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BANKING SUPERVISION

ESCB/European banking supervision response to the European Commission's public consultation on a new digital finance strategy for Europe/FinTech action plan

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Executive summary

This European System of Central Banks (ESCB)/European banking supervision¹ response (hereafter referred to as “the ECB response”) has been approved by the Governing Council of the European Central Bank (ECB) and was prepared with the assistance of national central banks (NCBs) and national competent authorities (NCAs) and in consultation with the Supervisory Board of the ECB. A separate ESCB response has addressed considerations regarding payments in the context of a specific consultation of the European Commission on a retail payments strategy for the European Union (EU), launched on the same day as this consultation.

The ECB broadly supports the priority areas identified by the European Commission in the consultation document to foster the development of digital finance in the EU, which have gained further in importance in the light of the recent coronavirus (COVID-19) pandemic crisis, namely: (1) ensuring that the EU financial services regulatory framework is fit for the digital age; (2) enabling consumers and firms to reap the opportunities offered by the EU-wide Single Market for digital financial services by removing fragmentation; (3) promoting a well-regulated data-driven financial sector for the benefit of EU consumers and firms; and (4) enhancing the digital operational resilience framework for financial services. As regards the latter priority, the ECB has provided a separate contribution in the context of the specific consultation launched by the Commission on this matter.

While the ECB recognises that financial technology (“fintech”) and innovation may bring significant benefits for financial institutions, their customers, the financial system and the broader economy, the digital transformation of the banking sector has to be performed taking due account of the risks related to the use of innovative technologies. The pandemic crisis has acted as a catalyst to accelerate the already planned digitalisation efforts of the financial sector as well as the further transformation of their business models, and has also highlighted additional challenges and risks for financial institutions.

The ECB follows a **technology-neutral approach** to its areas of competence, including banking supervision and the oversight of payment systems, in accordance with the SSM Regulation and the Treaty on the Functioning of the European Union. The ECB’s role is to ensure the safety and soundness of the banking sector, maintaining a high standard of prudential supervision and oversight of payment systems, schemes and instruments, irrespective of the particular business model or the application of any particular technological solution. The ECB aims to maintain a level playing field for banking services, and follows the guiding principle of “same activity, same risks, same supervision and regulation”. In its role as catalyst in the field of payments, the ECB fosters an innovative market for euro payments in cooperation with the relevant stakeholders and pursues the objectives of strategic autonomy and resilience.

¹ “European banking supervision” refers to the Single Supervisory Mechanism (SSM) in view of the NCA involvement in the preparation of this response.

The ECB has responded to the evolving challenges and risks arising from financial innovation on multiple fronts. On the central banking side, consistent with its mandate to ensure financial stability and the smooth functioning of payment systems, the ECB is monitoring and assessing the implications of fintech and actively exploring new technologies that may prove useful in supporting the ECB's functions. On the banking supervision side, the ECB is assessing the evolving business models and looking into the related new risks and challenges that banks are facing due to innovation and digitalisation, and is closely monitoring banks' related risk management practices and internal governance also in the light of the current pandemic crisis. In the same vein, the Eurosystem is also currently reviewing its oversight frameworks for payment instruments.

One important challenge in relation to digital finance will be to **reassess the dependence of European financial service providers on non-EU providers of critical services and technical infrastructures (e.g. the "cloud")**, while EU-based global players have struggled to emerge. This could lead to banks' reliance on a few non-EU service providers and possible concentration issues at both entity and systemic levels.

In the context of the current regulatory framework, different entities which could perform to a certain extent similar activities, such as credit institutions, e-money institutions and payment institutions, are subject to various regulatory and supervisory frameworks, either at national or European level. As this trend is accelerated by innovation and digitalisation, this framework may need to be reviewed to ensure a level playing field and maintain the principle of "same activity, same risks, same supervision and regulation". Moreover, as part of its oversight role over payment systems, instruments and schemes, the ECB envisages enhancing its cooperation with national authorities supervising payment service providers (PSPs).

As regards the above-mentioned priorities of the European Commission, the ECB considers that:

- **While the current EU financial services regulatory framework is already broadly technology neutral, it should support fair competition and ensure a level playing field in digital financial services, while addressing associated risks and also reinforcing the need to develop strong risk management at the firm level.** Important areas for improvement would be to enhance clarity on the application of existing laws and regulations to innovative technologies and related business models, and to diminish the fragmentation resulting from different legal and regulatory frameworks and industry standards across EU Member States, in order to foster the Internal Market, the pan-European application of standards and a level playing field.
- With regard to facilitating the use of digital financial identities throughout the EU, **the ECB fully endorses the mandatory use of unique identifiers**, based on internationally recognised global standards including legal entity identifiers (LEIs), unique transaction identifiers (UTIs) and unique product identifiers (UPIs).

- **The ECB supports the need for enhanced cooperation throughout the EU on different schemes such as regulatory sandboxes and innovation hubs,** and acknowledges the benefits of fostering an open dialogue between supervisors and supervised entities. This may encourage banks (and other financial entities) to launch innovative solutions, while being able to monitor the accompanying risks in a controlled environment.
- **The ECB considers that open finance can have implications for the supervised banks, at both entity and systemic levels** and also as regards the nature of the cooperation between these banks and new potential actors, such as third-party providers. In this respect, the ECB is adapting its supervisory approach towards the regulated entities to the new landscape that the revised Payment Services Directive (PSD2) has enabled, also in anticipation of the next developments. While open finance and the use of alternative data (such as data from public sources) can enable the modernisation of banks' internal processes, it should however be ensured that customer data sharing, also with third-party providers, meets clear legal requirements and fulfils security standards.

Introduction

On 3 April 2020, the European Commission launched a public consultation covering a range of issues that fall under the umbrella term “digital finance”, aiming to contribute to the new EU FinTech action plan to be published later this year.² The Commission seeks to identify if there is a need to adapt the current regulatory framework or to launch new initiatives, against the backdrop of a rapidly evolving financial landscape, driven by a fast uptake of technologies by incumbent firms and the entrance into the market of new players (including technology companies).

The ECB welcomes this consultation in view of the key relevance of digital finance for the entire financial sector. Enhanced technological possibilities and changing customer demands have affected markets and businesses worldwide, including the European financial sector. In line with the European Commission’s objectives, the ECB considers that it is essential for Europe to manage, regulate and supervise the financial system in a way that promotes and protects Europe’s values and financial stability.

Against this background, this ECB response, which has been approved by the Governing Council of the ECB, was prepared with the assistance of ESCB committees and of NCAs through the internal structures of the ECB and in consultation with the Supervisory Board of the ECB. The Annex specifies the views of the ECB regarding various questions raised by the European Commission in its consultation questionnaire. The ECB has focused its response on the questions falling within its central banking and banking supervision tasks and has not expressed views on aspects which do not relate to its mandate (e.g. consumer protection). In order to ensure consistency, the term “ECB” will be used throughout the response to express these views.

The European Commission has identified the following priorities:

1. ensuring that the EU financial services regulatory framework is fit for the digital age, i.e. technology neutral and innovation friendly;
2. enabling consumers and firms to reap the opportunities offered by the EU-wide Single Market for digital financial services by removing fragmentation;
3. promoting a well-regulated data-driven financial sector for the benefit of EU consumers and firms;
4. enhancing the digital operational resilience framework for financial services.

Priority 4 is not covered in this ECB response since this priority and related questions were covered in a previous European Commission public consultation launched in

² The current consultation follows two previous European Commission public consultations launched in December 2019, focusing on [crypto-assets](#) and digital operational resilience respectively. The Commission has also launched a specific consultation on a retail payments strategy for the EU, in parallel to the present one. All four consultations contribute to informing the European Commission in view of a new digital finance strategy for Europe/FinTech action plan to be published in the third quarter of 2020.

December 2019 on **digital operational resilience** for which the ECB has provided a separate contribution.

Furthermore, considerations regarding payments are addressed in a specific consultation of the European Commission on a **retail payments strategy for the EU** launched on the same day as the present consultation and for which a specific ESCB response has been submitted.³ The ESCB response identifies a need for coordinated action on multiple fronts to reinforce the EU's independence and competitiveness in the field of payments. In this respect, the successful roll-out of instant payments is a strategic priority that could benefit to an equal degree from mandatory adherence to the SEPA Instant Credit Transfer scheme and from adding instant credit transfers to the list of services of the Payment Accounts Directive⁴, under certain conditions. The ESCB response also encourages the Commission to revise the Settlement Finality Directive (SFD)⁵ so that adequately supervised or overseen entities (e.g. e-money and payment institutions) become eligible to directly access SFD-designated payment systems, while at the same time avoiding the creation of undue risks for payment systems. Similarly, the ESCB supports taking regulatory action to ensure open access to key technical infrastructure services (e.g. mobile device capabilities) based on transparent, objective and non-discriminatory criteria that take into account security standards, oversight and supervisory requirements. The ESCB response stresses the importance of satisfying the needs of all EU citizens by preserving access to, and acceptance of, cash at the point of sale.

³ See the "[European System of Central Banks response to the European Commission's consultation on a retail payments strategy for the EU](#)" on the ECB website.

⁴ Directive 2014/92/EU of the European Parliament and of the Council of 23 July 2014 on the comparability of fees related to payment accounts, payment account switching and access to payment accounts with basic features (OJ L 257, 28.8.2014, p. 214).

⁵ Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems (OJ L 166, 11.6.1998, p. 45).

1 Digital finance in the context of the pandemic crisis

Financial technology (“fintech”)⁶ may bring significant benefits for financial institutions, their customers, the financial system and the broader economy.

The emergence of fintech has led to changes in their business models. Fintech can improve the customer experience, enabling for example digital onboarding, the use of online customer interfaces, and the roll-out of services and products in a more affordable and efficient manner. The application of artificial intelligence (AI), coupled with the large volumes of data now available, can also help financial institutions improve many of their back-office functions. More generally, fintech has a significant potential to enhance the competitiveness of the EU financial sector by deepening the Internal Market and fostering the capital markets union. As pointed out by the European Commission⁷, strong and innovative digital capacities in the financial sector will help improve the EU’s ability to deal with emergencies such as the COVID-19 outbreak. On the other hand, this digital transformation has to be performed taking due account of the risks related to the use of innovative technologies.

The pandemic crisis has highlighted the need for banks⁸ and financial market infrastructures (FMIs) to avail of mature digital capabilities to deliver products and services.

In this respect, banks have adjusted their operations, ensuring business continuity and enabling them to continue to provide services on a cross-border basis.⁹ These are not new phenomena for the banking sector, but the crisis is acting as a catalyst to accelerate the already planned digitalisation efforts of banks as well as the further transformation of their business models.

It is still too early to tell how the post-pandemic landscape will look.

Nevertheless, this crisis has also highlighted additional challenges and risks for banks, PSPs and FMIs. As they transfer their processes to contingency environments, their exposure to cyber threats increases, as does the risk of IT failures. Banks’ IT systems must be resilient enough to withstand the current heavy reliance on remote working and servicing. Furthermore, digitalisation strategies require sufficient means, a due implementation supported by knowledgeable staff, measured by financial and non-financial risk metrics, and adequate governance procedures. Finally, updating or even replacing legacy IT systems may require significant efforts, especially if banks use multiple IT systems which are linked together.

The euro area central banks and supervisors are closely monitoring how technological changes and innovation affect financial markets and banks. As further explained below, the ECB will continue to engage with the banking industry, in order to adequately tailor its supervisory approach and its approach to oversight, also with a

⁶ Fintech is a term used throughout the response to refer to financial technology – in the ECB’s view an umbrella term for any kind of technological innovation used to support or provide financial services that could result in changes to business models, applications, processes or products.

