

# Research Report

## **Cost and value in banks**

**A model fit for the digital era?**

**Sylvain Bouyon**



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## A model fit for the digital era?

Sylvain Bouyon<sup>1</sup>

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### Abstract

In recent years, there has been much hype that banks will soon experience a dramatic loss of market shares. Too slow and too old-fashioned for the ever-changing digital era, they could even disappear, overwhelmed by fintech start-ups and tech giants. The consultation and desk research conducted for this study, however, reveal a rather more nuanced picture. Retail and corporate banks do have to cope with legacy issues that impede their efficiency and reactivity. Yet, many of their activities are being rapidly digitalised, especially in consumer finance.

In that context, regulators should favour the digitalisation of banks while alleviating related risks. They should also build on this mutation to raise consumers' welfare and the competitiveness of non-financial corporations (NFCs). Among these measures, a reconsideration of the role of software expenses in the new Capital Requirements Regulation and Capital Requirements Directive could be a powerful means for national supervisors to orientate digital expenses where these are most needed. Also, authorities should better foresee the cost of IT changes needed for implementing new rules and the indirect impact of those rules on banks' clients, especially SMEs. Further convergence in know-your-customer processes for NFCs is needed. The preventive approach in credit should be generalised to all clients. Finally, robust labour and education policies are key to ensuring a sufficient supply of IT skills.

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## List of abbreviations

|         |  |
|---------|--|
| AIPSP   | Account information payment service provider                 |
| AML     | Anti-money laundering  |
| CEBS    | Committee of European Banking Supervisors                    |
| CRD     | Capital Requirements Directive                               |
| CRR     | Capital Requirements Regulation                              |
| CSBS    | Conference of State Bank Supervisors                         |
| ECB     | European Central Bank  |
| eIDAS   | Electronic identification, authentication and trust services |
| ESCB    | European System of Central Banks                             |
| FX      | Foreign exchange   |
| G-SIB   | Global systemically important bank                           |
| GDPR    | General Data Protection Regulation                           |
| KYC     | Know your customer   |
| MFI     | Monetary financial institutions                              |
| MiFID   | Markets in Financial Instruments Directive                   |
| NFC     | Non-financial corporation                                    |
| NIS     | Network Information Service                                  |
| NPL     | Non-performing loan  |
| P2P     | Peer-to-peer   |
| PSD     | Payment Service Directive                                    |
| PSP     | Payment service provider                                     |
| Regtech | Regulatory technology  |
| SME     | Small and medium enterprise                                  |

## Executive summary

Innovative banks that offer the most up-to date services to consumers and companies are often seen as a prerequisite for the achievement of an advanced digital economy. Successive research, events and consultations organised by CEPS-ECRI have revealed a strong appetite from different stakeholders for further action at the European level to better monitor risks and drivers of digitalisation in corporate and retail finance.

Against this background, the insights of some retail and corporate banks, customers and experienced consultants were gathered to better understand the recent evolution in costs and values of banks, as well as in the quality of their services and processes. The information collected does not correspond to the official position of the related company, but merely mirrors the opinion of the expert interviewed. The information gathered through seventeen interviews helped to give direction to the desk research and final recommendations.

The present report follows a threefold approach. It first provides analyses on the recent evolution of expenses and income among the largest EU banks. The challenges to develop efficient cost management in the digital era are then assessed, with a particular focus on IT costs and compliance costs. Finally, some attention is given to the main drivers behind the digitalisation of retail and corporate finance, as well as to how and to what extent digitalisation has been reshaping the costs and values at the different product stages.

### Recent dynamics in the income and expenses of the largest European banks

Over the 2012–16 period, **interest and fees on loans remained one of the core activities of most EU systemically important banks**. On average, this specific income fluctuated at around two-thirds of total interest income and two-fifths of total income. The vast majority of these loans concerns consumers and corporations. At the bank level, no dramatic changes, which could mirror a change of business model, have been recorded in the share of interest and fees on loans.

On the cost side, **interest expenses have contributed much less than non-interest expenses to total expenses**. Moreover, the share of interest expenses contracted significantly between 2012 and 2016. Interest on bank deposits made up only 11% of total expenses in 2016. The average contribution of non-interest expenses to total expenses was as follows in 2016: 28.4% for labour and related expenses, 9.0% for equipment expenses and 31.1% for other operating expenses. The contribution of labour and related expenses to total expenses rose by 4.6 percentage points over the 2012–16 period, partly on the back of significant contraction in total expenses.

### The challenges of cost management

Identifying, measuring and allocating costs have become more complex. The emergence of hybrid models combining online and offline channels implies that new cost drivers need to be developed and that these costs are adequately allocated to cost pools and cost objects. **Legacy issues** also add to the complexity of developing efficient cost systems. **Most banks still use different methodologies within the group**, multiple and conflicting taxonomies, product hierarchies and accounting processes, varying definitions for many of the same terms and disparate cost allocation systems. Also, owing to continual revisions, many cost indicators

cannot be compared over time. Due in particular to the lack of methodological consistency, many banks still have major difficulties in identifying the right cost levers to improve margins. At present, the use of analytics to empower cost reduction efforts concern only a part of these banks.

An adequate management of compliance costs is increasingly perceived as having a crucial role to play in the mitigation of reputational risks. Most of the compliance costs have stemmed from the implementation of new pieces of legislation. New rules enacted at both the national and EU levels have aimed at addressing risks as diverse as those pertaining to data privacy, cybersecurity, exploitation of information asymmetries, anti-money laundering, competition and financial stability. Given the multiplicity of compliance cost origins and drivers, the development of an efficient approach to the management of cost compliance remains challenging.

Owing to heightened regulatory pressures and the need to improve reputation, the compliance costs of banks have increased significantly in the last few years. Nevertheless, the level of compliance costs is likely to vary across financial organisations, depending on their strategy and size. Costs should be lower for firms that compete **on the quality of their products and processes**, as their business strategy implies that they comply more easily. **Scale might also matter**. Smaller banks are likely to face higher costs than larger banks do in pursuit of the same performance standards. Often, those smaller banks have greater difficulties in fully automating compliance processes, thereby resulting in higher recurring costs.

The sector of banking and financial services is one of the largest spenders on IT. This IT spending has even increased in recent years and should continue to rise in the coming years. Measuring and allocating IT costs remains demanding, especially when they result from phenomena such as shadow banking. Although banks' IT spending for the purpose of maintenance is much higher than for the purpose of investment, **a surge has recently been recorded in the latter among EU banks**. Overall, the efficient management of IT spending is proving to be a powerful driver behind the decrease in total costs.

Policy-makers should develop tools aimed at facilitating a balanced digital transformation of the banking sector. The competitiveness of EU banks should be strengthened and the right incentives should be provided for developing the most up-to-date services to customers. The first priority for achieving these objectives is to ensure that regulators and implementing **authorities integrate and better anticipate the cost of IT changes needed for implementing new rules**. This could be done systematically as part of any impact assessment conducted.

Second, as regulators are working on a revised Capital Requirements Directive (V) and Capital Requirements Regulation (II), this could be an opportunity to reconsider the role of expenses on digital elements in the calculation of capital ratios. **The exclusion of software expenses for certain priority areas could be a powerful means for national supervisors to orientate digital expenses where these are most needed**. Priority areas could be defined at the discretion of national supervisors and could be justified, for example, by better proportionality (small banks versus large counterparts), better access to finance by SMEs (with a focus on corporate finance rather than retail) and the need for faster transaction processes for NFCs (digitalising KYC and authentication processes for NFCs, notably in trade finance). The definition of the right parameters to distinguish the types of software expenses would require close cooperation

between accounting standard setters and supervisory authorities in developing the final set of rules and in implementing it.

Tax incentives seem a priori to be rather attractive, but the main limitation of this option concerns the definition of the metrics used to estimate 'productive' spending. Finally, labour and education policies are key to ensuring a sufficient supply of IT skills.

### **Drivers behind digitalisation of retail and corporate finance**

Four main drivers behind banks' digitalisation have been assessed: a greater need for regtech, the digitalisation of customers, eroding lending margins and new entrants. Noticeable differences could be observed between retail finance and corporate finance, and could explain why for most banks digitalisation in retail finance has so far been more advanced than in corporate finance.

**For consumer finance, it appears that the rapid digitalisation of consumers has for the most part been the cause of the digitalisation of financial providers.** In that sense, consumers have taken the lead. The digitalisation of companies' processes has been slower, as a result of greater complexity. Companies are increasingly considering the digitalisation of corporate finance as a powerful driver of their own digital transformation. **Corporations and banks mutually influence each other with respect to digitalisation.** Against the backdrop of decreasing lending margins, it is often assumed that financial organisations would use digitalisation to cut costs in order to maintain similar patterns of profitability. Quantitative analyses reveal that in recent years eroding lending margins have been registered primarily in retail finance.

Despite all the hype and speculation about what could happen, no dramatic change has so far taken place on the supply side of financial services. In the EU market, the vast majority of financial services offered, whatever the area, continues to be provided by banks, even in segments where alternative providers are most active, such as unsecured consumer loans, small SME loans, corporate foreign exchange and payment services. That notwithstanding, the fear of being overwhelmed by new competitors in the coming years, notably by tech giants, persists and constitutes a powerful incentive for banks to innovate by digitalising their processes and services, on a sole basis or in cooperation with alternative providers.

### **Digitalisation and the reshaping of costs and values at the different stages of products**

Although it is still too early to assess the full impact of the recent digital investment made by large banks on the costs and values of retail finance and corporate finance, specific trends can already be detected. The objective is to analyse how and to what extent the different stages of products in retail and corporate finance are being reshaped by banks in a digital context: marketing, distribution, advice, scoring, contracting/authentication/KYC and recovery.

Banks increasingly use fully online marketing campaigns, as they prove to be cheaper, more accurate and more reactive to changes than offline counterparts. In the big data environment, **the use of predictive analytics for the purpose of better segmentation** has become more popular. These tools are used mostly for consumers and SMEs, as each large corporation often represents a segment in itself for which banking solutions are specifically designed.

The vast majority of established financial organisations opt for an omnichannel distribution model that integrates both online and offline channels. This hybrid model is admittedly generally assessed as being more complex to manage and costlier than a fully online model.

Robo-advisers are also mostly used in the context of a hybrid model, where automated and human processes are combined. The benefits of automated advice in terms of costs and values remain ambiguous. Overall, **so far automation in corporate finance has been limited**, whereas some noticeable initiatives have already been taken in retail finance. Generally, though, automated financial advice for the moment has mostly been used on securities market lines.

In the meantime, a greater number of banks are trying to provide useful online financial information to consumers. The production of financial information to support banking customers in their decisions and strategies might be even more valuable for companies, especially for SMEs, which often expect banks to play the role of a consultant. Still, **companies often have a very poor appreciation of the forecasting services of banks**.

At present, most retail banks are still using traditional scorecards with linear models and decision trees. Yet, it is widely expected that the majority of mainstream providers will use machine learning to a certain extent for creditworthiness assessment in the foreseeable future. These techniques could contribute in some way to improving the risk management of underperforming loans by refining the metrics used in the trade-off between risks and returns. However, compliance questions related to data privacy rules will remain in relation to the type of data used and the exact purpose of algorithms (as requested by the General Data Protection Regulation).

A majority of mainstream retail banks are willing to **fully digitalise the contracting process**, by automating all manual processes related to the signature of contracts and by removing all physical papers. The objective is similar for KYC processes with consumers. This approach is expected to contribute to significant cost cuts in the long run.

The information gathered during the consultation and desk research revealed that **authentication and KYC processes have become more and more burdensome for NFCs, and appear to significantly slow down the completion of transactions**. As regulatory pressure has been intensifying on banks, corporate finance has become more demanding vis-à-vis KYC requirements for companies. And often, NFCs (especially SMEs) do not have the adequate resources to efficiently deal with these necessary items.

Furthermore, an opinion shared by numerous large corporations is that standards among banks remain way too fragmented, KYC processes are often not streamlined and data are not sufficiently integrated across banks. These issues are notably due to **divergent interpretations of rules by banks** and cause significant difficulties for large corporations that interact with multiple banks. Almost all the stakeholders approached considered that **trade finance** is the segment for which the need for improvement in terms of converging standards and KYC processes is the greatest.

As regards credit recovery, lenders to consumers increasingly adopt a proactive approach and **try to anticipate potential missed payments before they materialise**. Against the background of surging non-performing loans (NPLs), EU supervisors have been trying very recently to

further promote the use of early warning schemes in corporate finance as well. Once the missed payments actually occur and the delays are significant, banks have the possibility either to manage the NPL internally or to outsource it to dedicated NPL servicing companies. Several stakeholders interviewed highlighted that credit recovery could be the product stage with the largest potential for outsourcing, in particular for more critical cases.

The gradual digital transformation of corporate finance and retail finance brings both opportunities and risks. Regulators should enhance these opportunities, while addressing the risks by promoting specific practices for both banks and regulatory/supervisory bodies. The generalisation of such practices should ensure a balanced digital transformation and even improve the overall quality of the banking system.

**Legislators should better assess the indirect impact of new rules on consumers and companies.** In particular, the design, implementation and supervision of KYC rules should further take into account the extent to which new requirements resulting from these rules can impede the efficiency of transaction systems. Specific attention should be given to the indirect effects on SMEs with few resources. To alleviate the possible, indirect negative effects of new rules on customers, additional efforts should be made by regulators to **limit overlaps and enhance synergies between those rules.**

Also, facilitating the use of banking services by NFCs calls for regulators and supervisors to **encourage converging practices across banks in terms of KYC requirements.** This notably implies additional focus on possible differentiation with respect to the interpretation of the new rules. One approach consists of facilitating and encouraging cooperation between banks on these issues, for instance by enhancing the emergence of centralised, due diligence KYC registries.