⁷ See the [consultation document](#) (page 8) on the European Commission’s website.

⁸ The terms “bank” and “credit institution”, as defined in Article 4(1) of Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms, are used interchangeably.

⁹ See also the blog post by Pentti Hakkarainen, Member of the Supervisory Board of the ECB, entitled “[The first lesson from the pandemic: state-of-the-art technology is vital](#)”, 8 May 2020.

view to ensuring that the euro area banking sector is in a position to face the challenges of the new post-pandemic environment.¹⁰

It is up to banks however to face this new reality, shift to greater digitalisation and step up their innovation efforts, in order to meet changing customer demands, with adequate risk management procedures in place. If banks adopt an agile, responsible and risk-based approach towards innovation, they could face the increased competition in the financial sector and amend their value proposition, streamline their internal processes and become more cost efficient, ensuring the sustainability of their business models.

¹⁰ For further information, see Box 4 of the [“ECB Annual Report 2019”](#).

2 The ECB's general approach to digital finance

Regarding innovation and technology in the digital finance area – and in line with its principles – the ECB follows a technology-neutral approach to supervision and oversight. The ECB's role is to ensure the safety and soundness of the banking sector, maintaining a high standard of prudential supervision, irrespective of the application of any particular technological solution. With regard to its oversight role¹¹, the ECB is currently revising its harmonised oversight approach, which sets common oversight standards for payment instruments and schemes. The new framework includes, besides payment schemes, the assessment of payment arrangements providing different technological solutions. The aim is to evaluate the associated risks and mitigate them regardless of technological implementation.

The ECB has responded to the evolving challenges and risks arising from financial innovation on multiple fronts. On the **central banking** side, consistent with its mandate to ensure financial stability and the smooth functioning of payment systems, the ECB is monitoring and assessing the implications of fintech and actively exploring new technologies that may prove useful in supporting the ECB's functions. Profitability pressures stemming from competition with technology companies are being amplified by banks' needs for investment in digitalisation, which requires time to yield net benefits. Growing interlinkages with firms could mean that any disruptions might have systemic implications for the financial system unless adequate safeguards are put in place. Another important challenge in relation to digital finance will be to reassess the dependence of financial institutions on non-EU providers of critical services and technical infrastructures (e.g. the cloud), while EU-based global players have struggled to emerge. This could lead to banks' reliance on a few non-EU service providers at both the entity and systemic levels. On the **banking supervision** side, the ECB is looking into the new risks and challenges that banks are facing due to innovation and is closely monitoring their risk management practices, also in light of the current pandemic crisis. The risks associated with the use of fintech are not limited to IT. The ECB is therefore adapting its methodological toolbox, reflecting on the technologies used and providing supervisory recommendations across all prudential risk categories, including governance, business model and operational risk.

The ECB's ongoing work within the euro area aims to foster a common approach to fintech-related risks, ensure a consistent supervisory approach across the euro area and open a dialogue with the industry¹², also in view of its mandate in relation to the authorisation and supervision of banks in the euro area.¹³ The ECB aims to maintain a level playing field for banking services and financial services more generally, and

¹¹ According to the [Eurosystem oversight policy framework](#), the Eurosystem pursues three complementary approaches to promote the safety and efficiency of FMIs, namely: (i) owning and operating FMIs; (ii) conducting oversight activities; and (iii) acting as a catalyst. The term "FMI" encompasses, inter alia, payment systems, and clearing and settlement systems. Furthermore, as payment instruments and payment schemes are an integral part of payment systems, the Eurosystem includes these in central bank oversight of payment systems.

¹² See the [ECB Banking Supervision website](#).

¹³ In accordance with Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions, the ECB has the tasks to, amongst others, decide on common procedures for credit institutions in the euro area, perform direct supervision of significant institutions in the euro area and oversee the functioning of the system.

follows the guiding principle of “same activity, same risks, same supervision”¹⁴ and regulation. This means that similar activities that generate similar risks require the same regulatory treatment and supervisory approach, in order to ensure consistency. This has also been reflected in the regulatory framework and supervisory approach further specified in the SSM Supervisory Manual. While the ECB does not prescribe how banks should conduct their business, supervisors look into the risks related to the bank’s activities and if they are adequately managed. In this regard, the ECB is proactively engaging with banks to gain knowledge of their transformation process and take-up of innovative technological solutions. This work in relation to digital transformation and the use of innovative technologies is conducted by assessing banks’ business model changes and related risks. The work on fintech supervision has also been made part of the SSM supervisory priorities for 2020¹⁵ to assess banks’ business models in the light of increasing digitalisation and related risks such as IT and cyber risks.

Therefore, it is of utmost importance to assess the risks and benefits arising from new technologies in the increasingly digital and changing landscape. The ECB is continuously adapting its supervisory (and oversight) approach vis-à-vis fintech, leveraging on knowledge gained through industry dialogues and exchanges with other authorities. In this regard, the ECB’s supervisory approach will benefit from the support of legislation that is technology neutral and addresses the new landscape and risks related to digitalisation and innovation.

In the context of the current regulatory framework, different entities which could perform to a certain extent similar activities, such as credit institutions, e-money institutions and payment institutions, are subject to varying regulatory and supervisory frameworks, either at national or European level. As this trend is accelerated by innovation and digitalisation, this framework may need to be reviewed to ensure a level playing field and maintain the principle of “same activity, same risks, same supervision and regulation”. Moreover, as part of its oversight role over payment systems, schemes and instruments, the ECB envisages enhancing its cooperation with national authorities supervising PSPs.

¹⁴ See the speech entitled “[A binary future? How digitalisation might change banking](#)” by Andrea Enria, Chair of the Supervisory Board of the ECB, at the banking seminar organised by De Nederlandsche Bank, Amsterdam, 11 March 2019.

¹⁵ See the “[SSM Supervisory Priorities 2020](#)” on the ECB Banking Supervision website.

3 The ECB's views on the priority areas identified by the Commission

As mentioned above, the ECB broadly supports the priority areas identified by the Commission in relation to digital finance and the related policy work to spur the development of digital finance in the EU. Indeed, this is in line with the ECB's priority to remain technology neutral, while taking into account new benefits and risks related to innovation and digitalisation. The ECB's views on the consultation's questions in relation to the three priorities in question are further specified below.

3.1 The ECB's views on Commission priority 1: ensuring that the EU financial services regulatory framework is fit for the digital age

In the ECB's view, the European Commission's priority appears to be in line with the current EU financial services regulatory framework, which is already broadly technology neutral. However, in matters of regulation, technological neutrality is not a means in itself: it needs to be balanced against the risks that the free use of technological innovation may entail. The EU financial services regulatory framework should support fair competition in digital financial services, while addressing associated risks and also reinforcing the need to develop strong risk management at the firm level. Furthermore, the development of digital finance should take into consideration wide accessibility of basic financial services and the technologies that underpin them.

The ECB supports a technology-neutral approach to regulation, supervision and oversight.¹⁶ While remaining mindful that new technologies do not undermine common standards and interoperability, the ECB does not attempt to steer the market in one direction or the other when it comes to the use of particular technologies.¹⁷ Recent developments in technologies and financial market players suggest that the regulatory framework should be further clarified and adapted to the new digital reality to preserve and enhance the level playing field of the EU financial system in the evolving landscape. **For example, the entrance of technology companies into the financial services sector, big technology ("big tech") companies in particular, has raised concerns that the principle of "same activity, same risks, same supervision" and regulation could be undermined.**¹⁸ Should big tech companies decide to enter financial services on a large scale, and especially into the retail market, it has to be ensured that risks associated with their activities are appropriately captured and addressed in the regulatory framework.

¹⁶ See also the panel remarks "[On supervisory architecture](#)" by Andrea Enria, Chair of the Supervisory Board of the ECB, at the Financial Stability Institute 20th anniversary conference, Basel, 12 March 2019.

¹⁷ See also the speech entitled "[A binary future? How digitalisation might change banking](#)" by Andrea Enria, Chair of the Supervisory Board of the ECB, at the banking seminar organised by De Nederlandsche Bank, Amsterdam, 11 March 2019.

¹⁸ Ibid.

Through the licensing process¹⁹ and the ongoing supervision of banks in the euro area (both significant and less significant institutions), it can be observed that certain **aspects of the supervision of banks' use of innovative technologies and digitalisation strategies require enhanced attention**, touching on various topics. These topics include: (i) the increased use of cloud service providers, leading to concentration (both idiosyncratic and systemic) among a few providers, including big tech companies; (ii) the use of AI for a range of functions, e.g. credit scoring and robo-advice, to ensure the performance of the models and also prevent bias; (iii) the move towards an open banking model to enhance the effective and safe use of available data; (iv) the use of distributed ledger technology (DLT) for certain activities, such as trade finance, requiring a good governance of the platforms and an understanding of the technologies; and (v) regulatory technology (regtech), for the purpose of meeting regulatory requirements, reporting, supporting compliance and enhancing risk management in a credit institution.

The ECB is continuously adapting its supervisory approach to banks' use of innovative technologies, leveraging on knowledge gained through its own experience with advanced technologies, industry dialogues and exchanges with other authorities in the European and global fora. The ECB's objective is to promote a common understanding of fintech-related risks and ensure that they are assessed in a consistent manner across the euro area.

Overall, the ECB considers that **important areas for improvement** would be to enhance clarity on the application of existing laws and regulations to innovative technologies and related business models, and to diminish the fragmentation resulting from different legal and regulatory frameworks and industry standards across EU Member States, in order to foster the Internal Market, the pan-European application of standards and a level playing field. In this regard, **targeted amendments to legislation, interpretative guidance and a periodic review of existing rules** would be useful to ensure that the EU framework remains effective and technology neutral. While the ECB sees some benefits in bespoke regimes for nascent technologies, such as DLT, these will have to be balanced against the risks of their leading to a complex and potentially inconsistent regulatory framework.

3.2 The ECB's views on Commission priority 2: enabling consumers and firms to reap the opportunities offered by the EU-wide Single Market for digital financial services by removing fragmentation

A level playing field is of utmost importance to fully reap the opportunities of an EU-wide Single Market for digital financial services. This requires, among other things, building up reliable legal and monitoring frameworks. An important step in that direction would be a generally accessible real-time European business register, whether centrally managed or as a digitally linked network of national registers. Such a

¹⁹ See "[Guide to assessments of fintech credit institution licence applications](#)", ECB Banking Supervision, September 2017.

register should contain unique entity identifiers and information on the structure of institutions, preferably LEIs.

In this context and with regard to facilitating the use of digital financial identities throughout the EU, **the ECB fully endorses the mandatory use of different identifiers**, based on internationally recognised global standards including LEIs, UTIs and UPIs, which is crucial to reap the benefits of and speed up the comprehensive digitalisation and automation of processes in financial services. With regard to the LEI, the ECB considers that it is a key and indispensable element of digital financial identities, and that it should be leveraged and used to the greatest extent possible. In that context, it should be noted that the European Systemic Risk Board has set up a task force to prepare a recommendation on the establishment of an EU legislative framework for greater adoption of LEIs across the EU, requiring all legal entities in the EU to have an LEI and that each entity's LEI is also mandatory for financial transaction and public reporting. The ECB is of the view that the various aspects of the European Commission's identified framework, in relation to providing rules and guidance at an EU level, are relevant and justified, and can create greater efficiency of such frameworks.

In addition, **the ECB supports the need for enhanced cooperation throughout the EU on different schemes such as regulatory sandboxes and innovation hubs**, and acknowledges the benefits of fostering an open dialogue between supervisors and supervised entities. The ECB notes that regulatory sandboxes are under development in various Member States. While **the setting-up of an EU-wide sandbox would be a task for the legislator to decide on**, such an initiative, as well as national initiatives, would need to be in line with the European regulatory framework and the division of competences contained therein, as well as the ECB's mandate for licensing credit institutions and supervising credit institutions.²⁰ Therefore, the ECB welcomes the European Commission's initiatives to address cross-border aspects when European entities operate in such schemes, in order to ensure a harmonised approach and foster a level playing field.

With regard to the use of passporting to scale up activities across the Member States, the ECB welcomes the work of the European Banking Authority (EBA) on potential impediments to the cross-border provision of banking and payment services.²¹ **The ECB supports further work by the Commission/EBA on the cross-border provision of services, which is especially relevant for digital finance.** Currently, only some Member States have defined a framework for credit institutions to provide cross-border financial services using intermediaries (e.g. branches) in another Member State and the respective notification process. The ECB is of the view that additional clarity could be helpful in this area to ensure a consistent approach throughout the EU and foster the ease of cross-border operations which are especially relevant for digitally operating credit institutions.

²⁰ See also the speech entitled "[Innovation and digitalisation in payment services](#)" by Yves Mersch, Member of the Executive Board of the ECB, at the Second Annual Conference on "Fintech and Digital Innovation: Regulation at the European level and beyond", Brussels, 27 February 2018.

²¹ "[Report on potential impediments to the cross-border provision of banking and payment services](#)", European Banking Authority, 29 October 2019.

Finally, taking a broader perspective, the ECB supports the cooperation throughout the EU in the context of other initiatives, e.g. those aiming to monitor the fintech phenomenon in Europe and related statistical initiatives.²²

3.3 The ECB's views on Commission priority 3: promoting a well-regulated data-driven financial sector for the benefit of EU consumers and firms

The ECB considers that open finance can have implications for the supervised banks, at both the entity and systemic levels and also as regards the nature of the cooperation between these banks and new potential actors, such as third-party providers. The revised Payment Services Directive (PSD2)²³ has created a new environment for access to payment account data, as well as the potential for added-value services. These data can now be shared with competitors, including non-banks. At the same time, technological developments have made big data, cloud services and AI algorithms more accessible, increasing the value of data for banks. Against this background, the ECB is adapting its supervisory approach towards the regulated entities to the new landscape that PSD2 has enabled, also in anticipation of the next developments.

With respect to consent-based access to personal data and data sharing in the financial sector, in the ECB's view, alternative data sources such as public data could be useful in providing insights, even though supervisory decisions or actions cannot be taken based directly and solely on such data, also in view of data quality issues. However, data generated by means of advanced technologies can complement the data collected by traditional means. For instance, alternative data from the news and social media can be used for sentiment analysis. Some alternative data sources are public and, in this sense, bring the benefit that they are widely accessible with limited or no confidentiality restrictions.

²² See, for example, "IFC Report on central banks and fintech data issues", Bank for International Settlements, February 2020.

²³ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market (OJ L 337, 23.12.2015, p. 35).

ANNEX:

The ECB's response to the European Commission's questionnaire

General questions

Question 1

What are the main obstacles to fully reap the opportunities of innovative technologies in the European financial sector (please mention no more than 4)?

Please also take into account the **analysis of the Expert Group on Regulatory Obstacles to Financial Innovation**²⁴ in that respect.

The ECB considers the following to be the most important areas for improvement, so that European financial service providers can fully reap the opportunities that have arisen from the emergence of innovative technologies:

1. **Enhance clarity** on the application of existing laws and regulation to innovative technologies and related business models. Some technological innovations entail a degree of legal uncertainty, which could hinder the uptake of innovation by financial service providers. The uncertainty stemming from the lack of a stable legal taxonomy in this area, taking into account new innovative applications in the financial sector for the performance of financial activities and for the delivery of products and services, as well as the specific requirements related to the use of innovative technologies, could subsequently lead to uncertainty as to the regulatory and supervisory regime applicable to newcomers as well as incumbents, including with regard to anti-money laundering (AML) and know-your-customer (KYC) requirements. For instance, regarding the General Data Protection Regulation (GDPR) and other relevant legislation, guidance would be needed on the application of the requirement for erasure in DLT platforms, as well as on the issue of specificity of user consent in AI models.
2. **Diminish the fragmentation** due to different legal and regulatory frameworks and industry standards across EU Member States, in order to foster the Internal Market, the pan-European application of standards and a level playing field.
3. **Reassess the dependence** of financial institutions on providers of critical digital services (e.g. cloud-based services) and technical infrastructures, which are mostly non-EU providers. At the same time, EU-based global players have struggled to emerge.

²⁴ "Final report of the Expert Group on Regulatory Obstacles to Financial Innovation: 30 recommendations on regulation, innovation and finance", European Commission, 13 December 2019.

4. **Enhance the assessment of risks and benefits arising from new technologies, in view of the increasingly digital and changing landscape.**

The ECB is continuously adapting its supervisory and oversight approach to fintech, leveraging on knowledge gained through its own experience in applying advanced technology, industry dialogues, exchanges with other authorities and participation in fora focused on innovation, such as the European Forum for Innovation Facilitators (EFIF). The objective is to promote a common understanding of fintech-related risks among supervisors and legislators and to ensure that they are assessed in a consistent manner within the EU.

Question 2

What are the key advantages and challenges consumers are facing with the increasing digitalisation of the financial sector (please mention no more than 4)?

For each of them, what if any are the initiatives that should be taken at EU level?

The ECB refrains from answering questions in relation to consumer protection.

Building on previous policy and legislative work, and taking into account the contribution digital finance can make to deal with the COVID-19 emergency and its consequences, the Commission services are considering four key priority areas for policy action to spur the development of digital finance:

1. ensuring that the EU financial services regulatory framework is technology-neutral and innovation friendly;
2. reaping the opportunities offered by the EU-wide Single Market for digital financial services for consumers and firms;
3. promoting a data-driven financial sector for the benefit of EU consumers and firms; and
4. enhancing the operational resilience of the financial sector.

Question 3

Do you agree with the choice of these priority areas?

- Yes
- No
- Don't know / no opinion / not relevant

Question 3.1

Please explain your answer to question 3 and specify if you see other areas that would merit further attention from the Commission:

Subject to the following remarks, the ECB supports the European Commission's choice of priority areas, which appear to be broadly justified and consistent with the legal framework related to EU financial services regulation.

Specifically, the EU financial services regulatory framework is already broadly technology neutral. Looking at the legal framework governing the banking sector, the Capital Requirements Regulation and Directive (CRR/CRD)²⁵ package does not include any provisions regarding preferential treatment in relation to banks using innovative technologies. In addition, the revised Markets in Financial Instruments Directive (MiFID II)²⁶ speaks of a "system" in the context of defining regulated markets, multilateral trading facilities (MTFs) or organised trading facilities (OTFs) without distinguishing in terms of the technology they deploy. Equally, from a payments and post-trading perspective, the revised Payment Services Directive (PSD2)²⁷, the Settlement Finality Directive (SFD)²⁸, the Systemically Important Payment Systems Regulation (SIPSR)²⁹, the European Market Infrastructure Regulation (EMIR)³⁰ and the Centralised Securities Depository Regulation (CSDR)³¹ describe a "system" in contractual rather than technological terms. As a regulatory focus, technological neutrality – especially in an open market economy with free competition, such as the Single Market – is conducive to innovation-friendly regulatory outcomes.

However, in matters of regulation, technological neutrality should not be viewed in isolation; instead, it needs to be balanced against the risks that the free use of technological innovation may entail. There are several examples where the EU legislator regulated technological developments differently due to their novel risks. For instance, MiFID II seeks to ensure that algorithmic trading or high-frequency algorithmic trading techniques do not create a disorderly market and cannot be used for abusive purposes. Similarly, while the GDPR³² acknowledges that the increased

²⁵ Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms (OJ L 176, 27.6.2013, p. 1) and Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (OJ L 176, 27.6.2013, p. 338).

²⁶ Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments (OJ L 173, 12.6.2014, p. 349).

²⁷ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market (OJ L 337, 23.12.2015, p. 35).

²⁸ Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems (OJ L 166, 11.6.1998, p. 45).

²⁹ Regulation of the European Central Bank (EU) No 795/2014 of 3 July 2014 on oversight requirements for systemically important payment systems (ECB/2014/28) (OJ L 217, 23.7.2014, p. 16).

³⁰ Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (OJ L 201, 27.7.2012, p. 1).

³¹ Regulation (EU) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories (OJ L 257, 28.8.2014, p. 1).

³² 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 (OJ L 119, 4.5.2016, p. 1).

scale of collection and sharing of consumers' personal data due to technological developments brings new challenges for the protection of personal data (e.g. in relation to DLT and erasure), it calls upon technology to facilitate the free flow of personal data within the EU and to ensure a high level of data protection. Therefore, the European Commission's consultation paper identifies priority areas which are in line with technological neutrality and innovation friendliness.

In addition, EU regulation should support fair competition in digital financial services. Technology-neutral regulation also serves this objective. Furthermore, the development of digital finance should take into consideration wide accessibility of basic financial services and the technologies that underpin them.

A further priority area could be to harmonise substantive rules related to digital finance (e.g. formation of digital contracts, transfer of crypto-assets, whether outright or by way of collateral, cross-border technical acceptance of eID/eSignature solutions, legal validity of smart contracts and blockchain-registered transactions). Considering the likely challenges, an incremental approach would seem more advisable, placing the emphasis on the regulation of the cross-border aspects of digital finance activities.

The accessibility of basic financial services by all user groups (including vulnerable groups) should also be considered as a relevant issue, as well as digital inclusion, because increased digitalisation of financial services requires new skills of users and adequate access to technologies.

1 Ensuring a technology-neutral and innovation friendly EU financial services regulatory framework

Question 4

Do you consider the existing EU financial services regulatory framework to be technology neutral and innovation friendly?

- Yes
 No
 Don't know / no opinion / not relevant

Question 4.1

If not, please provide specific examples of provisions and requirements that are not technologically neutral or hinder innovation:

Overall, the ECB considers that the current EU framework is technologically neutral, as banks need to fulfil the same requirements depending on the specificities of their business model and risk profile, while on this basis proportionality can also be applied

(for specific examples that this may not be the case, please refer to the report of the Expert Group on Regulatory Obstacles to Financial Innovation).³³

In line with the above-mentioned report, it should be analysed to what extent the current framework for financial services is technology neutral and able to accommodate fintech innovation and whether it needs to be adapted, also with a view to making the framework suitable for further innovations within the financial sector. The ECB is of the view that interpretative guidance, targeted amendments and a periodic review of existing rules would be useful to ensure that the EU framework remains technology neutral also going forward, given the change of the nature of banks' business models as a result of innovation and digitalisation.

Question 5

Do you consider that the current level of consumer protection for the retail financial products and services established by the EU regulatory framework is technology neutral and should be also applied to innovative ones using new technologies, although adapted to the features of these products and to the distribution models?

- Yes
- No
- Don't know / no opinion / not relevant

Question 5.1

Please explain your reasoning on your answer to question 5, and where relevant explain the necessary adaptations:

The ECB expresses no views on this question.

³³ "Final report of the Expert Group on Regulatory Obstacles to Financial Innovation: 30 recommendations on regulation, innovation and finance", European Commission, 13 December 2019.