In the big data era, regulators should encourage the development of advisory tools such as financial dashboards for consumers. Finally, provided that data protection rules are respected, regulators and supervisors should encourage the **generalisation of early warning schemes for both consumers and companies,** for the purpose of limiting the volume of loans in arrears.

## Introduction

Digital transformation is crucial for the banking sector. Although several recent pieces of legislation have shown the commitment of European regulators to try to facilitate this transformation (in particular through the PSD2 and NIS Directives, and the GDPR),<sup>2</sup> much more still needs to be done at the policy level. The topic has been heavily followed at CEPS-ECRI, especially through its conferences, workshops, research publications and the relevant research projects the think tank has conducted for European regulators. These activities reveal that there is a strong appetite from different stakeholders for further action at the European level to better monitor risks and drivers of digitalisation in finance (notably via the development of regulatory sandboxes, a new approach to financial regulation that better integrates the digital world, a more consistent framework for cybersecurity, better cooperation between supervisors of financial services and supervisors of digital developments, etc.).

**Retail and corporate finance are the main focus of that research.** The former covers products for households, in particular payments, consumer/housing loans and current/savings accounts, whereas the latter concerns services to companies, such as cash management, corporate payments, depository services, credit, foreign exchange (FX) and trade finance. Products related to capital markets (e.g. derivatives) are not analysed in the present study. Well-functioning and innovative markets for retail and corporate finance that offer the most up-to-date services to their customers are among the prerequisites for the development of an advanced digital economy. In some parts of the study, mostly in section 3, the simultaneous analyses of corporate and retail finance enable parallels to be drawn, as well as differences between the two segments with respect to digitalisation and the reshaping of costs and values.

Against this background, gathering and analysing information provided by retail and corporate banks to better understand how their costs and values have been evolving in recent years is a key step before assessing how the digital transformation of banks, and especially of these two segments, should be further supported. Furthermore, the insights of some customers and some experienced consultants have contributed to a better appreciation of how banks are perceived by external stakeholders that interact with them on a regular basis. As such, **seventeen interviews have been conducted with executives from different types of organisations** (see Annex 1 for the detailed list): six with large banks, one with a fintech start-up, three with consulting firms, one with a tech giant and six with large non-financial corporations.

The information collected does not correspond to the official position of the related company, but merely mirrors the opinion of the expert interviewed. This information helped to give direction to the analyses conducted during the desk research and to the final recommendations. In particular, the desk research process attempted to provide some reliable statistics to corroborate (or not) some of the answers gathered during the consultation.

The present report examines the recent evolution observed in costs and values within banks, by following a threefold approach. First, based on the latest income statements of the largest EU banks, the main trends in terms of expenses and income are analysed. Second, detailed

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<sup>2</sup> PSD2 stands for the Payment Service Directive 2, NIS stands for Network Information Service and GDPR stands for General Data Protection Regulation.

analyses are conducted on the challenges faced by banks to develop efficient cost management in the digital era. This entails gathering a better understanding of the main issues to be addressed by banks when they identify, measure, allocate and reduce operational costs. In that respect, specific emphasis is placed on compliance and IT costs. Finally, insights are provided on the main drivers behind the digitalisation of corporate and retail finance, as well as on how and to what extent digitalisation has been reshaping the costs and values at the different product stages.

## 1. Recent dynamics in the income and expenses of European banks

### *Takeaways*

Over the 2012–16 period, interest and fees on loans remained one of the core activities of most EU systemically important banks. The vast majority of these loans concerns consumers and corporations. On the cost side, interest expenses have contributed much less than non-interest expenses to total expenses. Interest on bank deposits made up only 11% of total expenses in 2016. Despite all the announced restructuring plans, total labour and related expenses stagnated somewhat between 2012 and 2016, and their contribution to total expenses even increased.

In this section, the income statements of the global systemically important banks (G-SIBs)<sup>3</sup> in the EU, as defined by the Financial Stability Board in November 2015,<sup>4</sup> is used as a proxy of the dynamics observed in the income and expenses of the European banking sector. All the statistics provided below correspond to the unweighted average.

### 1.1 Interest and fees on loans remain one of the core activities of most large banks

At the end of 2016, interest income remained the largest source of income for thirteen of the seventeen (G-SIB) banks assessed in the study. The corresponding unweighted average for these seventeen banks stood at 59.3% in 2016, with a minimum of 34.3% and a maximum of 92.6%. The average has moved around a slight downward trend since 2012 when it reached 60.5% (see Table 1).

Over the 2012–16 period, **interest and fees on loans remained by far the main contributor to interest income**, with their share fluctuating at around two-thirds of total interest income and two-fifths of total income. The vast majority of these loans concern private customers: consumers and corporations. Nevertheless, the contribution of interest and fees on loans to total income can vary markedly across banks, depending on each business model.

For instance, in 2016, this share varied from a minimum of 19.1% to a maximum of 68.5%, with relatively high standard deviation. Based on the 2016 income statements, four of the seventeen banks recorded a share below 25%, five banks between 25% and 40%, four banks between 40% and 50%, and four banks above 50%. In 2012, the distribution was broadly similar: three below 25%, five between 25% and 40%, two between 40% and 50%, and seven above 50%. Some fluctuations have admittedly been registered in these shares at the bank level. However, no dramatic changes, which could mirror a change of business model (for example from a retail-based model to an investment-based model, and vice versa), have been observed for any of these banks during the time span analysed.

<sup>3</sup> The banks covered for these analyses are BNP Paribas, Crédit Agricole, Société Générale, Commerzbank, Deutsche Bank, Unicredit, ING, BBVA, Santander, Nordea, Crédit Suisse, UBS, RBS, Barclays, HSBC, Lloyds and Standard Chartered. Dexia and BPCE are not included.

<sup>4</sup> The income statements of these banks for each year between 2012 and 2016 were provided by MarketWatch.

## 1.2 Non-interest expenses are much higher than interest expenses

**On the cost side, interest expenses have contributed less than non-interest expenses to total expenses.** In 2016, interest expenses comprised on average 31.5% of total expenses, with a minimum of 17.8% and a maximum of 77.9%. Interestingly, interest expenses on bank deposits made up only 36% of total interest expenses, whereas the remaining share concerned interest expenses on debt, interest capitalised and interest expenses related to other borrower funds.

In contrast to the share of income interest in total income, significant variations were recorded over 2012–16 in the share of interest expenses in total expenses. During the period, it decreased by 5.7 percentage points (pp). Interest expenses on bank deposits have been the main driver behind this significant contraction, contributing to a decrease of 4.2 pp. **This marked decrease in interest expenses on deposits primarily resulted from the substantial contraction in interest rates on deposits.** Remarkably, the few banks that have had to face significant financial difficulties in recent years have observed much more pronounced decreases than other banks in the share of interest expenses on bank deposits, somewhat mirroring the phenomena of “bank runs”.<sup>5</sup>

As regards non-interest expenses, their average contribution to total expenses was as follows in 2016: 28.4% for labour and related expenses, 9.0% for equipment expenses and 31.1% for other operating expenses. Despite the large restructuring actions announced in recent years by most of the largest EU banks (which often include large numbers of dismissals) and the gradual digitalisation of internal processes (which should result in less need for labour in several banking activities), **the contribution of labour and related expenses rose by 4.6 pp between 2012 and 2016.** On the other hand, the share of equipment expenses decreased somewhat, while the share of other operating expenses increased at a much slower pace than that of labour costs.

The share of labour costs increased for sixteen out of seventeen banks. For three of these banks, the share even rose by more than 10 pp. Different factors can explain these dynamics. First, by considering the cumulative labour costs of the seventeen banks, a contraction of 2.9% was registered over the 2012–16 period. Therefore, the analyses in terms of relative shares need to be relativized in some way. Overall, the cumulative income and expenses of the seventeen banks did indeed contract significantly between 2012 and 2016 (respectively, by 18.9% and 22.3%).

Second, while labour costs for positions that involve repetitive tasks and which are related to specific activities of banks (distribution channels, back office, etc.) have already decreased somewhat due to the gradual automation of these specific services, labour costs related for instance to compliance and reporting requirements (legal departments and compliance teams) or digital transformation (external consultants, such as data architects) have followed significant upward paths in very recent years.

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<sup>5</sup> A ‘bank run’ occurs when a large number of clients withdraw their money from a bank, because they believe the bank may cease to function in the near future.

Table 1. Key figures on income and expenses of 17 EU (G-SIB) banks (%)

|  | 2012        | 2013        | 2014        | 2015        | 2016        |
|--|-------------|-------------|-------------|-------------|-------------|
| <b>Total income</b>                      | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  |
| <b>Interest income</b>                   | <b>60.5</b> | <b>57.7</b> | <b>57.6</b> | <b>58.8</b> | <b>59.3</b> |
| Interest and fees on loans               | 40.3        | 38.9        | 38.8        | 39.5        | 39.2        |
| Other interest income <sup>a)</sup>      | 20.2        | 18.8        | 18.8        | 19.3        | 20.1        |
| <b>Non-interest income <sup>b)</sup></b> | <b>39.5</b> | <b>42.3</b> | <b>42.4</b> | <b>41.2</b> | <b>40.7</b> |
|  |             |             |             |             |             |
| <b>Total expenses</b>                    | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  | <b>100</b>  |
| <b>Interest expenses</b>                 | <b>37.2</b> | <b>34.3</b> | <b>31.9</b> | <b>31.1</b> | <b>31.5</b> |
| Interest expenses on bank deposits       | 15.5        | 13.6        | 12.2        | 11.5        | 11.3        |
| Other interest expenses <sup>c)</sup>    | 21.7        | 20.8        | 19.6        | 19.6        | 20.2        |
| <b>Non-interest expenses</b>             | <b>62.8</b> | <b>65.7</b> | <b>68.1</b> | <b>68.9</b> | <b>68.5</b> |
| Labour and related expenses              | 23.8        | 25.1        | 25.8        | 27.9        | 28.4        |
| Equipment expenses                       | 9.4         | 8.5         | 9.2         | 8.3         | 9.0         |
| Other operating expenses                 | 29.6        | 32.1        | 33.2        | 32.7        | 31.1        |

Notes: Figures on income are the unweighted average of the contribution to total income. Figures on expenses are the unweighted average of the contribution to total expenses.

<sup>a)</sup> Other interest income includes interest income on bank deposits, repos, funds, etc.

<sup>b)</sup> Non-interest income includes securities gains, trading account income, trust income, commission and fee income, etc.

<sup>c)</sup> Other interest expenses include interest expenses on debt, interest capitalised, etc.

Source: Income statements of banks, MarketWatch.

## 2. The challenges of cost management

### *Takeaways*

Most banks still use different methodologies within the group, multiple and conflicting taxonomies, product hierarchies and accounting processes, varying definitions for many of the same terms and disparate cost allocation systems. Due in particular to the lack of methodological consistency, many banks still have major difficulties in identifying the right cost levers to improve margins.

Owing to heightened regulatory pressures and the need to improve reputation, the compliance costs of banks have increased significantly in the last few years. Costs should be lower for firms that compete on the quality of their products and processes, as their business strategy implies that they comply more easily. Scale might also matter. Smaller banks are likely to face higher costs than larger banks do in pursuit of the same performance standards.

The IT spending of banks has increased in recent years and should continue to rise in the coming years. Although banks' IT spending for the purpose of maintenance is much higher than for the purpose of investment, a surge has recently been recorded in the latter among EU banks.

Policy-makers should develop tools aimed at facilitating a balanced digital transformation of the banking sector and should build on this mutation to enhance consumers' welfare and the competitiveness of non-financial corporations (NFCs). The first priority for achieving these objectives is to ensure that regulators and implementing authorities integrate and better anticipate the cost of IT changes needed for implementing new rules.

Second, as regulators are working on a revised Capital Requirements Directive (CRD V) and Capital Requirements Regulation (CRR II), this could be an opportunity to reconsider the role of IT spending in the calculation of capital ratios. The exclusion of software expenses for certain priority areas could be a powerful tool for national supervisors to orientate digital expenses where these are most needed. The definition of the right parameters to distinguish the types of software expenses would require close cooperation between accounting standard setters and supervisory authorities in developing the final set of rules and in implementing it.

Tax incentives seem a priori to be rather attractive, but the main limitation of this option concerns the definition of the metrics used to estimate 'productive' spending. Finally, labour and education policies are key to ensuring a sufficient supply of IT skills.

### 2.1 New challenges for cost reporting

In the last 15 years, accountancy has become more and more challenging for retail and corporate banks. Financial reporting has become increasingly demanding, owing to growing regulatory requirements and higher pressure to cut costs. In parallel, in the context of specific phenomena, the origins of costs have multiplied in recent years, thereby significantly increasing the complexity of measuring costs, allocating them and reporting them.

### 2.1.1 *Greater complexity in measuring and allocating costs*

As emphasised during the consultation, some phenomena occurring in recent years have resulted in the multiplication of the origins of costs. For example, the digitalisation of traditional banks has contributed to new services and processes that generate specific costs: those related to the collection and management of data (including being in line with the latest regulations that apply) and maintenance of the digital platforms (such as addressing cybersecurity risks, performance in terms of convenience and efficiency). **This phenomenon is all the more complex since the digital transformation is often only partial** and results in hybrid distribution models combining both online and offline channels.

Along the whole product chain, online and offline channels of interactions are available, especially for individual customers. This implies that marketing campaigns can be conducted both offline (via the distribution of leaflets, the use of billboards, etc.) and online (via the development of 'digital first awareness' tools). For research and purchase of products, the graphs in Annex 3 reveal for instance that most consumers of personal loans combine both online and offline tools. This evolution implies that new cost drivers need to be developed and that these costs are adequately allocated to cost pools and cost objects.<sup>6</sup>

**Legacy issues** also add to the complexity of developing efficient cost systems. **Several of the organisations consulted confirm that cost methodologies can differ even within the banks, across the different sectors of activity.** The robust external growth observed in the period preceding the 2008–09 financial crisis, with the multiplication of mergers and acquisitions, contributed to the development of very complex organisations where none of the cost models of the two merging banks was naturally imposed on the whole new organisation.