Identifying areas where the financial services regulatory framework may need to be adapted

Question 6

In your opinion, is the use for financial services of the new technologies listed below limited due to obstacles stemming from the EU financial services regulatory framework or other EU level regulatory requirements that also apply to financial services providers?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Distributed Ledger Technology (except crypto-assets)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Cloud computing	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artificial Intelligence/ Machine learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet Of Things (IoT)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biometrics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quantum computing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you see other technologies whose use would be limited in the financial services due to obstacles stemming from the EU financial services legislative framework, please specify and explain:

In terms of other technologies, the ECB believes that application programming interfaces (APIs) provide advantages for banks, including potential improvements to efficiency, data standardisation, privacy, as well as data protection, in comparison to other techniques (e.g. screen scraping). Banks have been internally relying on APIs for many years. They traditionally maintain multiple systems to run their operations and APIs enable the communication among these. Recently, the focus has turned to external APIs. The use of APIs, in the context of PSD2 but also beyond, is increasing in banks, especially those that intend to monetise their APIs via different models. To achieve interoperability of external APIs, the ECB considers that a clear and consistent regulatory framework for APIs, as well as their standardisation, where possible, would be beneficial. In this context, further discussions also including relevant stakeholders may be necessary.

Question 6.1

Please explain your answer to question 6, specify the specific provisions and legislation you are referring to and indicate your views on how it should be addressed:

Regarding DLT (except crypto-assets), the ECB believes that the existence of harmonised definitions, legal clarity (e.g. on the governance of the platform and applicable law) and standardisation, where possible, would be beneficial for the expansion of DLTs in banking solutions and FIMs.

At the beginning of 2019, the EBA published a guideline on outsourcing arrangements.³⁴ This guideline also integrated the 2017 EBA recommendations on outsourcing to cloud service providers. The ECB has actively contributed to the elaboration of this guideline. It contains no significant restrictions on the usage of cloud services. Nevertheless, further action could be taken to strengthen the legal certainty for industry participants on the use of cloud computing in the financial sector and its effective supervision, in particular in the area of standardisation of services and contracts, and requirements in relation to the location of data, as well as the providers' facilities.

³⁴ "Final Report on EBA Guidelines on outsourcing arrangements", European Banking Authority, 25 February 2019.

Question 7

Building on your experience, what are the best ways (regulatory and non-regulatory measures) for the EU to support the uptake of nascent technologies and business models relying on them while also mitigating the risks they may pose?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Setting up dedicated observatories to monitor technological and market trends (e.g. EU Block chain Observatory & Forum; Platform Observatory)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Funding experimentation on certain applications of new technologies in finance (e.g. block chain use cases)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promoting supervisory innovation hubs and sandboxes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting industry codes of conduct on certain applications of new technologies in finance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhancing legal clarity through guidance at EU level for specific technologies and/or use cases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Creating bespoke EU regimes adapted to nascent markets, possibly on a temporary basis	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what are the other ways the EU could support the uptake of nascent technologies and business models relying on them while also mitigating the risks they may pose:

While the ECB sees some benefits in bespoke regimes for nascent technologies (such as the use of blockchain), there are also risks of their leading to a complex and possibly inconsistent regulatory structure and provisions in different EU Member States. Similarly, the creation of regimes applicable on a temporary basis may be relevant for nascent markets, but could also increase regulatory uncertainty in relation to provisions related to nascent markets (e.g. new innovative players in the field of lending, wealth management). Therefore, enhancement of the European regulatory framework may be necessary to ensure a level playing field.

Assessing the need for adapting the existing prudential frameworks to the new financial ecosystem, also to ensure a level playing field

Question 8

In which financial services do you expect technology companies which have their main business outside the financial sector (individually or collectively) to gain significant market share in the EU in the five upcoming years?

Please rate each proposal from 1 to 5:

	1 (very low market share below 1%)	2 (low market share)	3 (neutral)	4 (significant market share)	5 (very significant market share above 25%)	N.A.
Intra-European retail payments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intra-European wholesale payments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumer credit provision to households with risk taking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumer credit distribution to households with partner institution(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mortgage credit provision to households with risk taking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mortgage credit distribution to households with partner institution(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Credit provision to SMEs with risk taking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Credit distribution to SMEs with partner institution(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Credit provision to large corporates with risk taking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Syndicated lending services with risk taking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk-taking activities in Life insurance products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk-taking activities in Non-life insurance products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk-taking activities in pension products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intermediation / Distribution of life insurance products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intermediation / Distribution of non- life insurance products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intermediation / Distribution of pension products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other insurance related activities, e.g. claims management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Re-insurance services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investment products distribution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asset management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify in which other financial services you expect technology companies to gain significant market share in the EU in the five upcoming years:

It should be examined to what extent fintech ecosystem companies and financial services platforms might start gaining additional market share in the next years as a result of their offering and a combination of various aforementioned financial services.

Question 8.1

Please explain your answer to question 8 and, if necessary, describe how you expect technology companies to enter and advance in the various financial services markets in the EU Member States:

Technology companies could deploy various strategies to become more active in the payments market. They could build on existing payment infrastructure, cooperate with existing PSPs, or choose to offer their own payment solutions on a newly developed proprietary or third-party infrastructure. In the latter case, new solutions may also have a negative impact on market integration. Technology companies could also enter new markets by taking over successful start-up companies. In Europe, for the most part, technology companies offer technical services to banks and PSPs both at the front end (e.g. electronic wallets) and back end (e.g. cloud services) of the payments value chain. The ECB believes that technology companies could pursue a more prominent role in payment service provision. Large technology companies with cross-border user bases may develop new global payment schemes/arrangements by using new and innovative technologies/assets. Technology companies' strategies could be potentially broader than the provision of new payment instruments/arrangements (e.g. extending to eID solutions). However, at this stage, it is not possible to estimate these companies' market share in five years' time. Ultimately, the technology companies' expansion in financial services would depend on the underlying business model of the technology company.

Question 9

Do you see specific financial services areas where the principle of “same activity creating the same risks should be regulated in the same way” is not respected?

Yes
 No
 Don't know / no opinion / not relevant

Question 9.1

Please explain your answer to question 9 and provide examples if needed:

In relation to the banking sector:

Any entity in the euro area that accepts deposits and offers loans to the public is supervised as a credit institution and hence must adhere to the applicable regulation. Only the ECB can grant licences to such institutions.³⁵

The entrance of service providers such as technology companies into the financial services sector, more specifically big tech companies, has raised concerns that the principle of “same activity, same risks, same supervision and regulation” could be undermined. Should big tech companies decide to start providing financial services on a large scale, and especially in the retail market, this could significantly transform the financial landscape. Big tech companies provide services to a large customer base and can leverage on economies of scale and their presence on multiple markets to offer financial services to both consumers and merchants, as well as gaining access to large amounts of user data that can be exploited for credit rating purposes and targeted marketing. At the same time, these service providers could deliberately choose their product characteristics to circumvent the existing regulation, potentially undermining the applicability of the “same activity, same risks, same supervision and regulation” principle.³⁶

At the current juncture, in the euro area at least, the ECB witnesses that big tech companies are partnering with banks or providing ancillary services. Examples of the former include Google Pay and Apple Pay, services which are being rolled out across the EU with benefits for the participating banks, but also for the big tech companies that would not need to meet the regulatory requirements themselves, and of course for consumers. Some big tech companies are also key providers of cloud services for banks.

Nevertheless, as mentioned elsewhere in the ECB's answers (see, for example, Question 10 and Question 12), it is important that we remain vigilant in this respect

³⁵ In line with its mandate in Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions (OJ L 287, 29.10.2013, p. 63).

³⁶ See also the speech entitled “[A binary future? How digitalisation might change banking](#)” by Andrea Enria, Chair of the Supervisory Board of the ECB, at the banking seminar organised by De Nederlandsche Bank, Amsterdam, 11 March 2019.

and are prepared at an EU level to consider adjusting the regulatory perimeter if and when big tech companies should increasingly offer banking services, such as lending to consumers and/or small and medium-sized enterprises (SMEs), to ensure that the risks related to these services are adequately addressed (including concentration risks), and in a similar manner across the various institutions providing those services, as well as in the various European jurisdictions.

Question 10

Which prudential and conduct risks do you expect to change with technology companies gaining significant market share in financial services in the EU in the five upcoming years?

Please rate each proposal from 1 to 5:

	1 (significant reduction in risks)	2 (reduction in risks)	3 (neutral)	4 (increase in risks)	5 (significant increase in risks)	N.A.
Liquidity risk in interbank market (e.g. increased volatility)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquidity risk for particular credit institutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquidity risk for asset management companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Credit risk: household lending	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Credit risk: SME lending	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Credit risk: corporate lending	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pro-cyclical credit provision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concentration risk for funds collected and invested (e.g. lack of diversification)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concentration risk for holders of funds (e.g. large deposits or investments held in a bank or fund)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Undertaken insurance risk in life insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Undertaken insurance risk in non-life insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Operational risks for technology companies and platforms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Operational risk for incumbent financial service providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Systemic risks (e.g. technology companies and platforms become too big, too interconnected to fail)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Money-laundering and terrorism financing risk

Other



Please specify which other prudential and conduct risk(s) you expect to change with technology companies gaining significant market share in financial services in the EU in the five upcoming years:

The ECB does not provide any views on this matter.

Question 10.1

Please explain your answer to question 10 and, if necessary, please describe how the risks would emerge, decrease or increase with the higher activity of technology companies in financial services and which market participants would face these increased risks:

The ECB notes that consideration should be given to the possible entrance of big tech companies into the financial services market. They can draw upon the vast amounts of data from their wide customer base and combine this with their extensive use of innovative technologies to better tailor their product offering. Big tech companies have the potential to quickly gain a significant market share, which could lead to significant concentration risks and, in the event of operational failures and targeted cyberattacks, could have a systemic impact on the financial system as a whole, thus increasing financial stability risks.

Incumbent financial institutions are reacting to this changing environment by transforming their business models. This could imply, for instance, transforming the bank itself into a fully fledged digital institution, establishing a stand-alone digital bank or partnering with non-bank fintech or big tech companies to deliver certain products, creating ecosystems where financial institutions, fintech start-ups and service providers cooperate. In relation to its oversight and supervisory mandates, the ECB does not attempt to steer the market in one direction or the other. Our aim is to maintain a level playing field in financial services. Our guiding principle is “same activity, same risks, same supervision and regulation”.³⁷ Therefore, the evolving business models and the application of new technologies are being monitored with regard to the related risks and banks’ risk management processes.

The security and operational resilience of the financial sector can be affected in a number of ways by the increased use of new technologies. Overall, it can be expected that the increased presence of technology companies will create more operational complexity and add intermediaries in the financial sector, also increasing third-party

³⁷ See also the speech entitled “[A binary future? How digitalisation might change banking](#)” by Andrea Enria, Chair of the Supervisory Board of the ECB, at the banking seminar organised by De Nederlandsche Bank, Amsterdam, 11 March 2019.

dependencies. This may raise systemic risk, as operational problems that arise in one country may spread to other countries. A complicating factor in this respect may be that the presence of such companies in many countries may reduce the insight of national overseers and prudential supervisors into the type and scale of financial activities taking place within their jurisdictions. As the pace of technological innovation increases, the financial sector will see more often the introduction of innovative technology which has not been intensively market-tested and is therefore inherently more risky from an operational point of view. At the same time, the accelerated adoption of new technologies could also enhance the resiliency of the sector. For example, the use of cloud services could, under certain conditions, improve operational systems' availability, scalability and resilience compared with what can be achieved with on-premises data centres.

A competitive attitude of market players should not result in a deterioration of business operating conditions which could increase operational risks due to underinvestment in IT security.

The reliance on external technology providers increases the surface of attack, thereby potentially facilitating the propagation of disruptions. However, some specialised technology companies have a strong interest in ensuring a high level of cyber and operational resilience, as the provision of technology services is their core business.

Lastly, when EU financial service providers increasingly rely on (critical) services offered to them by non-EU technology firms, EU sovereignty with regard to those services (e.g. the ability to regulate and supervise those non-EU service providers) decreases. The same applies when non-EU technology firms replace EU financial service providers for services to EU citizens and businesses (for example, when non-EU big tech companies' market share in offering retail payment services increases).

Question 11

Which consumer risks do you expect to change when technology companies gain significant market share in financial services in the EU in the five upcoming years?

Please rate each proposal from 1 to 5:

	1 (significant reduction in risks)	2 (reduction in risks)	3 (neutral)	4 (increase in risks)	5 (significant increase in risks)	N.A.
Default risk for funds held in non-banks and not protected by Deposit Guarantee Scheme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Liquidity risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Misselling of insurance products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Misselling of investment products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Misselling of credit products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Misselling of pension products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate provision of information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inadequate complaint and redress process and management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use/abuse of personal data for financial commercial purposes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discrimination e.g. based on profiles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Operational risk e.g. interrupted service, loss of data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify which other consumer risk(s) you expect to change when technology companies gain significant market share in financial services in the EU in the five upcoming years:

The ECB refrains from providing a response in relation to consumer risks.

Question 11.1

If necessary, please describe how the risks would emerge, decrease or increase with the higher activity of technology companies in financial services and which market participants would face these increased risks:

The ECB does not provide an answer to this question.

Question 12

Do you consider that any of the developments referred to in the questions 8 to 11 require adjusting the regulatory approach in the EU (for example by moving to more activity-based regulation, extending the regulatory perimeter to certain entities, adjusting certain parts of the EU single rulebook)?

- Yes
- No
- Don't know / no opinion / not relevant

Question 12.1

Please explain your answer to question 12, elaborating on specific areas and providing specific examples:

Technology companies have entered into the financial services sector, thereby allowing them to remain outside the remit of the financial regulatory regime for some activities, while in the case of regulated activities the required authorisation has to be obtained, or the service/product has to be offered in a partnership with an entity having the required authorisation (i.e. a banking licence). However, in the ECB's view, the prospect of technology companies increasing their footprint in the financial services sector and using increasingly sophisticated ways to provide these services could warrant the need to extend the regulatory perimeter and to explore the possibility of complementing the current entity-based regime with an activity-based approach.

From the ECB's perspective, an important financial stability concern relates to the increasing reliance of financial institutions on big tech companies for certain technical services supporting the provision of financial services such as cloud computing (see also Question 8.1). Such services are typically provided by a handful of big tech companies, almost all of which are located outside the EU, posing challenges to the EU regulators in terms of their reach and effective intervention. Moreover, big tech companies' service provision is not limited to the financial sector. The ECB believes that these considerations underscore the need for closer cooperation, coordination and dialogue at both global and cross-sectoral levels. They may also call for some institutional arrangements to ensure such cross-border and cross-sectoral coordination.

Enhance multi-disciplinary cooperation between authorities

Question 13

Building on your experience, what are the main challenges authorities are facing while supervising innovative/digital players in finance and how should they be addressed?

Please explain your reasoning and provide examples for each sector you are referring to (e.g. banking, insurance, pension, capital markets):

In relation to the banking sector:

The ECB follows a technology-neutral approach to banking supervision, whereby any licensed credit institution in the euro area will be supervised according to the same high standards, proportionate to its individual risk profile. Many banks in the euro area, including both incumbent institutions as well as market entrants, are using fintech.

Based on the licensing of banks which use fintech, as well as the ongoing supervision of banks in the euro area (both significant and less significant institutions), there are recurring issues with regard to supervision, touching on, among others, the following topics:

- increased use of cloud service providers, leading to concentration (both idiosyncratic and systemic) among a few providers including big tech companies;
- use of AI for a range of back-office functions and increasingly also front-office functions;
- move towards an open banking/beyond banking model;
- use of DLT for certain activities.

As mentioned in our answer to Question 1, the ECB is continuously adapting its supervisory approach to banks' use of innovative technologies, leveraging on knowledge gained through its own application of advanced technologies, industry dialogues and exchanges with other authorities. The ECB's objective is to promote a common understanding of fintech-related risks and ensure that they are assessed in a consistent manner across the euro area.

Question 14

According to you, which initiatives could be put in place at EU level to enhance this multi-disciplinary cooperation between authorities?

Please explain your reasoning and provide examples if needed:

The ECB supports and is proactively engaged in EU-wide initiatives aimed at enhancing cooperation between competent authorities and supporting mutual learning among supervisors. These include for example the Commission's FinTech Lab, the

Horizon 2020 project and the European Forum of Innovation Facilitators (EFIF), amongst others. In addition, the ECB works together with the NCAs to adapt its supervisory approach within the SSM.

With specific reference to the EFIF, the ECB welcomes and supports the proposals of the European Commission to further enhance this format and to incorporate dialogues such as those previously organised under the auspices of DG-CONNECT (e.g. the FinTech Lab).

As mentioned earlier in response to Question 12, the activities of big tech companies, especially technical service provision to financial institutions, require closer cooperation and coordination at both global and cross-sectoral levels. They may also call for some institutional arrangements to ensure such cross-border and cross-sectoral coordination.

The ECB supports in particular the development of an EU-level enhanced and dedicated oversight framework, which would be tailor-made for critical third-party providers and would be based on binding tools, such as direct intervention and sanctioning powers by the relevant competent authorities. The ECB supports the idea of oversight of critical third-party providers being performed by a dedicated oversight function, which could leverage on and complement the existing Eurosystem oversight framework for critical service providers of FMIs. We are of the opinion that any possible new framework should also focus on the issues related to “chain outsourcing” (i.e. fourth-party service providers).

Cross-border activities of financial service providers require furthermore enhanced and proactive cooperation and exchange of information based on adequate technical tools among prudential supervisors, as well as between prudential supervisors and overseers of payment systems and payment schemes in the EU.

2 Removing fragmentation in the single market for digital financial services

Question 15

According to you, and in addition to the issues addressed in questions 16 to 25 below, do you see other obstacles to a Single Market for digital financial services and how should they be addressed?

The ECB broadly agrees with the European Commission’s assessment of the obstacles to a Single Market for digital finance. Please refer also to the ECB’s response to the retail payments consultation (in particular, the need to facilitate further the provision of instant/faster payments both for domestic and cross-border payments across the EU).

Facilitating the use of digital financial identities throughout the EU

Question 16. What should be done at EU level to facilitate interoperable cross- border solutions for digital on- boarding?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Harmonise rules governing customer due diligence requirements in the Anti-Money Laundering legislation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Harmonise rules governing the acceptable use of remote identification technologies and services in the Anti-Money Laundering legislation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Broaden access for obliged entities to publicly held information (public databases and registers) to enable verification of customer identities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide further guidance or standards in support of the customer due diligence process (e.g. detailed ID elements, eligible trusted sources; risk assessment of remote identification technologies)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilitate the development of digital on-boarding processes, which build on the e-IDAS Regulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilitate cooperation between public authorities and private sector digital identity solution providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrate KYC attributes into e-IDAS in order to enable on-boarding through trusted digital identities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Please specify what else should be done at EU level to facilitate interoperable cross-border solutions for digital on-boarding:

The ECB has addressed digital identities and the need for action at EU level to promote the development of cross-border compatible digital identity solutions (for payment authentication purposes) in the parallel European Commission public consultation on a retail payments strategy. In its response, the ECB notes that changes to eIDAS (electronic identification, authentication and trust services) are

needed to: (i) enable the use of national eID/eSignature solutions by the private sector; (ii) facilitate PSPs' cross-border acceptance of eID/eSignature solutions; and (iii) enable PSPs to use a single EU eIDAS-compliant solution for remote onboarding, servicing and payment authentication at any PSP in Europe. Furthermore, in order for the EU to reap the full benefits of digitalisation and to facilitate European solutions, it is important to ensure that national laws facilitate and/or give equal treatment to paper-based and digital identities, signatures and documents/contracts.

Customer due diligence is not addressed in this response, as the topic falls outside of the ECB's mandate.

Question 17

What should be done at EU level to facilitate reliance by financial institutions on digital identities gathered by third parties (including by other financial institutions) and data re-use/portability?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Make the rules on third party reliance in the Anti-Money Laundering legislation more specific	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide further guidance relating to reliance on third parties for carrying out identification and verification through digital means, including on issues relating to liability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promote re-use of digital identities collected for customer due diligence purposes in accordance with data protection rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promote a universally accepted public electronic identity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Define the provision of digital identities as a new private sector trust service under the supervisory regime of the eIDAS Regulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Please specify what else should be done at EU level to facilitate reliance by financial institutions on digital identities gathered by third parties (including by other financial institutions) and data re-use/portability:

In addition to what has been said in response to Question 16 with respect to eIDAS, one key prerequisite for the wide reliance on digital identities is that such identities rely on a unique, standardised and harmonised means of entity identification, based on internationally recognised global standards. In that context, the LEI (ISO 17442) is the global standard and should be further leveraged and promoted. The introduction of overlapping/competing standards should be avoided, as this would lead to inefficiencies in the identification process, as well as in subsequent analysis and sharing processes.

Question 18

Should one consider going beyond customer identification and develop Digital Financial Identities to facilitate switching and easier access for customers to specific financial services?

Should such Digital Financial Identities be usable and recognised throughout the EU?

Which data, where appropriate and in accordance with data protection rules, should be part of such a Digital Financial Identity, in addition to the data already required in the context of the anti-money laundering measures (e.g. data for suitability test for investment services; data for creditworthiness assessment; other data?

Please explain your reasoning and also provide examples for each case you would find relevant.

The ECB has not provided a response on this topic.

Question 19

Would a further increased mandatory use of identifiers such as Legal Entity Identifier (LEI), Unique Transaction Identifier (UTI) and Unique Product Identifier (UPI) facilitate digital and/or automated processes in financial services?

- Yes
- No
- Don't know / no opinion / not relevant

If yes, in which framework(s) is there the biggest potential for efficiency gains?

The ECB fully endorses the mandatory use of different identifiers based on internationally recognised global standards, including LEIs, UTIs and UPIs, which are crucial to reap the benefits of and speed up the comprehensive digitalisation and automation of financial services processes. Amongst other benefits, the ECB acknowledges that the identifiers enable data interoperability and the provision of standardised information, as well as facilitating data processing, financial decisions and automation. All of the aspects of the aforementioned framework, in relation to providing rules and guidance at an EU level, are relevant and justified from the ECB's perspective.

Turning to data related to fintech from a statistical perspective, collaboration and coordination among the EU authorities could be envisaged with respect to a fintech monitoring framework. Currently, information about fintech entities is scarce and not harmonised. Moreover, there is no agreed statistical definition of fintech. Such a monitoring framework would make it possible to keep track of the progress in achieving the digital strategy goals, as well as identify areas which would require further statistical support.³⁸

Making it easier for firms to carry out technology pilots and scale up across the Single Market

Question 20

In your opinion (and where applicable, based on your experience), what is the main benefit of a supervisor implementing (a) an innovation hub or (b) a regulatory sandbox as defined above?

The ECB observes that providing a space for an open dialogue on banks' innovative applications is a key feature and benefit of national innovation hubs and regulatory sandboxes, as this may encourage banks (and other financial entities) to launch innovative solutions. A regulatory sandbox enables entities to experiment with innovative financial products or services in a defined space and time period, while containing the consequences of a possible failure.

In addition, such schemes could enable supervisors to monitor banks' innovation activities, in order to enhance their understanding of related risks relevant for the banking sector, as well as the wider financial sector (depending on each supervisor's mandate), and ultimately foster a level playing field. At present, the establishment of a sandbox at EU level is not currently foreseen in European legislation (including in the CRR/CRD).