As such, as confirmed by the consultation and some specific desk research, many financial organisations still deal with an amalgamation of multiple and conflicting taxonomies, product hierarchies and account processes, with different definitions for many of the same terms. One of the main barriers to adopting a bank-wide costing governance model is the fact that traditional banks typically run parallel and/or duplicative costing processes across the bank. A large survey conducted by Ernst and Young in 2017 revealed that overall, only 31% of financial organisations use one dedicated allocation system across the enterprise.<sup>7</sup>

In addition, one of the stakeholders interviewed during the consultation highlighted that owing to continual methodological adjustments, the value of many of the indicators used is not comparable from one year to another. This lack of consistency over time is a further impediment to the development of long-term and resilient strategies aimed at reducing operational costs.

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<sup>6</sup> The notions of cost drivers, cost pools and cost objects are defined in Annex 2.

<sup>7</sup> The findings of the survey can be found on EY.com ([http://www.ey.com/Publication/vwLUAssets/EY-the-allocation-game-white-paper-july-2017/\\$FILE/EY-the-allocation-game-white-paper-july-2017.pdf](http://www.ey.com/Publication/vwLUAssets/EY-the-allocation-game-white-paper-july-2017/$FILE/EY-the-allocation-game-white-paper-july-2017.pdf)).

## 2.1.2 *Difficulties in developing an efficient accountancy system for cost reduction*

As analysed in the previous section, specific barriers such as legacy issues impede the possibility to develop efficient cost management. In line with the information collected via desk research, several of the organisations consulted emphasised that whereas most traditional banks manage to have a satisfactory estimation of costs by main product line (with different types of product breakdowns across banks), **many banks still have major difficulties in identifying the right cost levers to improve margins**. In particular, once again, the lack of a consistent methodology across the bank remains one of the main reasons behind these difficulties.

The development of new technologies has been promoted by many consulting firms as an efficient way to reduce costs on a continual basis, especially by exploiting in an efficient manner the ever-growing amount of granular data produced. For example, cost analytics is often advertised as a tool that, among other things, will produce forward-looking analytics resulting in the ability to manage costs before they are incurred, and thus will have a significant impact on strategic decisions. As shown by Ernst and Young (2017),<sup>8</sup> while 85% of large banks use cost analytics with the purpose of allocating costs in an equitable way across cost objects, for example by improving the ability to measure the actual consumption of the service provided, over 50% of banks declare that they are not using analytics to empower their cost reduction efforts and 58% of banks do not use cost analytics across their entire cost base.

## 2.2 **Difficulties in managing specific costs**

### 2.2.1 *Compliance costs: The role of technology*

#### *Context*

A specific type of expense that has aroused greater interest in recent years for regulators, senior executives and researchers alike is compliance costs. The content of the responses collected through the consultation confirmed this increasing interest. In the present study, compliance costs are defined as all the costs incurred by the financial organisation to ensure that the business complies with existing external laws and regulations, and internally-defined policies and ethical standards. As emphasised by Europe Economics (2009),<sup>9</sup> these expenses have increasingly been perceived as having a crucial role to play in the mitigation of reputational risks. As such, in large financial organisations, heads of compliance have been playing an ever-more important role on the operational board (as full members or as close advisers to chief executive officers). Given the poor reputation of most banks in the wake of the 2008–09 financial crisis and the heightened regulatory pressures over the last few years, an adequate monitoring of compliance costs has become an imperative for most financial organisations.

Most of the compliance costs have stemmed from the implementation of new pieces of legislation. A significant share of these new rules enacted at both the national and EU levels

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<sup>8</sup> Ibid.

<sup>9</sup> The corresponding study can be found on the European Commission's website ([http://ec.europa.eu/internal\\_market/finances/docs/actionplan/index/090707\\_cost\\_of\\_compliance\\_en.pdf](http://ec.europa.eu/internal_market/finances/docs/actionplan/index/090707_cost_of_compliance_en.pdf)).

has aimed at lessening the risk of another systemic crisis occurring in the foreseeable future. In parallel, legislators have been trying to alleviate specific risks related to the fast digitalisation of the banking sector. Among the main rules implemented, those addressing the following risks can be emphasised:

- data privacy risks regarding the collection and use of personal data (GDPR);
- cybersecurity risks related to data breaches, denial of service, web application attacks, payment card skimming, etc. (GDPR, PSD1, PSD2, NIS and electronic identification, authentication and trust services (eIDAS));
- risks related to information asymmetries between customers and providers whereby some providers exploit information asymmetries on financial products to the detriment of consumers (Mortgage Credit Directive, Consumer Credit Directive, Payment Accounts Directive, Markets in Financial Instruments Directive (MiFID));
- anti-money laundering (AML) risks, which have changed markedly in nature with the digitalisation of distribution channels and know your customer (KYC) (AML Directives 1, 2, 3 & 4);
- competition risks related to an uneven playing field between different types of providers, such as fintech start-ups, incumbents, large IT companies, etc. (PSD2); and
- financial stability risks (the CRDs and the Bank Recovery and Resolution Directive). As a result of the financial crisis and the very high costs incurred to bail out (through the use of public schemes) banks that were considered 'too big to fail', regulators have developed a large number of new rules to maintain the financial stability of the banking sector (by imposing new standards regarding capital ratios, liquidity ratios, etc.) and its ability to be restructured primarily through its own resources (e.g. through the development of resolution plans).

Given the multiplicity of compliance cost origins and drivers, the development of a cost pool for compliance is generally challenging. For instance, a significant number of regulations might involve additional staff training costs, additional systems costs, additional capital costs, additional administrative costs (i.e. the GDPR's requirements in terms of customers' consent can result in further paperwork), additional consultancy and legal advice costs, etc. **Often, specific costs such as the time spent by employees to explain the new rules to customers can hardly be quantified in an accurate manner.** The determination of related cost drivers to measure compliance costs resulting from new regulations can also be laborious (for example, the number of additional staff, the ongoing IT spending and the number of new external regulatory reports). Furthermore, compliance costs also include costs that are not related to regulation. Specific costs can be incurred for a purpose similar to a potential regulation, even though this regulation will never be implemented.

Heightened regulatory pressures and the fact that banks have been trying hard to improve their reputation can explain why most research attempts to anticipate future compliance costs conclude that overall, **they should increase significantly in the coming years.** For instance, a

large survey conducted by Duff and Phelps (2017)<sup>10</sup> across the globe found that financial institutions' compliance costs could more than double between 2017 and 2022 (from 4% to 10% of their total revenue), notably resulting from greater complexity in regulation.

### *Differentiated dynamics across banks*

The consultation emphasised several times that the level of compliance costs can vary across financial organisations, depending on their strategy and size. As regards strategy, **costs should be cheaper for firms that compete on the quality of their products and processes**, as their business strategy implies that they comply more easily (Europe Economics, 2009). Conversely, it should be more expensive to comply with new rules for financial firms that do not primarily compete on the quality of processes and products. Often these firms respond to new rules by raising their quality to the minimum required by the regulations, thereby implying that any future changes in regulations aimed at further improving the quality of the service will result in additional compliance costs for these firms.

Scale might also matter. Smaller banks are often acknowledged as being less equipped than larger counterparts to comply with a new set of rules. To address the issue, some dose of proportionality has been introduced in several EU rules, such as the CRR and CRD. As emphasised by the European Banking Authority,<sup>11</sup> the European Commission (Nava, 2014) has enumerated many areas of the CRR and CRD that are explicitly covered by the principle of proportionality. This includes, for example, general provisions (CRR, recital 46), reporting (CRR, Art. 99), supervision (CRD, Art. 79), internal capital adequacy assessment plans (CRD, Art. 73), and recovery and resolution plans (CRD, Art. 74). Recital 46, for instance, states the following:

The provisions of this Regulation respect the principle of proportionality, having regard in particular to the diversity in size and scale of operations and to the range of activities of institutions. ... Member States should ensure that the requirements laid down in this Regulation apply in a manner proportionate to the nature, scale and complexity of the risks associated with an institution's business model and activities.

The empirical literature on the role of economies of scale in total compliance costs has so far been rather limited. The desk research for the present study has identified two recent papers that cover EU banks' size and total compliance costs. One covers German cooperative banks (Schenkel, 2017). The other one concerns a survey of a group of Luxembourgish banks (Ernst and Young, 2016). They both confirm the existence of economies of scale in compliance. But the samples used are too narrow to generalise the findings to the whole EU banking sector. No relevant publications were found on total compliance costs for a large sample of banks across the EU. No study using a sample integrating both small banks and the largest banks, such as the G-SIBs, was identified. The interplay between compliance costs and bank size is generally analysed for specific pieces of legislation: the CRR and CRD, MiFID, AMLD or PSD.

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<sup>10</sup> The findings of the survey can be found on the Duff and Phelps website (<https://www.duffandphelps.coinsights/publications/compliance-and-regulatory/global-regulatory-outlook-2017>).

<sup>11</sup> See <https://www.eba.europa.eu/documents/10180/807776/European+Banking+Authority+Banking+Stakeholder+Group+-+Position+paper+on+proportionality.pdf>.

In the US, the literature is somewhat richer. But again, no empirical study analysing total compliance costs for a very diverse sample of banks has been identified. The largest banks and small ones are generally analysed separately. One publication that is worth mentioning concerns a large survey conducted by the Conference of State Bank Supervisors (CSBS) (Dahl et al., 2016). It placed the focus on a sample of community banks. It shows that the ratio of compliance costs to total non-interest expenses increased substantially as the size of the bank decreased.<sup>12</sup> For instance, banks with assets of \$1 billion to \$10 billion reported a ratio of compliance costs averaging 2.9% of their non-interest expenses, whereas banks with less than \$100 million in assets reported costs averaging 8.7%. Different parameters were used in that study to control for the differentiation in the quality standards achieved for compliance. And the finding remains broadly similar: smaller banks incur higher costs than larger banks do in pursuit of the same performance standards.

The findings of the CSBS survey could be explained by several factors. Typically, the process of complying with new rules involves two main types of costs (Europe Economics, 2009): one-off costs and costs that are recurring in nature. The former usually concerns fixed costs, such as changes to IT systems and the reshaping of business processes. These costs in principle represent the larger part. Recurring costs concern, for example, maintenance of new IT systems or written communication with customers. The objective of the organisation is that recurring costs are absorbed as quickly as possible into 'business as usual' processes.

The ability to limit the amount of recurring costs largely depends on the quality of the fixed investments resulting in the one-off costs. **Often, options in terms of fixed investments are limited for smaller banks owing to their restricted budget.** This is especially the case for the option of a full automation of new compliance processes, whose related investments can be expensive.

A typical example concerns the full automation of the reporting process within the CRD4, which requires a significant amount of resources. And this type of investment is needed to enhance the competitiveness of the organisation. The technology developed for compliance with CRD4 should allow the production of multiple internal and external reports that are consistent across the whole company and can integrate the different business lines. In addition, the technology put in place should have extensive reconciliation capabilities, because the new standards and ratios require close coordination between risk and finance data, as they are highly dependent on one another. It should also be able to handle the greater detail of real time data to meet the intraday monitoring requirements for the liquidity coverage ratio. Finally, the technology should integrate into a single architecture the different in-house and third-party calculation applications, and should be flexible enough to cope with the impact of the new regulations and modifications to the bank's changing business strategies.<sup>13</sup>

Another factor concerns the ability of banks to efficiently spread regulatory costs over staff members. And here again scale matters. In its findings, the study by CSBS (Dahl et al., 2016) shows that compliance expenses for staff as a percentage of non-interest expenses were by far

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<sup>12</sup> See Dahl et al. (2016) ([https://www.stlouisfed.org/~media/Publications/Regional-Economist/2016/July/scale\\_matters.pdf](https://www.stlouisfed.org/~media/Publications/Regional-Economist/2016/July/scale_matters.pdf)).

<sup>13</sup> See Deloitte (2014) ([https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/financial-services/Banking/lu\\_it-implications-basel-iii-crd-iv\\_06102014.pdf](https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/financial-services/Banking/lu_it-implications-basel-iii-crd-iv_06102014.pdf)).

the largest category in all size groups (representing more than 60% of total compliance expenses, much more than the cumulative compliance costs for data processing, consulting, accounting and legal fees) and decline remarkably for larger banks. This can be illustrated by the fact that in smaller banks, the nomination of a specialist for the compliance function may appear to be impossible, thus resulting in poor resource management for compliance.

### *2.2.2 IT spending: Maintenance versus investment*

In recent years, financial organisations, consulting firms and research organisations have increasingly attempted to better estimate which share of IT spending is related to each specific purpose. Overall, there are two purposes. The first one concerns IT spending that focuses on the maintenance of the existing IT infrastructure. The second one is related to new investment aimed at enhancing business growth or transforming the business model of the financial organisation.<sup>14</sup> According to many bankers and consultants, **maintenance has been and will continue to be by far the main purpose of IT spending.**

In 2015, a Celent publication by Jegher et al. estimated that the cumulative IT spending of banks in Europe, North America and Asia-Pacific reached \$197 billion. Maintenance of existing IT systems stood at 72% of this total. Nevertheless, it varies somewhat across the three geographical areas (see Figure 1). In comparison with their total IT spending, European banks recorded much less spending for the strategic purpose of investment than their American and Asian counterparts (broadly 19% for the former versus 31% for the latter two).

As regards the expected distribution in 2017, Jegher et al. (2015) anticipated **a much more marked growth in IT spending for the purpose of investment in Europe than in North America and Asia-Pacific (40%, 17% and 8%, respectively).** This trend was somewhat confirmed by the banks approached during the consultation. Retail banks have been investing very significantly in the last two years, especially in order to digitalise distribution processes. Still, maintenance should continue to be the lion's share of IT spending. Many external stakeholders (in particular consulting firms) emphasise that should European banks be able to dramatically reduce the number of systems and applications they use, maintenance costs should decrease significantly.

The distribution of IT spending by type of equipment revealed that the share of internal systems was broadly similar across the three continents in 2015: 28% in Europe, 32% in North

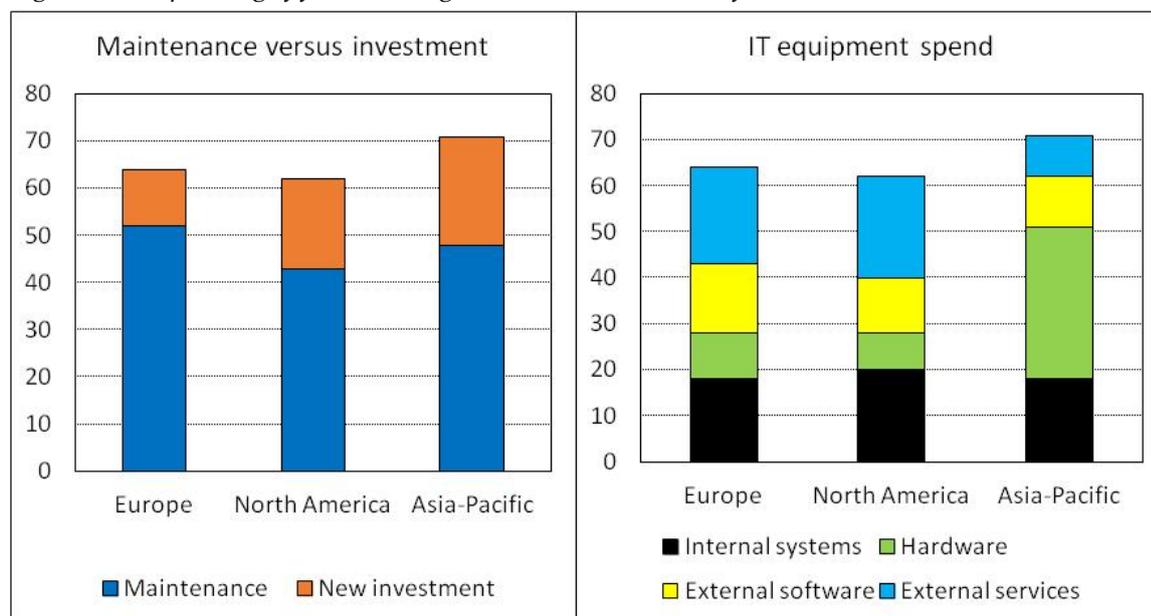
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<sup>14</sup> Gartner (2017) makes the following distinctions:

- “Run the business” is an indicator of how much the IT resources are consumed and focused on the continuing operation of the business. It includes all nondiscretionary expenses as part of the run-the-business cost. It is often called ‘business as usual’ or sustained investment. Running expenses do not directly increase revenue, or achieve by themselves new or enhanced goals of the enterprise.
- “Grow the business” is an indicator of how much of the IT resource is consumed and focused on developing and enhancing IT systems in support of business growth (typically organic growth). Discretionary investments are more likely to be included in the grow-the-business or transform-the-business costs.
- “Transform the business” is an indicator of how much of the IT resource is consumed and focused on implementing technology systems that enable the enterprise to enact new business models. This is very much a “venture” category and would be represented by activities such as a banker introducing early warning schemes that aim at anticipating missed payments of borrowers.

America and 25% in Asia-Pacific. It is noteworthy that the share of hardware was much higher in Asia-Pacific (47%) than in Europe (16%) and North America (13%). Also, European banks spent a somewhat higher share on external software than their counterparts (23% in Europe versus 19% in North America and 16% in Asia-Pacific).

Figure 1. IT spending of financial organisations (estimations for 2015, in US\$ billion)



Notes:

- External software includes programmes and other operating information used by a computer and which is provided through third-party licensing fees.
- Internal systems include software owned by financial organisations (as a result of a purchase or internal development).
- Hardware includes machines, wiring and other physical components of a computer or other electronic system.
- External services include fees paid to outsourcers.

Source: Jegher et al. (2015) (also quoted in Arnold and Braithwaite, 2015).

## 2.3 Policy recommendations

Regulators and supervisors alike have different tools at their disposal to facilitate the development of efficient IT and compliance strategies at banks. These instruments should aim at facilitating a balanced digital transformation of the banking sector, by helping to reinforce the competitiveness of banks and providing the right incentives for developing the most up-to-date services to customers. This approach eventually will greatly contribute to the establishment of a robust digital economy.

### 2.3.1 Anticipating the cost of IT changes needed for implementing new rules

First, as emphasised during the consultation, **policy-makers and implementing authorities should integrate and better anticipate the cost of IT changes needed for implementing new rules.** This estimation should be part of any impact assessment conducted by authorities. This should significantly smooth the transition to the new rules. One concrete example concerns the ability of regulators and supervisors to estimate the potential synergies or overlaps across different rules.

For instance, over the last year, numerous reports have emphasised the risk of overlaps and contradictions between the PSD2 and GDPR, with both pieces of legislation being implemented during the same period. In particular, the lack of guidance for implementing the PSD2 and the graver sanctions related to non-respect of the GDPR may lead some banks to give GDPR compliance greater priority over PSD2, likely resulting in severe limitations on third-party payment service providers' access to data and very strict interpretations of consent. This in turn would make third-party services more difficult to use, and less beneficial to consumers.<sup>15</sup>

### *2.3.2 Exclusion of software expenses from the standard CRR regime*

#### *Background*

As regulators are working on a revised CRD (V) and CRR (II),<sup>16</sup> this could be an opportunity to reconsider the role of expenses on digital elements in the calculation of capital ratios. In that respect, regulators could develop new policy tools aimed at helping supervisors to influence the digitalisation and compliance processes of banks.

For example, the purchase of software by credit institutions, which represents a significant share of total IT spending, has so far been treated as a cost rather than as an investment in the regulatory framework for capital requirements. This implies that financial organisations are required to match their software spending with an almost equivalent amount of capital to maintain their capital ratios. The position of some banking lobbyists (e.g. the European Banking Federation) is that software spending should be excluded from the general regime applicable to intangible assets under the definition of regulatory capital.<sup>17</sup> Two of the key arguments used by the European Banking Federation to defend their position are that, on the one hand, the current regulation of software spending impedes the ability of banks to innovate and compete with banks from other continents, and on the other hand, software has a value even in case of liquidation.

#### *Priority areas*

The possible creation of a specific regime for software spending within the CRR II raises many questions on the justification of such an exclusion. **First, to whom this exclusion should apply and why should it be applied?** In the name of proportionality, the exclusion could for instance only concern smaller banks. This measure would aim at helping smaller struggling banks to automate their processes.

But, will this approach result in a balanced, level playing field? While some larger banks have so far been highly successful in digitalising their processes, others are struggling. In that context, would it make sense to use size as the only parameter to benefit the exclusion? What

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<sup>15</sup> This interpretation can be found in Deloitte (2017) (<https://www2.deloitte.com/lu/en/pages/banking-and-securities/articles/psd2-gdpr-friends-or-foes.html>).

<sup>16</sup> The related proposal was published on 23 November 2016 (<https://ec.europa.eu/transparency/regdorep/1/2016/EN/COM-2016-850-F1-EN-MAIN.PDF>).

<sup>17</sup> A recent paper of the European Banking Federation (2017) takes this position ([http://www.ebf.eu/wp-content/uploads/2017/10/EBF\\_029517-EBF-survey-on-bank-investments-in-software.pdf](http://www.ebf.eu/wp-content/uploads/2017/10/EBF_029517-EBF-survey-on-bank-investments-in-software.pdf)).

about other criteria, such as business models, core activities and existing IT infrastructure? The possibilities are multiple.

Should regulators seek to favour the digitalisation of corporate financial services (which, as shown in sections 3 and 4, are often less digitalised than their retail counterparts), the exclusion regime could apply only to services for NFCs. Or, to better serve the policy agendas placing the focus on access to finance by small and medium enterprises (SMEs), only software expenses incurred for SME financial services could be systematically excluded from the standard regime. The ‘think small first’ principle could justify this exclusion on the basis of the activities covered.

The scope of activities to benefit from exclusion could be refined even further and could integrate the product stage. For instance, as shown in section 4, KYC and authentication processes have been recognised as increasingly burdensome for NFCs. Persistent paper processes (notably in trade finance) and lack of consistency across banks have been identified as the main drivers behind these difficulties. The exclusion of software expenses aimed at digitalising KYC and authentication processes for NFCs (all NFCs or only SMEs) could accelerate the digitalisation of these processes. This should eventually benefit customers most in need and contribute to the emergence of an up-to-date digital economy.

The possibilities of exclusion based on the characteristics of the organisations or the activities are manifold. The definition of consistent parameters would require **close cooperation between accounting standard setters and supervisory authorities in developing the final set of rules and in implementing it** (Borio and Tsatsaronis, 2007). Then, the success of this approach would greatly depend on the ability of banks to align accounting and prudential treatment of software and IT spending in general. Big data analytics could eventually be used to develop and apply the right standards.

The identification and use of parameters to exclude software expenses on the basis of the proportionality principle should not pose major difficulties. It could for example concern the size of the balance sheets. As regards activities and product stage, a distinction could be drawn only if adequate granular data is available on how software expenses are distributed across activities and product stages.

The exclusion regime could be malleable over time and depending on the context. **National supervisors would have at their disposal a powerful tool to orientate digital expenses where these are most needed, at their discretion.** Obviously, should the revised CRR go in that direction, it should impel national authorities in charge to justify the exclusion and assess the outcome of this exclusion on a regular basis.

#### *Accountancy treatment: Which types of expenses to consider?*

Considering accountancy treatment *sensu stricto*, questions remain on the types of software expenses. Whereas the European Banking Federation considers only software that is owned by banks (as a result of a purchase or internal development) and which contributes to inflating the value of intangible assets in the balance sheets of banks, what about other software spending? For instance, a large amount of IT expenses concerns the regular purchase of third-party software licences (see Figure 1, which shows the high share of spending on external software by European banks). This spending in principle does not contribute to raising the

value of intangible assets in the balance sheets of banks and therefore does not bring any value in case of liquidation. Yet, in many cases it can also greatly contribute to the digitalisation of specific processes. Would it make sense to consider this type of expense and if it does, through which regulatory channels should it be enhanced?

Another example concerns software incorporated in hardware. Traditionally, this type of software expense is recorded as part of the related tangible asset's value in the balance sheet. The depreciation method used is similar to the one for the related hardware. Should this specific type of software spending qualify for an exclusion from the CRR?

Depreciation methods can play a key role in how software expenses are treated. Related practices often vary markedly across member states. So, could the possibility to build an exclusion regime for software expenses be an opportunity to further harmonise the depreciation rules for these assets across the EU?

### *2.3.3 Tax incentives*

Another range of policy tools concerns tax incentives. Based on specific standards, policy-makers could strengthen the digitalisation of banks in a balanced manner by allowing the deductibility of particular IT spending. Whereas this approach seems a priori to be rather attractive, the main limitation concerns the definition of the metrics used to estimate this 'productive' spending.

### *2.3.4 Labour and education policies*

Finally, adapted labour and education policies are key to ensuring **a sufficient supply of IT skills in the economy and specifically in the banking sector**. In the meantime, given the ongoing and expected vast amount of job losses resulting from the digital transformation (in particular in branches and back-office functions), substantial efforts are needed at the policy level (through education and labour policy instruments) to facilitate quick reintegration within the labour market.

### 3. Drivers behind the digitalisation of banks

#### *Takeaways*

Four main drivers behind banks' digitalisation have been assessed: a greater need for regtech, the digitalisation of customers, eroding lending margins and new entrants. Noticeable differences could be observed between retail finance and corporate finance, and could explain why for most banks digitalisation in retail finance has so far been more advanced than in corporate finance.

For consumer finance, it appears that the rapid digitalisation of consumers has for the most part been the cause of the digitalisation of financial providers. The digitalisation of companies' processes has been slower, as a result of greater complexity. Companies are increasingly considering the digitalisation of corporate finance as a powerful driver of their own digital transformation. Quantitative analyses reveal that in recent years eroding lending margins have been registered primarily in retail finance.

In the EU market, the vast majority of financial services offered, whatever the area, continues to be provided by banks, even in segments where alternative providers are most active, such as unsecured consumer loans, small SME loans, corporate foreign exchange and payment services. That notwithstanding, the fear of being overwhelmed by new competitors in the coming years, notably by tech giants, persists and constitutes a powerful incentive for banks to innovate by digitalising their processes and services, on a sole basis or in cooperation with alternative providers.

The consultations and desk research revealed several drivers behind the digitalisation of banks. Noticeable differences could be observed between retail and corporate finance, and could explain why for most banks the **digitalisation in retail finance has so far been more advanced than in corporate finance**.

On the demand side, one assumption is that the extent to which retail and corporate banks have digitalised their processes and products depends on the preferences of customers as well as on the extent to which these customers have digitalised their own processes. A high degree of digitalisation of the processes of customers can greatly facilitate the digitalisation of banking services, thereby contributing to a high degree of interoperability between banks and their customers.

On the supply side, a common perception is that specific trends have forced banks to cut costs and the digital transformation has been used for that purpose. In particular, several stakeholders interviewed highlighted that the higher pressure to cut operational costs rather than boosting revenues has somewhat been caused by continually eroding lending margins in recent years. Still on the supply side, the competition from new entrants and the fear of competing with new ones in the near future (especially among the main IT companies: Orange in France, Google, Apple, Microsoft, Amazon, Facebook, etc.) are often perceived as powerful incentives for banks to reshape their offers by accelerating their digital transformation.