³⁸ "IFC Report on central banks and fintech data issues", Bank for International Settlements, February 2020.

Within the euro area, banks' innovation strategies are being assessed and discussed in the context of the EU bank licensing regime and ongoing supervisory dialogue, which allows for a close discussion on banks' innovative efforts. The ECB also pursues a market intelligence strategy, which consists of dialogue with market participants and other supervisory authorities, in order to encourage information and knowledge sharing and enhance understanding of the use of innovative technologies by banks in the euro area.

Therefore, the ECB welcomes the European Commission's initiatives to address cross-border aspects when European entities operate in such schemes, in order to ensure a harmonised approach and foster a level playing field, also for the potential testing of new technologies in a controlled environment.

In this context, the ECB has also incorporated the use of supervisory technologies as a core element into its strategic vision for banking supervision. To leverage the full potential of new technologies, the ECB has therefore created a dedicated supervisory technology (suptech) hub and introduced an ambitious digitalisation roadmap outlining a set of actions over a three-year horizon.

Question 21

In your opinion, how could the relevant EU authorities enhance coordination among different schemes in the EU?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Promote convergence among national authorities in setting up innovation hubs and sandboxes, through additional best practices or guidelines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Facilitate the possibility for firms to test new products and activities for marketing in several Member States ("cross border testing")	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Raise awareness among industry stakeholders	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensure closer coordination with authorities beyond the financial sector (e.g. data and consumer protection authorities)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promote the establishment of innovation hubs or sandboxes with a specific focus (e.g. a specific technology like Block chain or a specific purpose like sustainable finance)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify how else could the relevant EU authorities enhance coordination among different schemes in the EU:

The establishment of a sandbox at EU level is not currently foreseen in European legislation and ultimately the setting-up of an EU-wide sandbox would be for the regulators to decide on. Such an initiative, as well as national initiatives, would need to be in line with the European regulatory framework and the division of competences contained therein, as well as the ECB's mandate for licensing credit institutions and direct supervision of significant institutions.³⁹ Further coordination and cooperation may be beneficial to ensure alignment between national initiatives and address cross-border issues.

³⁹ See also the speech entitled "Innovation and digitalisation in payment services" by Yves Mersch, Member of the Executive Board of the ECB, at the Second Annual Conference on "Fintech and Digital Innovation: Regulation at the European level and beyond", Brussels, 27 February 2018.

Question 21.1

If necessary, please explain your reasoning and also provide examples for each case you would find relevant:

The ECB in its supervisory function is also monitoring the various schemes implemented throughout the euro area, and discussing their relevance from a banking supervision perspective. We will also continue contributing to the discussions taking place at an EU level.

Question 22

In the EU, regulated financial services providers can scale up across the Single Market thanks to adequate licenses and passporting rights.

Do you see the need to extend the existing EU licenses passporting rights to further areas (e.g. lending) in order to support the uptake of digital finance in the EU?

According to the current regulatory framework, the entities that are authorised to provide banking or payment services can passport all or some of these services (e.g. lending) to clients in other Member States. The question as to which activities, innovative or not, should be subject to authorisation in a Member State, consequently qualifying for possible passporting to other Member States, is rather a question of regulatory perimeter.

With respect to the use of passporting to scale up activities across the Member States, the ECB supports the EBA's recommendation, outlined in its report on potential impediments to the cross-border provision of banking and payment services⁴⁰, that the European Commission should provide an update of its interpretative communications on the cross-border provision of services. It is especially relevant for digital finance, in order to receive more clarity on when a digital activity is to be regarded as a cross-border provision of services and in which cases it should then be classified under the freedom to provide services or the freedom of establishment.

In its interpretative communication (97/C 209/04), the European Commission had also addressed the use of intermediaries for banking activities in another Member State. Currently, only some Member States (e.g. Spain⁴¹) have defined a framework for intermediaries from other Member States to provide cross-border banking or financial services in their country and the respective notification process. The ECB is of the view that additional clarity could be helpful in this area. This clarity should also foster stronger relationships between entities which are passporting and the NCA of a target Member State.

⁴⁰ "Report on potential impediments to the cross-border provision of banking and payment services", European Banking Authority, 29 October 2019.

⁴¹ Royal Decree 309/2019.

Ensuring fair and open access to relevant technical infrastructures for all financial service providers that wish to offer their services across the Single Market

(It should be noted that this topic is also included, from the payment perspective, in the [Retail Payments consultation](#))

Question 23

In your opinion, are EU level initiatives needed to avoid fragmentation in the Single Market caused by diverging national measures on ensuring non-discriminatory access to relevant technical infrastructures supporting financial services?

Please elaborate on the types of financial services and technical infrastructures where this would be relevant and on the type of potential EU initiatives you would consider relevant and helpful:

From a payments perspective, access to technical infrastructures was covered in the ESCB response to the retail payments consultation. In its response, the ESCB supports action by the EU regulator to ensure open access to key technical infrastructure services on the basis of transparent, objective and non-discriminatory criteria that take into account security standards, oversight and supervisory requirements.

Empowering and protecting EU consumers and investors using digital finance across the Single Market

Question 24

In your opinion, what should be done at EU level to achieve improved financial education and literacy in the digital context?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Ensure more affordable access at EU level to financial data for consumers and retail investors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encourage supervisors to set up hubs focussed on guiding consumers in the digital world	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organise pan-European campaigns and advisory hubs focusing on digitalisation to raise awareness among consumers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collect best practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promote digital financial services to address financial inclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Introduce rules related to financial education comparable to Article 6 of the Mortgage Credit Directive, with a stronger focus on digitalisation, in other EU financial regulation proposals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what else should be done at EU level to achieve improved financial education and literacy in the digital context:

The ECB refrains from providing a response in relation to consumer financial education.

Question 25

If you consider that initiatives aiming to enhance financial education and literacy are insufficient to protect consumers in the digital context, which additional measures would you recommend?

The ECB refrains from providing a response in relation to consumer financial education.

3 Promote a well-regulated data-driven financial sector

Question 26

In the recent communication "A European strategy for data", the Commission is proposing measures aiming to make more data available for use in the economy and society, while keeping those who generate the data in control.

According to you, and in addition to the issues addressed in questions 27 to 46 below, do you see other measures needed to promote a well-regulated data driven financial sector in the EU and to further develop a common European data space for finance?

In addition to the issues addressed in Questions 27 to 46, the ECB considers that some dedicated tools and methods should be developed so that data obfuscation allows data usage without compromising confidentiality.

Facilitating the access to publicly available data in finance

Question 27

Considering the potential that the use of publicly available data brings in finance, in which areas would you see the need to facilitate integrated access to these data in the EU?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Financial reporting data from listed companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Non-financial reporting data from listed companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
SME data	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prudential disclosure stemming from financial services legislation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Securities market disclosure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disclosure regarding retail investment products	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify in which other area(s) you would see the need to facilitate integrated access to these data in the EU:

In the ECB's view, public access to financial data should focus on two areas: financial reporting data and banking supervision quantitative disclosure requirements (so-called Pillar 3 of the Basel framework). At present, the EBA is integrating supervisory reporting and quantitative Pillar 3 disclosure requirements for financial institutions into a single reporting framework, in which the data disclosed under Pillar 3 will form a subset of the data subject to supervisory reporting. This integration is a precondition for the EBA to develop and maintain a public data hub comprising information disclosed in accordance with the quantitative Pillar 3 disclosure requirements and extracted from supervisory data. Financial reporting data could be easily added; in fact, this information is already collected by supervisors, albeit within a different consolidation scope.

Credit institutions would benefit from such a framework, since they would only report the respective information once, and prudential supervisors as well as public data users would benefit from having easier access to pertinent data. Moreover, establishing a framework for a central data repository at the EBA could significantly improve the quality of supervisory data and make the EBA transparency exercises redundant. It would also more broadly foster the integration of the EU banking sector by facilitating market participants' access to information disclosed under Pillar 3 of the Basel framework.

This approach is currently followed by the US authorities, where a federal agency (the Federal Financial Institutions Examination Council – FFIEC) collects and discloses supervisory data on behalf of banks. This implies cost savings for banks as their Pillar 3 disclosure obligations are limited to the qualitative part. A similar central data repository at EU level would disclose Pillar 3 data in accordance with requirements for financial institutions (on a quarterly, semi-annual or annual basis), in order to ultimately put the European Union at the same level as the United States in terms of public data availability.

The EBA may require a legal mandate to make available public data as part of a central repository without the explicit consent of the financial institutions to which these data belong. This mandate should, however, be without prejudice to the power of competent authorities to request additional ad hoc information from supervised entities. Therefore, the ECB sees merit in further exploring the legal and practical feasibility of establishing a central data repository at the EBA.

The integration of statistical, prudential and resolution data envisaged by Article 430(c) of the CRR would facilitate the establishment of such a public repository. Ideally, the data contained in the repository should be a subset of the information available to authorities, in order to avoid duplicated data requests and to ensure alignment between the two.

In addition to the above-mentioned priority areas, the ECB believes that further areas could be explored, in particular environmental, social and governance (ESG) reporting.

In order to make the best use of alternative data sources, access to privately held data (e.g. by social media firms) – possibly via appropriate agreements with the private sector – needs to be organised in such a manner that public bodies, including central banks, can gain access to the data in a sustainable manner, in particular for statistical and analytical purposes.

Finally, the ECB sees merits in supporting the initiatives related to the Open Data Directive⁴², e.g. high-value datasets or the EU Open Data Portal.⁴³

Question 28

In your opinion, what would be needed to make these data easily usable across the EU?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Standardised (e.g. XML) and machine-readable format	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Further development of the European Financial Transparency Gateway, federating existing public databases with a Single EU access point	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Application Programming Interfaces to access databases	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public EU databases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Please specify what else would be needed to make these data easily usable across the EU:

The ECB believes that, in order to ensure data comparability for public users, there are certain changes to the Pillar 3 disclosure framework that are necessary. These changes are also required to fully integrate supervisory reporting with disclosure requirements.

Firstly, since some Pillar 3 disclosure templates have flexible reporting formats, it is important to expand the use of fixed reporting formats to the extent possible, in order to improve data comparability and consistency. Banks would still be free to publish additional disclosures to complement the information published in the fixed formats.

⁴² Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information (OJ L 172, 26.6.2019, p. 56).

⁴³ See the [EU Open Data Portal](#).

Secondly, the materiality thresholds applied for Pillar 3 data disclosure should be the same as for supervisory reporting, in order to ensure alignment between the two.

Thirdly, the revision policy applied to Pillar 3 data should be the same as for supervisory reporting. Otherwise, in the event of data corrections, public users would not be able to access updated information.

Fourthly, interoperability with other datasets would also be necessary.

Finally, exploring new technologies (e.g. DLT) in this context could be considered.

Consent-based access to personal data and data sharing in the financial sector

Question 29

In your opinion, under what conditions would consumers favour sharing their data relevant to financial services with other financial services providers in order to get better offers for financial products and services?

Whilst consumer protection matters do not fall under the ECB's remit, the ECB acknowledges that consumers are the owners of their financial services-related data and may be reluctant to share them with third parties, unless they receive some kind of benefit, such as better financial conditions, access to specific services or information, as can be seen from practices of big technology companies⁴⁴. For this reason, consumers may be in favour of sharing their financial data under several conditions. Below are a few examples:

1. The data should be anonymised when possible. Access to the actual data of the physical persons should be granted to other financial service providers or non-financial service providers only when the consumer accepts the offer.
2. The data content and the individual data points should be made explicit and consumers should be made aware of the use of their data. The consumer should also be put in a position to select the data points he/she is willing to share.
3. The consumer should give his/her explicit consent to share the data with other financial service providers or non-financial service providers. However, this consent should not be given automatically.
4. The data should be used only by those with proper authorisation and should not be shared with third parties for other purposes.