Another driver concerns the multiplication of new regulatory requirements, which raises compliance costs. Banks therefore need to digitalise compliance processes, as well as non-compliance processes, in order to maintain similar levels of profitability. Some elements of this factor and how it has impacted on IT investment are analysed above in section 2.2.

### 3.1 Digitalisation of clients and banks: Who takes the lead?

Banking is a sector that involves long-term relationships and multiple interactions with customers. Credit products, such as a residential or commercial mortgage, typically engage banks and borrowers in a multi-year relationship. Other products, such as cash management, imply multiple transactions and exchanges between the bank and its customer. As such, the level of digitalisation of these customers will certainly have an impact on the extent to which banks will digitalise their products and processes. Questions remain nonetheless about which sense of causality is shaping the digital transformation of customers and banks. **Do banks take the lead in terms of digitalisation, thereby forcing customers to digitalise their processes, or is it the opposite?** The answer might differ across the various business lines.

#### 3.1.1 Consumers

As part of their recent communication strategies when announcing large structuring plans and multiple lay-offs, many European banks have justified these decisions by emphasising that most consumers are continually asking for more digital possibilities and prioritise convenience and speed when they interact with their financial providers. This justification is partly evidence-based. As shown in Annex 4 (Figure A4.1), the equipment of consumers in terms of smartphones and computers has increased markedly over the last few years. The vast majority of consumers has access to broadband Internet services, either through mobile or fixed channels. This obviously justifies and facilitates the development of digital distribution channels by banks. Also, the fast growth in the production of digitally stored consumer data (see Figure A4.2 in Annex 4), due notably to growth in the use of social media data across all generations (see Figure A4.3 in the same Annex) implies that many new opportunities have emerged for banks in terms of big data analytics.

The desk research conducted for this study has not found any study showing that the digitalisation of banks was a key reason for a large number of consumers to purchase a smartphone or a computer. For consumer finance, it appears that the rapid digitalisation of consumers has for the most part been the cause of the digitalisation of financial providers. **In that sense, consumers have taken the lead.**

#### 3.1.2 Non-financial corporations

The vast majority of EU28 NFCs do have access to the Internet: according to Eurostat, 97% of EU companies that employ more than ten persons had access to the Internet in 2016. Yet, unlike consumers, this has not been a sufficient reason for corporate banks to digitalise their processes and services. **The digitalisation of companies that enables full interoperability with banks is complex and can take multiple forms.** For larger corporations, the digitalisation of corporate financial services generally requires the development of a collaboration aimed at ensuring that bankers align their objectives and investments with those of customers.

A typical example concerns cash management and payments. The way NFCs manage their receivables and payables will significantly affect the types of digital solutions that banks can develop. It is commonly accepted in corporate finance that further control of intra-company cash balances through centralised cash flow management can greatly contribute to the efficiency of liquidity management.<sup>18</sup> Some regulations have helped companies to enhance this centralisation. For instance, the single euro payments area has reinforced the ability of treasurers to centralise receivables management, especially at the European level. The acquisition of certain digital technologies, such as clouds and software as a service, is generally perceived as helping corporations in that effort of centralisation.

Until recently, the majority of large companies have had fragmented liquidity management systems, with different cash flow management, terminologies, standards and practices across the group (in particular for supply-chain finance, payment reconciliation, accounts receivable and trade finance). Whereas for a few years this could justify the difficulties of corporate banks in digitalising their processes, the consultation for the present study and several recent surveys show that corporations increasingly consider the digitalisation of banks to be insufficient.

For instance, in the Transaction Banking Survey conducted by *GTNews* in 2016 among more than 300 banking providers and corporates, the findings reveal the lowest level of satisfaction of corporate practitioners with their banking partners since the survey began in 2013.<sup>19</sup> The year-on-year drop in satisfaction recorded in 2016 is particularly pronounced among smaller private companies. And for the first time in that survey, corporates were less concerned with pure cost considerations and prioritised ease of use and service quality. “Security and control standards”, “highly efficient and integrated technology systems and processes”, and “digital customer servicing” were respectively the first, second and fifth most significant reasons for corporations to choose a bank.

To conclude, **the digitalisation of corporate banks and their customers can be analysed as an interactive dynamic between the two stakeholders, rather than the result of a single sense of causality where the degree of digitalisation of corporations impacts on that of banks.** Corporations are increasingly considering the digitalisation of corporate finance as a powerful driver of their own digital transformation, and as such gradually see finance in the same way they connect their supply chain, namely as a part of their integrated real-time digital system. The dynamics of digitalisation might therefore differ between consumer finance and corporate finance. While consumers generally have the lead in the former, corporations and banks seem to mutually influence each other in the latter.

### 3.2 Erosion of lending margins: Corporate finance versus retail finance

In line with many publications by consulting firms, several of the stakeholders consulted highlighted that the dynamics in lending margins can have a substantial impact on the decision of banks to accelerate their digitalisation or not. Against the backdrop of decreasing

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<sup>18</sup> See the interview with Erik Zingmark of Nordea Bank, *Treasury Today*, September 2015 (<http://treasurytoday.com/2015/09/interview-erik-zingmark-nordea-ttbi>).

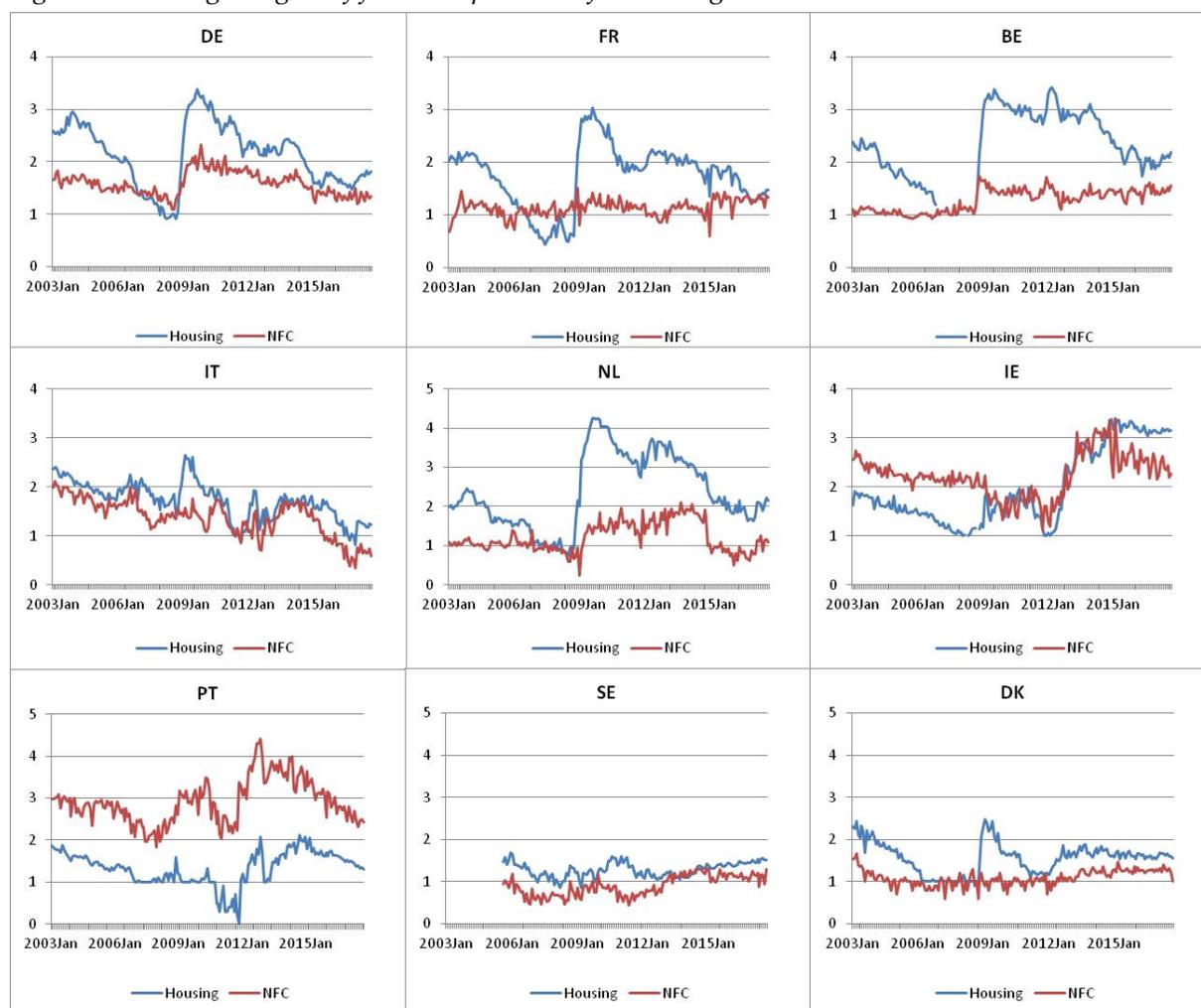
<sup>19</sup> See *GTNews* (2016). For the results of the survey, see ([https://www.cgi.com/sites/default/files/SIBOS2016/cgi\\_transaction\\_services\\_survey.pdf](https://www.cgi.com/sites/default/files/SIBOS2016/cgi_transaction_services_survey.pdf)).

lending margins, financial organisations would be compelled to cut costs in order to maintain similar patterns of profitability. As such, full or partial digitalisation of financial processes is used as a powerful means to cut different types of costs: less investment in bricks-and-mortar branches to the benefit of online distribution channels, job losses in these branches and back-office departments, etc.

As emphasised by several stakeholders in the consultation, lending margins for loans to households have been eroding for many financial organisations over the last few years. This assumption has somewhat been confirmed by the desk research process. The monthly data on housing loans of the European Central Bank (ECB) (see Figure 2) reveals that related lending margins have been moving along downward paths since the beginning of 2010 in Germany, France, Belgium, Italy and the Netherlands. These downward trends have become even steeper since 2012 in these five countries excluding Germany. In the meantime, lending margins have been stagnating somewhat in Denmark and Sweden, and have been following upward trends in Portugal and Ireland.

Trends observed in the activity of loans to NFCs have been rather different. Considering the 2010–17 period, no significant downward trends have been recorded in any of the countries analysed. Since 2012, the Netherlands, Portugal and Italy have admittedly registered significant downward trends. Nevertheless, for the seven other economies, lending margins for NFCs have been stagnating over the last five years. **Overall, should the dynamics of lending margins impact on the cost strategy of banks, then the pressure to cut costs owing to decreasing lending margins would be more pronounced in retail finance than in corporate finance.**

Figure 2. Lending margins of financial providers for housing loans and loans to NFCs



Note: As published by the ECB, the lending margins of monetary financial institutions (MFIs) are calculated using MFI interest rate statistics. Lending margins are measured as the difference between MFIs' interest rates on new business loans and a weighted average interest rate on new deposits from households and NFCs. In the case of non-euro area countries, rates on loans and deposits in both euros and the national currency are taken into account. For the lending margins of MFIs resident in euro area countries, interest rates refer to loans to euro area residents, while for those of MFIs resident in non-euro area countries, rates refer to loans to domestic residents.

Source: ECB.

### 3.3 Increased competition among specific products

In recent years, the emergence of fintech start-ups and other non-bank players has given rise to speculation that the whole banking system is in danger of significant disruption. If this has yet not happened, the persistent fear of banks that some new fintech business models might still take significant market shares for specific products and that new companies with large resources might enter the market (telecommunications companies, social media platforms, etc.) has forced banks to re-evaluate their strategies for those markets. Re-evaluation has most of the time resulted in further digitalisation aimed at improving existing products, reducing prices or cutting costs. Another option that has increasingly been chosen in very recent years

is to purchase the competitor. Among the markets where it is generally assumed that alternative providers have made a noticeable dent, particular products concern small credit to SMEs, consumer loans, corporate FX and payment.

### *3.3.1 Corporate FX and peer-to-peer platforms offering loans to consumers and SMEs: A niches' success*

In the UK, which remains the most advanced domestic market in the EU for peer-to-peer (P2P) platforms providing loans, new P2P loans for consumers reached £0.91 billion in 2015, up from £0.55 billion one year earlier, whereas new P2P loans for businesses increased from £0.75 billion in 2014 to £1.49 billion in 2015.<sup>20</sup> Admittedly, these figures reveal robust growth in these two markets. However, they still pale in comparison to the whole UK market and mirror **significant achievements in specific niches by a few successful start-ups rather than a game changer for consumer and SME finance in general.**

Owing to the absence of available statistics that can be consolidated at the EU level on the types of providers in the FX segment, the desk research could not determine if the share of non-bank providers of FX has increased or not in the latest years. Amid these uncertainties, contradictory analyses are published on the real ability of non-bank providers to overtake banks in the supply of FX. It seems nonetheless that, in line with a market such as P2P platforms offering loans, alternative providers are taking market shares in specific niches. Notably due to the multiplication of new FX providers, efforts have been made by supervisors to promote ethical standards in the FX market. For example, as of December 2017, the Foreign Exchange Global Code of Conduct that was published in May 2017 was already being followed by most national central banks of the European System of Central Banks (ESCB).<sup>21</sup> Nevertheless, regulatory constraints have so far remained limited to FX markets.

### *3.3.2 Noticeable disruption in payment*

**Noticeable disruptions have been observed in the payment segment over the last decade.**

So far, the main success stories within the fintech ecosystem have operated mostly in the segment of payments, especially for consumers: TransferWise, PayPal, Apple Pay, Stripe, Payoneer, Skrill, Amazon Pay, etc. Therefore, it does not come as a surprise that, regardless of the type of customer, the busiest product area for fintech start-ups has been payment. According to McKinsey (2015),<sup>22</sup> in 2015, payment start-ups accounted for 40% of all fintech

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<sup>20</sup> These statistics are provided by Statista (<https://www.statista.com/>).

<sup>21</sup> This code of conduct can be found on the website of the Global Foreign Exchange Committee ([https://www.globalfx.org/docs/fx\\_global.pdf](https://www.globalfx.org/docs/fx_global.pdf)). The official commitment of most national central banks of the ESCB was published in November 2017 ([https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.pr171129\\_2.en.html](https://www.ecb.europa.eu/press/pr/date/2017/html/ecb.pr171129_2.en.html)).

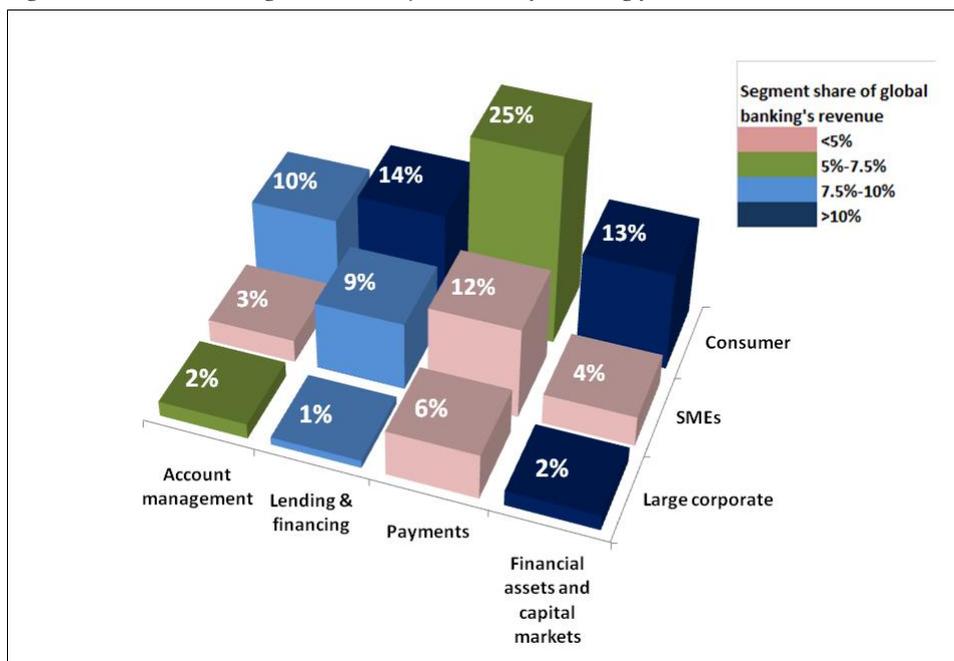
<sup>22</sup> These statistics are based on a sample of more than 350 commercially most well-known cases registered in the Panorama database of McKinsey. As indicated by McKinsey, this sample might not be fully representative. The related publication can be found here, with the statistics on p. 6: <https://www.mckinsey.com/~media/mckinsey/industries/financial%20services/our%20insights/cutting%20through%20the%20noise%20around%20financial%20technology/cutting-through-the-fintech-noise-full-report.ashx>.

start-ups active in the consumer segment, 43% in SMEs and 55% in large corporations (see Figure 3).

Different factors can explain the fast emergence of payment service providers (PSPs). First, the payment segment is the most intense in terms of technological content, which facilitates innovation. For instance, the phenomenon of cryptocurrencies, which is trying to completely change the manner in which payments will be executed in the future, is unique in financial services. Second, the payment services offered by banks are often perceived as the segment with the largest potential for improvement (too slow, not convenient, too expensive, etc.). Third, the rapid digitalisation of banking customers who increasingly use smartphones has given rise to large potential for innovative payment methods that do not include payment cards anymore. Finally, the fast growth in e-commerce has resulted in a substantial need for Internet billing solutions.

Although banks still cover most of the payment market on a global scale, non-bank actors are growing at a steady pace. An increasing number of consumers and corporations are relying on these alternative means of payment and plan to use them in the foreseeable future. Regulators are enacting rules such as PSD2 that could facilitate the expansion of PSPs. Nevertheless, it is still difficult to assess how this particular segment will transform in the coming years. **Much will depend on how the trust and preferences of the vast majority of consumers and corporations alike will evolve.** Should they grow markedly in favour of PSPs, then the landscape of the payment segment might change dramatically, with the appearance of multiple new payment providers that use existing interbank systems or a parallel infrastructure. Conversely, should trust not increase markedly, it is likely that the market share of non-bank providers will remain limited or will grow somewhat with the introduction of tech giants that leverage their brand and scale.

Figure 3. Customer segments and products of leading fintechs, 2015



Source: McKinsey (2015).

**Overall, despite all the hype and speculation on what could happen, no dramatic change has so far happened on the supply side of financial services.** In the EU market, the vast majority of financial services offered, whatever the area, continues to be provided by banks, even in segments where alternative providers are most active, such as consumer loans, small SME loans, corporate FX or payment. That notwithstanding, **the fear of being overwhelmed by new competitors in the coming years**, notably by tech giants, persists and constitutes a powerful incentive for banks to innovate by digitalising their processes and services, on a sole basis or in cooperation with alternative providers.

## 4. Digitalisation and the reshaping of costs and values at the different stages of products

### *Takeaways*

Although it is still too early to assess the full impact of the recent digital investments made by large banks on the costs and values of retail finance and corporate finance, specific trends can already be detected. Banks increasingly use fully online marketing campaigns, as they prove to be cheaper, more accurate and more reactive to changes than offline counterparts. In the big data environment, the use of predictive analytics for the purpose of better segmentation has become more popular. The vast majority of established financial organisations opt for an omnichannel distribution model that integrates both online and offline channels.

Robo-advisers are also mostly used in the context of a hybrid model, where automated and human processes are combined. The benefits of automated advice in terms of costs and values remain ambiguous. In the meantime, a greater number of banks are trying to provide useful online financial information to consumers. Companies often have a very poor appreciation of banking advice, especially regarding forecasting.

It is widely expected that the majority of mainstream providers will use machine learning to a certain extent for creditworthiness assessment in the foreseeable future. However, compliance questions related to data privacy rules will remain in relation to the type of data used and the exact purpose of algorithms. A majority of mainstream retail banks are willing to fully digitalise the contracting process, by automating all manual processes related to the authentication, KYC schemes and signature of contracts, and by removing all physical papers.

Authentication and KYC processes have become more and more burdensome for NFCs, and appear to significantly slow down the completion of transactions. And often, NFCs (especially SMEs) do not have the adequate resources to efficiently deal with these necessary items. Standards among banks remain way too fragmented, KYC processes are often not streamlined and data are not sufficiently integrated across banks. These issues are particularly true for trade finance.

As regards credit recovery, lenders to consumers and SMEs increasingly adopt a proactive approach and try to anticipate potential missed payments before they materialise. Several stakeholders interviewed highlighted that credit recovery itself could be the product stage with the largest potential for outsourcing, in particular for more critical cases.

Legislators should better assess the indirect impact of new rules on consumers and companies. In particular, the design, implementation and supervision of KYC rules should further take into account the extent to which new requirements resulting from these rules can impede the efficiency of transaction systems. Specific attention should be given to the indirect effects on SMEs with few resources. Facilitating the use of banking services by NFCs calls for regulators and supervisors to encourage converging practices across banks in terms of KYC requirements.

In the big data era, regulators should encourage the development of advisory tools such as financial dashboards for consumers. Finally, provided that data protection rules are respected, regulators and supervisors should encourage the generalisation of early warning schemes for both consumers and companies, for the purpose of limiting the volume of loans in arrears.

Although it is still too early to assess the full impact of the recent investment made by large banks in digitalisation on the costs and values of retail finance and corporate finance, the consultation has already revealed some specific trends. The objective of this section is to analyse how and to what extent the different stages of products in retail and corporate finance are being reshaped by banks in a digital context: marketing, distribution, advice, scoring, contracting/authentication/KYC and recovery.

#### 4.1 Marketing: Increasing segmentation

Banks have been relying increasingly on online tools to market their products. As shown in Annex 3 for personal loans, according to the Google Consumer Barometer Survey (2015), first awareness was the product stage with the highest share of digitalisation. In many EU countries, more than half of first awareness was made online for personal loans in 2015. It reached levels much above 60% in the Netherlands, France, Ireland, the UK and Germany. Given that the digitalisation of banking channels was non-existent or marginal at best only a few years ago, these figures reveal the pace of change in the marketing of banking products to households.

One of the core drivers behind this change is the **need for cost reduction**. It remains cheaper to use online marketing campaigns than offline ones. The online option implies that no costs of printing, postage, labels, etc., are involved. Furthermore, online marketing has proved to be faster (it can be published instantly) and more flexible (the content can be changed anytime in a cheap and quick way, for example, in the case of a change in fees).

Also, in a big data environment, **an increasing number of banks have been using predictive analytics for the purpose of better segmentation**. Eventually, this segmentation should help banks to tailor more personalised offers for products and their distribution. Segmentation tools are used mostly for consumers and SMEs. Each large corporation often represents a segment in itself for which banking solutions are specifically designed. Segmentation in retail finance entails gaining a better understanding of the purchase and risk behaviours of consumers, traditionally by using demographic data such as age, income and education, as well as past financial data. Based notably on the fast growth in the volume of data generated through the use of digital banking channels for a few years, recently banks have focused more on data that provide information on the financial acumen and the level of digital sophistication of consumers.

As for SMEs, for years the segmentation has also placed the focus on traditional data, such as the number of staff and the ageing of the company, as well as financial data contained in financial statements like income statements or balance sheets (revenues, assets, equity, income, liquidity ratios, return on equity, etc.). Some data have also been used to better understand the dynamics of the economic sector in which the SME is evolving. **The general perception is that banks are investing less in SME finance than in consumer finance with respect to digital transformation**. And the refinement of SME segmentation, which for example could integrate data on the digital behaviour of SMEs when they interact with banks or much more refined data on the dynamics of the economic sector in which the company is operating, is no exception.

The increasing use of data analytics for the purpose of segmentation can trigger two types of risks. First, banks need to address compliance and reputation issues in relation to regulations such as the GDPR on personal data. In theory, the use of a significant amount of data could contribute to improving segmentation, thereby refining and personalising somewhat the ads and solutions offered. Nevertheless, in practice, this objective can be achieved only if each consumer concerned gives his or her consent before that person's data are used. In addition, in the big data environment, the risks of using biased data remain significant and if not properly handled, these risks could jeopardise the whole marketing strategy for both consumer and corporate finance, resulting in higher costs and lower values than expected.

## 4.2 Distribution: The hybrid model versus the fully online model

A persistent debate in the digital transformation of distribution channels for retail and corporate finance concerns the extent to which these channels need to be digitalised. Whereas there is a view that all the processes should be fully digitalised (this view is shared typically by tech companies that try to enter the market and many fintech start-ups), the vast majority of established financial organisations rather opt for an **omnichannel model that integrates both online and offline channels**. This hybrid model is admittedly generally assessed as being more complex to manage and costlier than a fully online model. While on the one hand, many banks have announced a significant number of lay-offs in branches, the full implementation of these restructuring plans takes time. On the other hand, it is commonly accepted that a significant share of consumers (see Annex 3 concerning personal loans) and companies prefer using both online and offline channels when comparing, analysing, purchasing and using a financial product.

## 4.3 Advice: Automation and financial information

### 4.3.1 *The role of automated financial advice*

One of the most significant questions for the transformation of the advice function concerns the role that should be played by machine learning and automation, the so-called robo-advisers. Beyond the hype that has promoted robo-advisers as the new device that will replace all humans in branches and will result in marked cost cuts, the consultation showed that so far, **robo-advisers are mostly used in the context of a hybrid model**, where automated and human processes are combined. In most models, more complex tasks that require a high degree of agility should in principle continue to be completed by the staff.

As also revealed by the consultation of the Joint Committee of European Supervisory Authorities (2016) on automation in financial advice,<sup>23</sup> the benefits of automated advice in terms of costs and values remain ambiguous. Some respondents emphasised that this automation should contribute to significant cuts in costs, provided that the customer base is sufficiently large for economies of scale to materialise. Others highlighted that the main benefits would accrue not as a result of cost reductions but of additional revenue streams. The argument used by the latter group of stakeholders is that automation in advice not only

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<sup>23</sup> The final report can be downloaded from the website of the European Supervisory Authorities ([https://esas-joint-committee.europa.eu/Publications/Reports/EBA%20BS%202016%20422%20\(JC%20SC%20CPFI%20Final%20Report%20on%20automated%20advice%20tools\).pdf](https://esas-joint-committee.europa.eu/Publications/Reports/EBA%20BS%202016%20422%20(JC%20SC%20CPFI%20Final%20Report%20on%20automated%20advice%20tools).pdf)).

requires a large initial investment, but also high maintenance costs (continual testing, maintenance and marketing of automated tools). Also, a view emerged in the consultation of the European Supervisory Authorities (ibid.) that automated tools are less useful for clients with complicated financial needs. Overall, so far automation in corporate finance has been limited, whereas some significant initiatives have already been taken in retail finance. Generally, however, automated financial advice for the moment has mostly been used on securities market lines.

One digital tool that can support the advice function and which has been developing very quickly concerns online comparative websites. Enhanced by specific European rules, such as the EU Payment Accounts Directive of 2014 for consumers' current accounts, this device is currently more present in consumer finance than in corporate finance.

#### *4.3.2 The production of useful information for customers*

Another trend that has been transforming the advice function of banks concerns the development of additional information provided to customers once the product has been purchased. In retail finance, multiple online banking tools have been developed to help consumers follow financial information on a continual basis, such as movements on their current accounts, fluctuations in their wealth, etc. This information is getting increasingly sophisticated: for example, several banks are now providing digital dashboards with dynamic charts or pies on the monthly spending of the consumer, thus to some extent playing the role of a financial adviser. At the same time, the market for these services is becoming more competitive, especially in the context of the PSD2, which could greatly facilitate the emergence of non-bank account information payment service providers (AIPSPs), by giving them access to customers' financial data related to certain bank products. Should these AIPSPs achieve a sufficient scale in terms of customers' financial data, there are assumptions that banks might lose most of their tasks related to financial advice and education to the benefit of these new players.