⁴⁴ Big tech companies may already have access to large amounts of (financial) data stemming from their business.

Question 30

In your opinion, what could be the main benefits of implementing an open finance policy in the EU?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
More innovative and convenient services for consumers/investors, e.g. aggregators, comparison, switching tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Cheaper traditional services for consumers/investors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Efficiencies for the industry by making processes more automated (e.g. suitability test for investment services)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business opportunities for new entrants in the financial industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
New opportunities for incumbent financial services firms, including through partnerships with innovative start-ups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Easier access to bigger sets of data, hence facilitating development of data dependent services	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhanced access to European capital markets for retail investors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhanced access to credit for small businesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If you see other benefits of implementing an open finance policy in the EU, please specify and explain:

Question 31

In your opinion, what could be the main risks of implementing an open finance policy in the EU?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Privacy issues / security of personal data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Financial exclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Poor consumer outcomes (e.g. unfair pricing strategies)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Misuse of consumers' financial data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Business confidentiality issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased cyber risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Lack of level playing field in terms of access to data across financial sector activities	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If you see other risks of implementing an open finance policy in the EU, please specify and explain:

Question 32

In your opinion, what safeguards would be necessary to mitigate these risks?

The ECB believes that the following safeguards would be relevant for the related risks:

- Privacy issues/security of personal data:** to mitigate this risk, the data should be anonymised via an appropriate method, depending on the associated risks and the intended use of the data. Access to the actual data of the physical persons should be granted to other financial service providers only when the consumer accepts the offer and the finality of the use of the data is ensured.
- Financial exclusion and poor consumer outcomes:** to mitigate these risks, consumers should be put in a position to select the data points they are willing to share. With the appropriate awareness, consumers could avoid sharing the most sensitive data points, so that they cannot be used for adverse selection.

3. **Misuse of consumers' financial data:** to mitigate this risk, the rule should be that data should be used only by authorised financial service providers and should not be shared with third parties for other purposes without prior consent. A code of conduct could also be introduced. Breaches of this rule should be fined. An authority should be tasked with monitoring compliance.
4. **Cyber risk:** the ECB believes that an open finance policy could increase cyber risk. Such a policy can only be implemented in the EU if and when the banking sector has reached sufficient maturity in terms of cybersecurity risk management and digital operational resilience.

Question 33

In your opinion, for which specific financial products would an open finance policy offer more benefits and opportunities?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Savings accounts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Consumer credit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
SME credit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mortgages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Retail investment products (e. g. securities accounts)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Non-life insurance products (e.g. motor, home...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input checked="" type="radio"/>	
Life insurance products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Pension products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

If you see other financial products that would benefit of an open finance policy, please specify and explain:

Question 33.1

Please explain your answer to question 33 and give examples for each category:

The following financial products could benefit from an open finance policy:

- Savings accounts, retail investment products, pension products, life insurance products: more competition may allow investors to gain better returns.
- Consumer credit, SME credit, mortgages: more competition may allow borrowers to obtain better conditions. Access to more information could enable market operators to perform more accurate and comprehensive credit scoring, enabling a wider set of customers to benefit from lending services.
- Non-life insurance products: more competition may lead to a broader range of products and more favourable conditions.
- Other: new financial products may be offered to satisfy latent needs of consumers, investors and businesses.

However, the related risks should be adequately mitigated, including by changing business models, which could also bring new risks. In this context, it should also be ensured that customer data sharing with third-party providers meets clear legal requirements and fulfils security standards.

Question 34

What specific data (personal and non-personal) would you find most relevant when developing open finance services based on customer consent?

To what extent would you also consider relevant data generated by other services or products (energy, retail, transport, social media, e-commerce, etc.) to the extent they are relevant to financial services and customers consent to their use?

Please explain your reasoning and provide the example per sector:

In the ECB's view, and in the context of customer consent to the use of their personal and non-personal information, the usage of any (financial) service should not be dependent on this consent and not giving that consent should not prevent consumers from receiving the service.

With respect to other relevant data, based on some studies, access to social media information does indeed enhance, for example, credit risk model performance.⁴⁵ Depending on the specific application, the usage of the data generated by other services or products should be scientifically sound.

⁴⁵ Gambacorta, L. et al., "How do machine learning and non-traditional data affect credit scoring? New evidence from a Chinese fintech firm", BIS Working Paper No 834, Bank for International Settlements, December 2019.

Question 35

Which elements should be considered to implement an open finance policy?

Please rate each proposal from 1 to 5:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Standardisation of data, data formats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Clarity on the entities covered, including potential thresholds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Clarity on the way data can be technically accessed including whether data is shared in real-time (e.g. standardised APIs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Clarity on how to ensure full compliance with GDPR and e-Privacy Directive requirements and need to ensure that data subjects remain in full control of their personal data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Clarity on the terms and conditions under which data can be shared between financial services providers (e. g. fees)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Interoperability across sectors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clarity on the way data shared will be used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Introduction of mandatory data sharing beyond PSD2 in the framework of EU regulatory regime	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If mandatory data sharing is considered, making data available free of cost for the recipient	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what other element(s) should be considered to implement an open finance policy:

Supporting the uptake of Artificial intelligence in finance

Question 36

Do you/does your firm already deploy AI based services in a production environment in the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Question 36.1

If you/your firm do/does already deploy AI based services in a production environment in the EU, please specify for which applications?

The ECB has refrained from answering this question due to its relevance from an industry perspective (rather than supervisory authority perspective).

Question 37

Do you encounter any policy or regulatory issues with your use of AI?

Have you refrained from putting AI based services in production as a result of regulatory requirements or due to legal uncertainty?

From the ECB's perspective, data protection issues can be encountered when working with and implementing AI-based tools. For instance, when contracting external companies, data cannot always be shared with them. This can have an impact on the data quality as, without providing enough domain-specific data for retraining/testing purposes, AI models can become less accurate. As AI models cannot always be fully developed in house because of limited resources (e.g. AI-based natural language processing (NLP) models developed by big tech companies are superior in quality and performance), this can affect the use of AI. In this context, the use of AI-based services when sharing data with third parties may also give rise to legal as well as reputational risks.

Question 38

In your opinion, what are the most promising areas for AI- applications in the financial sector in the medium term and what are the main benefits that these AI-applications can bring in the financial sector to consumers and firms?

In the ECB's view, AI applications could be applied by banks in many areas of their operations, both in the back office and in customer-facing services.

Promising areas include activities related to assessing large numbers of granular transactions, reviewing large amounts of structured/unstructured corpora or engaging in highly repetitive tasks/processes (e.g. anti-money laundering/combating the financing of terrorism (AML/CFT), KYC, data quality, pattern or rare case recognition).

AI can also help banks to make better use of the vast amounts of data they have, helping them to tailor their products to customers. Through our work in the ECB, including interactions with banks, we have identified two key customer-facing areas where banks can increasingly apply AI-based solutions: credit scoring and automated wealth management or robo-advice.

In the case of credit scoring, AI could allow banks to widen their customer base, providing credit scores for clients with limited or no credit history. Depending on the programming of the algorithm, automation could decrease the possibility of human bias when banks make a final decision.

In the case of automated wealth management, AI-based models, coming at reduced cost, enable banks to provide such services to a much broader base of clients with limited or no human intervention, although experience in the ECB shows that most models are currently hybrid. There are examples of some banks running such services in house, but also others which have chosen instead to partner with third-party robo-advisors.

For all applications, adequate governance and understanding are important, both at staff and board level. In addition, control functions and internal audit should be in a position to assess the use of AI for various applications within the bank.

From a supervision angle, AI and machine learning (ML) can help to:

- facilitate and analyse regulatory reporting from financial institutions to supervisors;
- improve (i.e. provide faster) alerts, feedback and guidance to supervised institutions;
- break down language barriers by providing instant translation into, for example, English.

The ECB believes that promising areas for consumers and firms could be more proactive and customised services and recommendations (e.g. regarding financial opportunities), improving account management, anomaly detection or preventing default risks.

Question 39

In your opinion, what are the main challenges or risks that the increased use of AI-based models is likely to raise for the financial industry, for customers/investors, for businesses and for the supervisory authorities?

Please rate each proposal from 1 to 5:

1. Financial industry

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
1.1. Lack of legal clarity on certain horizontal EU rules	<input type="radio"/>		<input type="radio"/>	X	<input type="radio"/>	<input type="radio"/>
1.2. Lack of legal clarity on certain sector-specific EU rules	<input type="radio"/>	X	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.3. Lack of skills to develop such models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	X	<input type="radio"/>	<input type="radio"/>
1.4. Lack of understanding from and oversight by the supervisory authorities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	X	<input type="radio"/>	<input type="radio"/>
1.5. Concentration risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	X	<input type="radio"/>
1.6. Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what other main challenge(s) or risk(s) the increased use of AI-based models is likely to raise for the financial industry:

The ECB outlines below risks related to different aspects of banks' business models:

Governance

- management's (possible lack of) technical skills, knowledge and experience;
- banks' performance metrics need to be designed to capture innovative aspects of credit scoring;
- ensuring that banks have the appropriate know-how and processes to identify and manage potential incremental risks, related to customer or third-party data privacy and use;
- ensuring that banks consider whether the use of AI/ML could inadvertently lead to proxy discrimination, given the potential opacity of algorithms.

Operational risk

- whether banks have in place appropriate safeguards to check data integrity;
- whether banks have in place verification and validation techniques to detect and mitigate security and operational risks;
- whether banks have in place measures to ensure that the model is performing well and is not deviating from the expected behaviour.

Other risks

- Risk management both for internally developed models and in the case of outsourcing is a primary concern. Data quality risks are observed especially where data is processed/prepared by third parties. However, in order to win customers and remain profitable, banks see the need to keep pace with technological innovation. In view of the risks of being an early mover and the high investments needed (with uncertain returns), it is more a matter of when banks will move towards implementing a new strategy.
- At the recent EU FinTech Lab, it was stressed that the explainability of AI models remains key to ensure that the outcomes can be checked, and that the models should not train themselves to become biased. Similar issues were discussed at the ECB fintech industry dialogue on 21-22 May 2019.⁴⁶
- Legacy systems pose a challenge to the integration of AI.
- Quantum computing may become necessary to reap strategic benefits from some technological advancements (e.g. the rapid growth of datasets and the need for data processing power for AI models).
- Regulators and supervisors have indicated that they are assessing how these changes and the increased technological capabilities are affecting banks. At the EU FinTech Lab, it was also mentioned that AI is still in the early adoption phase and has much more potential for the future. This would also mean that risks may become more prominent going forward.
- Ethics: the development, deployment and use of any AI solution should adhere to some fundamental ethical principles, such as the respect for human autonomy, the prevention of harm, fairness and explainability.⁴⁷ These principles can be embedded from the start in any AI project, in an “ethical by design” approach. This also means that the business case made at the beginning of an AI project can include a high-level analysis of conformity to ethical principles and can refuse unethical solutions. Having an ethical policy in place enforcing the above principles and setting the boundaries for acceptable and unacceptable use cases are recommended. Such a policy can apply also when the AI solution (or part of it, for example external data) is purchased from a third-party vendor.

⁴⁶ See the [presentation](#) on the ECB Banking Supervision website.

⁴⁷ As mentioned in the [Ethics Guidelines for trustworthy artificial intelligence from the European Commission's High-Level Expert Group on AI](#), 8 April 2019.