The production of financial information to support banking customers in their decisions and strategies might be even more valuable for companies, especially for SMEs, which often expect banks to play the role of a consultant. Some initiatives have been taken by certain banks to improve the financial information provided to companies. For instance, some large EU banks have recently developed applications to enable corporations to retrieve information on all their bank accounts in the relevant national format of a single application, no matter the country in which these accounts are held. Some treasury tool applications can help SMEs to assess the costs and benefits of investment projects and suggest whether it is more beneficial to use cash concentration or to establish a payment factory for a particular project.<sup>24</sup> However, these initiatives remain for the moment limited in the SME segment.

**Many recent surveys conducted with treasurers of NFCs tend to show a low level of satisfaction with banking services related to financial advice.** In the yearly Transaction

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<sup>24</sup> See for example, K.J. Müller, "Riding the digital wave in cash management", *TMI*, June 2015 (<https://www.treasury-management.com/article/1/336/2794/riding-the-digital-wave-in-cash-management.html>).

Banking Survey conducted by the Association for Financial Professionals,<sup>25</sup> between 2014 and 2016, each year the service of “forecasting” reached the lowest score of all the banking products assessed in terms of satisfaction among corporate treasurers. The size of the company did not have a real impact on this profound dissatisfaction. One of the main reasons for this poor performance is the fact that cash forecasting is unique to each company and that the forecasting process differs across organisations (and even within the organisation, in particular for the large ones). Unless banks succeed in customising their forecasting services, one possible scenario is that new actors (such as AIPSPs) take over most of this specific market.

#### 4.4 Scoring

In the big data environment, new financial providers are extensively using machine learning algorithms to assess customer creditworthiness, especially for the purpose of unsecured consumer loans. This new technique is generally promoted as providing faster results and more refined estimations. In particular, it is used by fintech start-ups that aim at providing credit scoring for consumers with thin credit files, thereby often promoting their activity as a way of boosting financial inclusion. At present, the majority of retail banks are still using traditional scorecards with linear models and decision trees. Yet, according to EFMA (2016),<sup>26</sup> the majority of mainstream providers expect machine learning to be used to a certain extent for creditworthiness assessment in the foreseeable future.

The core assumption is that such techniques could contribute in some way to improving the risk management of underperforming loans by refining the metrics used in the trade-off between risks and returns. However, compliance questions related to data privacy rules will remain in relation to the type of data used and the exact purpose of algorithms (as requested within the GDPR). If several fintech start-ups have been using alternative data, such as social media data, without significant restrictions, **the reputation risk that is much more carefully addressed by traditional players is expected to prevent these banks from fully integrating such data in the near future.**

#### 4.5 Contracting, authentication and KYC

Overall, a majority of mainstream retail banks are willing to fully digitalise the contracting process, **by automating all manual processes related to the signature of contracts and by removing all physical papers.** At best, very few professionals will be dedicated to back up this process. As regards authentication and KYC processes, the objective of most providers is also to give consumers the opportunity to be identified only through digital channels. Many financial establishments are nonetheless still struggling to find the right combination of authentication techniques (passwords, static biometrics, dynamic biometrics, etc.) to ensure an adequate balance between security and convenience. The almost finalised Regulatory Technical Standards should have a noticeable impact on authentication processes. Specific EU rules, such as the eIDAS, which so far applies only to public administrations, are also perceived

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<sup>25</sup> Results of the Association for Financial Professionals (2015) survey can be found on the CGI website (<https://www.cgi.com/sites/default/files/brochures/2015-afp-transaction-banking-survey.pdf>).

<sup>26</sup> The related report can be downloaded from the EFMA website (<https://www.efma.com/study/detail/21891>).

as possible drivers of this digital transformation of authentication processes in banks. To conclude, most mainstream retail banks are investing in IT systems that will eventually result in significant cost cuts in the administrative processes of contracting and authentication for retail transactions.

As regards corporate finance, the information gathered during the consultation revealed that **authentication and KYC processes have become more and more burdensome for NFCs, and appear to significantly slow down the completion of transactions.** This view was confirmed by desk research. There are two main factors behind these greater constraints: on the one hand, as regulatory pressure has been intensifying on banks, corporate finance has become more demanding vis-à-vis KYC requirements for corporations. **And often, NFCs (especially SMEs) do not have the adequate resources to efficiently deal with these necessary items.** On the other hand, an opinion shared by a large number of corporations is that **standards among banks remain way too fragmented, KYC processes are often not streamlined and data are not sufficiently integrated across banks.**

The lack of common standards and KYC processes across banks chiefly results from **divergent interpretation of regulations by the respective compliance and legal teams.** Also, the common use of outsourced teams for compliance processing tasks sometimes makes communication between NFCs and their banks challenging. For large corporations that generally use the services of multiple banks for trade finance, cash management and foreign exchange, this prevalent fragmentation in KYC processes and standards can eventually be costly in terms of resources.

Almost all the stakeholders approached considered that **trade finance is the segment for which the need for improvement in terms of converging standards and KYC processes is the greatest.** Furthermore, contrary to most other products for corporate finance, trade finance is mostly offered through inefficient and time-consuming manual processes. The specificities of trade finance can explain the widespread inefficiencies observed in that type of service. As a letter of credit involves at least four stakeholders (two banks and two companies) that reside in two separate countries, the likelihood of having different standards, practices and even regulations is higher than for most other corporate finance products. Against that background, the establishment of fully digitalised processes that ensure a robust interoperability between all the stakeholders involved often proves to be a daunting task.

## 4.6 Recovery

The digitalisation of credit recovery processes in the case of missed repayments is expected to continue to be only partial. Most retail banks consider the combination of online and offline interactions to be the key to success in credit recovery. Specific trends, which are redefining costs and values in credit recovery, have been observed in recent years. First, **the prevention dimension is becoming a priority for a rising number of lenders.** By using data analytics and machine learning, based in general on past, structural financial data of consumers, many lenders are adopting a proactive approach and trying to anticipate potential missed payments before they materialise, typically a few months in advance.

In a number of member states, supervisors and regulators are gradually promoting these practices (via the enactment of micro-prudential rules)<sup>27</sup> in order to limit critical situations for consumers, the amount of non-performing loans (NPLs) on the balance sheets of banks and the overloading of courts. Once significant risks of non-payments have been detected, banks typically use offline channels to interact with consumers in order to find solutions, such as the reorganisation of the repayments (e.g. with a longer time span). This approach contributes to alleviating the risk of long and expensive judicial procedures.

No case studies were found on similar practices for overdrafts or for NFC credit. Until recently, the policy agenda related to the latter has placed the focus on the difficulty of SMEs in finding adequate funding rather than on the risk of missed repayments once an SME loan was contracted. Nevertheless, against the background of surging NPLs in several EU economies, EU supervisors have been trying very recently to promote the use of early warning schemes for handling SMEs' NPLs.

For instance, the draft guidance to banks on NPLs published by the ECB in March 2017 contains numerous references to the development of early warning indicators to anticipate the risk of arrears.<sup>28</sup> Annex 4 of the guidance provides a detailed list of indicators that can be used to detect the risk of future missed payments, especially for companies: a return below 10% of commercial paper, a negative trend in internal rating, unpaid cheques, a significant change in liquidity profile, the number of months with an overdraft exceeded, a decrease of turnover, a reduction in credit lines related to trade receivables, etc. For many corporate banks, the systematic implementation of these practices would require a marked change in the approach towards arrears and significant investment in tools such as data analytics.

Second, once the missed payments actually occur and the delays are significant, banks have the possibility either to manage the NPL internally or to outsource it to dedicated NPL servicing companies. Several stakeholders interviewed highlighted that **credit recovery could be the product stage with the largest potential for outsourcing, in particular for more critical cases**. Given the emergence of new specialised companies dedicated to NPLs, notably those within the fintech ecosystem that heavily rely on data analytics, new risks have appeared in relation to outsourcing practices. Typically, the EU rules for supervising the outsourcing practices of banks are based on the guidelines of the Committee of European Banking Supervisors (CEBS) published in December 2006, namely before the acceleration in the digitalisation of the banking sector and the appearance of new entrants.<sup>29</sup> In September 2017,

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<sup>27</sup> The French government adopted in November 2014 some recommendations requiring financial institutions to implement early warning systems in order to detect potential over-indebtedness during the repayment phase. See Arrêté du 5 novembre 2014 portant homologation de la charte d'inclusion bancaire et de prévention du surendettement [Approving the charter of inclusion banking and prevention of over-indebtedness], JORF du 13 novembre 2014 ([www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029750217&categorieLien=id](http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029750217&categorieLien=id)).

<sup>28</sup> See ECB (2017a). The publication can be found here: [https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance\\_on\\_npl.en.pdf](https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance_on_npl.en.pdf). In addition, the ECB conducted a consultation on NPL guidance for banks until 8 December.

<sup>29</sup> The CEBS guidelines on outsourcing can be found on the website of the European Banking Authority (<https://www.eba.europa.eu/regulation-and-policy/internal-governance/guidelines-on-outsourcing>).

in its guidelines on internal governance under Directive 2013/36/EU, the European Banking Authority reemphasised the general principles for the outsourcing policy of banks and mentioned that the CEBS guidelines are due to be revised.<sup>30</sup>

## 4.7 Policy recommendations

The gradual digital transformation of corporate finance and retail finance brings both opportunities and risks. Regulators should enhance these opportunities, while addressing the risks by promoting specific practices for both banks and regulatory/supervisory bodies. The generalisation of such practices should ensure a balanced digital transformation and even improve the overall quality of the banking system.

### 4.7.1 *Assessing the indirect impact of new rules on clients*

**Legislators should further assess the indirect impact of new rules on consumers and companies.** In particular, the design, implementation and supervision of KYC rules should further take into account the extent to which new requirements resulting from these rules can impede the efficiency of transaction systems. Specific attention should be given to the **indirect effects on SMEs**, which often do not have sufficient resources to efficiently handle these requirements.

### 4.7.2 *Limiting overlaps and enhancing synergies between rules*

In order to alleviate the possible, indirect negative effects of new rules on customers, further efforts should be made by regulators **to limit overlaps and enhance synergies between the numerous rules enacted in recent years.**

### 4.7.3 *Encouraging converging practices across banks in KYC requirements*

Also, facilitating the use of banking services by customers calls for regulators and supervisors to **encourage converging practices across banks in terms of KYC requirements.** This notably implies further focus on the possible differentiation with respect to the interpretation of the new rules. One approach consists of facilitating and encouraging cooperation between banks on these issues. For instance, regulators could clear the way for the creation and management of centralised, due diligence KYC registries. These systems could be populated by the banks with their own KYC data, and follow standardised processes aimed at ensuring that the documentation provided is consistent from one institution to the next and across multiple jurisdictions.<sup>31</sup> Obviously, specific data protection rules should apply in order first to maintain sufficient protection of the data stored, and second to make sure that this data is only used for KYC purposes.

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<sup>30</sup> These elements can be found on p. 34 of European Banking Authority (2017) (<https://www.eba.europa.eu/documents/10180/1972987/Final+Guidelines+on+Internal+Governance+%28EBA-GL-2017-11%29.pdf>).

<sup>31</sup> Such initiatives already exist, as mentioned in Deftereos (2016) (<http://xlcatlin.com/fast-fast-forward/articles/banks-the-benefits-and-risks-of-outsourcing>).

#### *4.7.4 Encouraging the development of advisory tools*

As banks have been collecting large amounts of consumer data for years and as digital technologies used to exploit these data are quickly strengthening, regulators should take this opportunity to **encourage the development of advisory tools such as dashboards**. The generalisation of pertinent financial dashboards could somewhat contribute to reinforcing the ability of consumers to take sound financial decisions. The development of exploitable financial data for companies is more complex and should remain at the sole and absolute discretion of providers.

#### *4.7.5 Generalising early warning schemes*

Finally, provided that data protection rules are respected, regulators and supervisors should encourage **the generalisation of early warning schemes for both consumers and corporations**. As recently emphasised by the ECB, the development of early warning indicators on a large scale could help in reducing the volume of loans in arrears and this approach should benefit all parties involved.

## Concluding remarks

Cost and value in banks: A model fit for the digital era?

In recent years, there has been much hype that banks will soon experience a dramatic loss in market shares. Too slow and too old-fashioned for the ever-changing digital era, they could even disappear, overwhelmed by fintech start-ups and tech giants. But the consultation and desk research conducted for this study reveal a rather more nuanced picture.

Retail and corporate banks do have to cope with **legacy issues** that impede their efficiency and reactivity. Most banks still use **multiple and contradictory norms within the group for accountancy, product hierarchies, taxonomies**, etc. Persistently out-of-date processes and IT systems are costly and still employ a significant share of the staff. And banks have often been accused of not being able to promote internally the ‘creative culture’ inherent to the digital era.

Yet recently, EU banks’ IT spending for investment purposes rather than maintenance has increased markedly. Championed by banks, the hybrid business model combining offline and online channels is definitely complex and costly to manage. So far, however, no fully digitalised competitor has been able to seize significant market shares. In the EU, the vast majority of financial services continue to be provided by banks, even in segments where alternative players are most active: unsecured consumer loans, small SME loans, corporate FX and payment services.

There is often some sort of intuition that the ever-rising regulatory burden hinders banks’ competitiveness: CRDs, BRRD, PSD1, PSD2, MCD, CCD, PAD, MiFID, AMLD 1, 2, 3 & 4, NIS, etc.<sup>32</sup> The list of acronyms and initialisms seems to be infinite. However, the research carried out for this study has again shown a **more toned picture**.