Furthermore, setting up an ethics committee (to validate new AI use cases, periodically review fairness metrics from live models, etc.) or integrating this function into an existing similar committee is also recommended, especially when AI technology is widely used in a bank.

2. Consumers/investors

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
2.1. Lack of awareness on the use of an algorithm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2. Lack of transparency on how the outcome has been produced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.3. Lack of understanding on how the outcome has been produced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4. Difficult to challenge a specific outcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.5. Biases and/or exploitative profiling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.6. Financial exclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.7. Algorithm-based behavioural manipulation (e.g. collusion and other coordinated firm behaviour)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.8. Loss of privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.9. Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what other main challenge(s) or risk(s) the increased use of AI- based models is likely to raise for customers/investors:

The ECB refrains from answering questions in relation to consumers.

3. Supervisory authorities

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
3.1. Lack of expertise in understanding more complex AI-based models used by the supervised entities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
3.2. Lack of clarity in explainability requirements, which may lead to reject these models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
3.3. Lack of adequate coordination with other authorities (e.g. data protection)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.4. Biases	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.5. Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what other main challenge(s) or risk(s) the increased use of AI- based models is likely to raise for the supervisory authorities:

The rapid evolution of technology, as well as the strong growth of datasets and data processing power, could create gaps in supervision. However, supervisory authorities should ensure the suitability (or lack thereof) of existing requirements on governance and risk management regarding the use of AI. In the ECB's view, the scarcity of AI experts on the market has led to a reliance on third parties and related co-sourcing and outsourcing risks, as has happened with cybersecurity experts. In addition, specialised training in relation to AI techniques and data labelling requires a generally significant effort, as well as the availability of scarce specialised supervisory resources.

Question 40

In your opinion, what are the best ways to address these new issues?

Please rate each proposal from 1 to 5

	1 (irrelevant)	2 (rather not)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
New EU rules on AI at horizontal level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New EU rules on AI for the financial sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guidance at EU level for the financial sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Experimentation on specific AI applications under the control of competent authorities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Certification of AI systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Auditing of AI systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Registration with and access to AI systems for relevant supervisory authorities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what other way(s) could be best to address these new issues:

The ECB has selected the most relevant solutions from those identified in the table above. In one particular case, an NCA has developed a number of general principles with regard to AI. The principles are divided into six key aspects of responsible use of AI, namely: (i) soundness; (ii) accountability; (iii) fairness; (iv) ethics; (v) skills; and (vi) transparency (or “SAFEST”). From a prudential perspective, soundness is the aspect of AI that is of primary concern. The application of AI in the banking sector should be reliable and accurate, behave predictably, and operate within the boundaries of applicable rules and regulations. Banks should also be accountable for their use of AI, as AI applications may not always function as intended and can result in damage to the firm itself, its customers and/or other relevant stakeholders. AI applications should not inadvertently disadvantage certain groups of customers.

Harnessing the benefits data-driven innovation can bring in compliance and supervision

Question 41

In your opinion, what are the main barriers for new RegTech solutions to scale up in the Single Market?

Please rate each proposal from 1 to 5:

Providers of RegTech solutions:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Lack of harmonisation of EU rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of clarity regarding the interpretation of regulatory requirements (e.g. reporting)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of real time access to data from regulated institutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of interactions between RegTech firms, regulated financial institutions and authorities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of supervisory one stop shop for RegTech within the EU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequent changes in the applicable rules	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what are the other main barrier(s) for new providers of RegTech solutions to scale up in the Single Market:

The ECB has selected the most relevant barriers from those identified in the table above.

Financial service providers:

	1 (irrelevant)	2 (rather not relevant)	3 (neutral)	4 (rather relevant)	5 (fully relevant)	N.A.
Lack of harmonisation of EU rules	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of trust in newly developed solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of harmonised approach to RegTech within the EU	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what are the other main barrier(s) for new financial service providers solutions to scale up in the Single Market:

The ECB has selected the most relevant barriers from those identified in the table above.

Question 42

In your opinion, are initiatives needed at EU level to support the deployment of these solutions, ensure convergence among different authorities and enable RegTech to scale up in the Single Market?

Yes

No

Don't know / no opinion / not relevant

Question 42.1

Please explain your answer to question 42 and, if necessary, please explain your reasoning and provide examples:

From the ECB's perspective, greater clarity regarding the interpretation of regulatory reporting requirements, as well as enhanced standardisation, where feasible, could make it possible for regtech applications to be scaled up and to become more widely available. At the same time, coordination among supervisors could level the playing field and enable economies of scale.

The compliance requirements for banks are numerous and extend across several areas. At the same time, regulatory changes are frequent. The available regtech solutions and their applicability to the current requirements should be checked frequently. Entities with cross-border activities might need suitable solutions for each jurisdiction, in accordance with the local regulatory framework. Hence, there is not one

solution that will fit all. An assessment per solution category could be beneficial in this respect, whilst taking into consideration the existence of different local frameworks.

Question 43

In your opinion, which parts of financial services legislation would benefit the most from being translated into machine-executable form?

Please specify what are the potential benefits and risks associated with machine-executable financial services legislation:

The ECB expresses no views on this question.

Question 44

The Commission is working on standardising concept definitions and reporting obligations across the whole EU financial services legislation.

Do you see additional initiatives that it should take to support a move towards a fully digitalised supervisory approach in the area of financial services?

Please explain your reasoning and provide examples if needed:

In the ECB's view, banks are faced with a multitude of different incident reporting schemes. The current different regulatory frameworks for cyber incident reporting in the EU (e.g. PSD2, TARGET2, ECB/SSM, eIDAS, Network and Information Security (NIS) Directive, GDPR, etc.) are characterised by different templates, taxonomies, thresholds, information requirements and time frames. In addition, these frameworks lead to the burden of multiple reporting of the same incidents in slightly different ways to different authorities.

In the medium-to-long term, some centralisation through an EU hub for information and communication technology (ICT) and security incident reporting could be established. ICT and security incidents could be securely reported by banks through the hub. The content of and thresholds for this reporting need, of course, to fit the purpose of each of the authorities. Authorities could receive alerts from the hub and retrieve information based on their mandate and individual needs. The creation of such a centralised EU hub could enable a thematic analysis of incidents, help inform authorities of common sectoral vulnerabilities and enhance our supervisory approach.

Question 45

What are the potential benefits and drawbacks of a stronger use of supervisory data combined with other publicly available data (e.g. social media data) for effective supervision?

Please explain your reasoning and provide examples if needed:

In the ECB's view, publicly available data could be useful in providing insights, even though supervisory decisions or actions cannot be taken based directly and solely on such data. An example would be the usage of alternative data from the news and social networks for sentiment analysis.

In addition, publicly available data has the advantage of being widely accessible, with limited or no confidentiality restrictions. However, the issue of data quality is crucial, since low-quality data may lead to inaccurate estimations, unrealistic models and ultimately poor decisions. Expert judgement will always be needed for the evaluation of the information and the decision on the correct action to be taken.

4 Broader issues

Question 46

How could the financial sector in the EU contribute to funding the digital transition in the EU? Are there any specific barriers preventing the sector from providing such funding?

Are there specific measures that should then be taken at EU level in this respect?

In the ECB's view, the digital transition will require substantial investments by EU firms, in order to compete globally. In 2016, the value added of the ICT sector accounted for 4% of EU GDP, compared with 5.8% in Japan, 5.4% in the United States and 4.9% in China. Figures from the Digital Economy and Society Index report published in 2019⁴⁸ also show that less than one-fifth of EU companies were highly digitalised, although the picture is highly heterogeneous across Member States, sectors and firms. While larger companies are relatively good at exploiting e-commerce possibilities (with 42% of companies with more than 250 employees making e-sales in 2018), SMEs were lagging behind (with only 19% making e-sales in 2018).

The ECB is of the view that successfully making the digital transition and reaping the benefits of the digital Single Market require adequate IT infrastructures. While the EU budget is already financing, for example, broadband internet connections through the Connecting Europe Facility, private financing will also be needed. When developing new online businesses, firms will also have to invest in cybersecurity and operational resilience, which should be covered by private financing. Overall, before the

⁴⁸ See the [European Commission's website](#).

COVID-19 crisis, SME spending on digitalisation was expected to reach €65 billion by 2022.⁴⁹

EU corporates, and in particular SMEs, rely largely on bank funding. However, the pandemic may lead to a deterioration of bank asset quality and an increase in non-performing loans, which may in turn limit banks' ability to provide additional lending to EU companies. Digital technologies are also reliant on intangible capital, which poses specific challenges.⁵⁰ The nature of intangible assets makes them less easy to use as collateral, so firms that invest in intangible assets use less debt financing (both from banks and from markets). Instead, these firms finance themselves with retained earnings and equity.⁵¹ Against this background, a greater supply of market-based, equity funding would facilitate the digital transition.⁵² Further progress in developing the capital markets union is therefore needed, in order to meet new funding needs stemming from the adaptation to long-term challenges, be it digitalisation or sustainability. In this respect, the final recommendations of the Commission's High-Level Forum on capital markets union should provide a sound basis for a new action plan, which is expected later this year.

The ECB recognises that digitalisation has the potential to facilitate capital market funding, by bridging the gap between investors and firms, e.g. through investment platforms. Lastly, informational gaps could also be addressed through the development of single data access portals, which would facilitate due diligence by investors and reduce transaction costs for companies.

Question 47

Are there specific measures needed at EU level to ensure that the digital transformation of the European financial sector is environmentally sustainable?

In the ECB's view, the financial sector (including FMIs) requires a substantial amount of energy and resources to operate (as visible, for instance, in the higher uptake of cloud technology in the financial sector relative to other sectors). The digital transformation of the sector may pose risks in this respect, should innovative services be implemented without taking their environmental impact into account. At the same time, however, it also creates opportunities to use technology to reduce the environmental footprint of financial services and infrastructures. Certain actors in the market have already implemented plans to account for and manage their impact on the environment; establishing standards, best practices or a discussion forum would facilitate a harmonious transition at the level of the European market. In particular, the criteria for environmental sustainability could be given more importance when

⁴⁹ See "[Financing the digitalisation of small and medium-sized enterprises – The enabling role of digital innovation hubs](#)", European Investment Bank, 2019.

⁵⁰ See the welcome remarks by Philip R. Lane, Member of the Executive Board of the ECB, at the ECB conference on "[Challenges in the digital age](#)", Frankfurt, 4 July 2019, and Dell'Ariccia, G. et al., "Bank lending in the knowledge economy", Working Paper Series, No 2429, ECB, June 2020.

⁵¹ See Andersson, M. and Saiz, L., "[Investment in intangible assets in the euro area](#)", Economic Bulletin, Issue 7, ECB, 2018.

⁵² See De Haas, R. and Popov, A., "[Finance and carbon emissions](#)", Working Paper Series, No 2318, ECB, September 2019.

implementing new services (e.g. payment methods) or FMs. Additionally, FMs, with their high level of reliability, could be leveraged to facilitate the provision of information to their users regarding the environmental impact of goods, services or investment products.

Some DLT set-ups use the consumption of energy to create a barrier against attacks as an alternative to the identification of parties involved in the validation of transactions (referred to as “proof of work”). In the light of the EU ambition to make the EU economy sustainable and to become the first climate-neutral continent (under the European Green Deal), and the EU agenda on sustainable finance, energy-intensive solutions should be discouraged. In this context, some entities have also started using AI to make their energy use more efficient.

As a result, the ECB would endorse the development of a monitoring and reporting framework at global level concerning financial entities’ environmental footprint, including their supply chain.

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