New rules often force banks to be imaginative and innovative, especially through the use of technology. In that sense, new rules can contribute to the digitalisation of the banking sector. Also, the need to comply with those rules proves to be a formidable barrier to entering the banking market. Potential competitors could bypass it by offering loan-type products as non-banks. But a relevant business model still needs to be invented. And this will most likely continue to be very challenging. Thus, paradoxically, high regulatory pressure might somehow protect banks from external competition.

Overall, the compliance costs of banks have increased and are generally expected to continue doing so. At the same time, their level might vary across banks, depending on the bank’s size and strategy. Costs should be lower for firms that compete on the quality of their products and processes, as their business strategy implies that they comply more easily. Scale might also matter. Smaller banks might have to face higher costs than larger banks do in pursuit of the same performance standards. Often, those smaller banks have greater difficulties in fully automating compliance processes, thereby resulting in higher recurring costs.

External factors also affect the pace of banks’ digitalisation. The more advanced digitalisation in consumer finance than in corporate finance can be explained by several drivers, such as

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<sup>32</sup> BRRD refers to the Bank Recovery and Resolution Directive, MCD to the Mortgage Credit Directive, CCD to the Consumer Credit Directive, and PAD to the Payment Accounts Directive.

different paths in corresponding lending margins and the degree to which customers have digitalised their own processes. For consumer finance, it appears that the rapid digitalisation of consumers has for the most part been the cause of the digitalisation of financial providers. In that sense, **consumers have taken the lead**.

Full digitalisation of NFCs that enables full interoperability with banks is more complex and can take multiple forms. This is particularly true for cash management. NFCs are increasingly considering the digitalisation of corporate finance as a powerful driver of their own digital transformation. To a certain extent, **companies and banks exert mutual influence with respect to digitalisation**.

The level of digitalisation achieved so far by banks also differs across product stages (marketing, distribution, advice, scoring, contracting/authentication/KYC and recovery) and product segments. Given their lower costs and higher accuracy and speed, fully online marketing campaigns are more and more popular in both SME and consumer segments. The use of predictive analytics for the purpose of better segmentation is also gaining traction in those segments.

The benefits of robo-advisers remain ambiguous; these are mainly used for specific products of retail finance, within a hybrid model combining automated and human processes. Financial advice through a digital dashboard is becoming a competitive advantage for consumer finance. In corporate finance, recent surveys often show a high level of discontent among NFCs with banking advice services such as forecasting.

Machine learning is greatly expected to affect creditworthiness assessment in the near future. Data privacy rules will nonetheless limit the ability of consumer finance to fully exploit alternative personal data.

Most retail banks are willing to fully automate the contracting processes. Wholly online KYC, signatures and so forth are expected to soon become a norm for consumers. Still, the picture is different for NFCs. Authentication and KYC processes have become more burdensome for NFCs and appear to slow down the completion of transactions. These difficulties result from **higher regulatory pressure, divergent interpretation of the law by banks and poor cooperation across banks**. Often, both SMEs and the large NFCs involved with many banks do not have the adequate resources to deal with these necessary items.

Finally, lenders to consumers increasingly develop algorithms aimed at anticipating potential missed payments before they materialise. Recently, European regulators have been promoting a similar approach for SME lending. For NPLs, credit recovery could be the product stage with the largest potential for outsourcing, especially for critical cases.

Against that background, regulators can follow two broad approaches. On the one hand, they can contribute to **shaping a balanced digital transformation of banks, by promoting digitalisation while alleviating related risks**. On the other hand, they can build on banks' digital transformation **in order to raise consumers' welfare and NFCs' competitiveness**. Obviously, some regulatory initiatives can result from some combination of the two approaches. Results obtained within the first approach can also indirectly affect the results of the second approach.

Policy-makers and implementing authorities should better anticipate **the cost of IT changes needed for implementing rules**. This could be done systematically as part of any impact assessment conducted.

As the CRD and CRR are due to be revised, this could be an opportunity to reconsider the role of expenses on digital elements in the calculation of capital ratios. **The exclusion of software expenses for certain priority areas could be a powerful tool for national supervisors to orientate digital expenses where these are most needed**. Priority areas could be defined at the discretion of national supervisors and could be justified, for example, by better proportionality (small banks versus large counterparts), better SME access to finance (with a focus on corporate finance rather than retail) and the need for faster transaction processes for NFCs (digitalising KYC and authentication processes for NFCs, notably in trade finance). Should regulators take this direction, the definition of the right parameters to distinguish the types of software expenses would require close cooperation between accounting standard setters and supervisory authorities in developing the final set of rules and in implementing it.

Tax incentives seem a priori to be rather attractive, but the main limitation of this option concerns the definition of the metrics used to estimate 'productive' spending. Finally, labour and education policies are key to ensuring a sufficient supply of IT skills.

Policy-makers should **better assess the indirect impact of any new banking rules on consumers and NFCs**. In particular, the design, implementation and supervision of KYC rules should further take into account the extent to which new requirements resulting from these rules can impede the efficiency of transaction systems. Specific attention should be given to the indirect effects on SMEs with few resources. To alleviate the possible, indirect negative effects of new rules on clients, additional efforts should be made by regulators to **limit overlaps and enhance synergies between those rules**.

Also, facilitating the use of banking services by NFCs calls for regulators and supervisors to **encourage converging practices across banks in terms of KYC requirements**. This notably implies additional focus on possible differentiation with respect to the interpretation of the new rules. One approach consists of facilitating and encouraging cooperation between banks on these issues, for instance by enhancing the emergence of centralised, due diligence KYC registries.

In the big data era, regulators should encourage the development of advisory tools such as financial dashboards for consumers. Finally, provided that data protection rules are respected, regulators and supervisors should encourage the **generalisation of early warning schemes for both consumers and companies**, for the purpose of limiting the volume of loans in arrears.

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## Annex 1. Organisations consulted

Table A1.1 List of organisations

| <b>Questionnaire for financial organisations and consulting firms</b>                                  |                                      |                                   |
|--|--------------------------------------|-----------------------------------|
| <b>Financial providers</b>   | <b>Consulting firms</b>              | <b>Non-financial corporations</b> |
| BNP Paribas<br>Unicredit<br>Intesa San Paolo<br>BBVA<br>Nordea Bank<br>Royal Bank of Scotland<br>Fidor | Deloitte<br>PwC<br>Initio Consulting | Microsoft                         |
| <b>Questionnaire for treasurers in non-financial corporations</b>                                      |                                      |                                   |
| Faurecia<br>FN Herstal<br>General Electric<br>Zoetis<br>BAE Systems<br>LyondellBasell Industries       |                                      |                                   |

## Annex 2. Concepts of costs

Like in other sectors, the cost systems of banks need to define cost objects, cost pools, cost drivers and the cost allocation base.

The cost object is the item for which the banks need to separately estimate a cost. For banks, the information collected via the consultation and the desk research reveals that cost objects can concern the following elements:

- a department,
- a project,
- one customer or a group of customers (based on specific characteristics, such as high-risk customers versus low-risk customers, high income versus low income, old versus young, customers of one geographical area versus another one, etc.),
- a geographical area,
- a branch or a group of branches,
- a product line, and
- a service line.

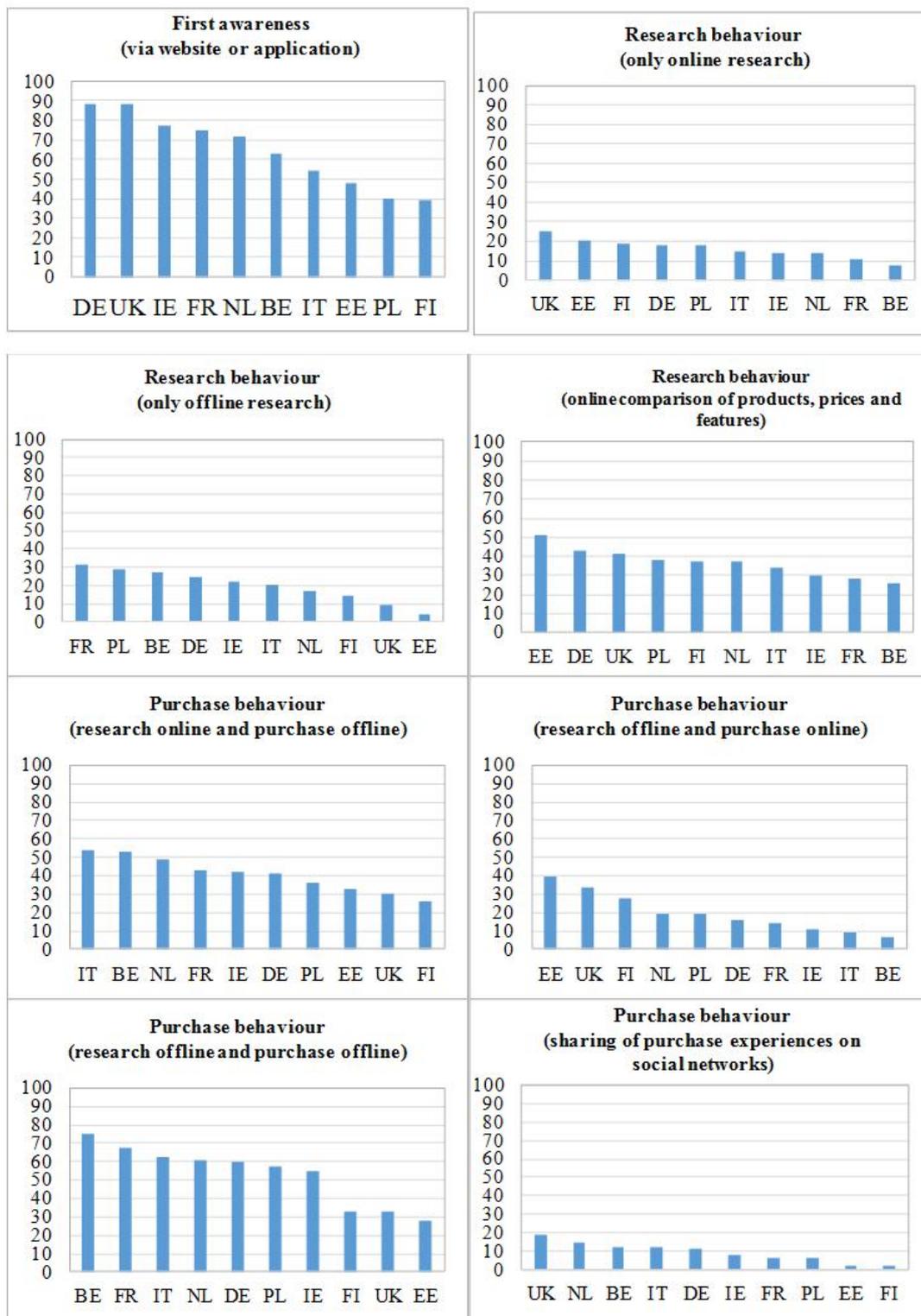
Cost pool concerns the account heading in which costs are accumulated for further assignment to cost objects. For banks, this can cover the loan collection cost, premises rent, etc. The selection of these pools depends on the cost allocation base used.

Cost drivers are the metrics used to explain how costs are incurred. For example, for banks, the cost drivers can be the number of payments processed for the indirect costs of maintenance of the IT payment system, the number of visits of customers for the indirect costs of the functioning of a branch, the number of advertisements/sales personnel for marketing, the number of customer calls/number of staff in departments for customer service or loan collection services, etc.

Finally, the cost allocation base is the variable that is used for allocating/assigning costs in different cost pools to different cost objects. It is generally agreed that an efficient cost allocation base implies an appropriate cost driver for a particular cost pool. Remarkably, a significant number of the organisations consulted, including banks, confirm that while direct costs are often well allocated, the cost allocation base adopted by banks is often inefficient for allocating the indirect cost pool to the right cost object, and would need significant updates.

### Annex 3. Distribution channels for personal loans

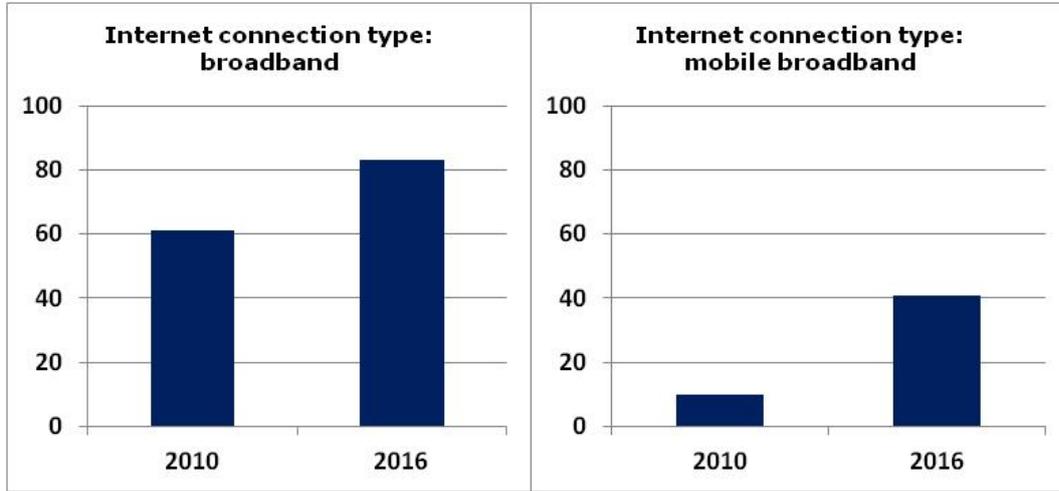
Figure A3. Degree of digitalisation of distribution channels for personal loans, 2015 (%)



Sources: Google Consumer Barometer Survey (2015), European Commission study (2016).

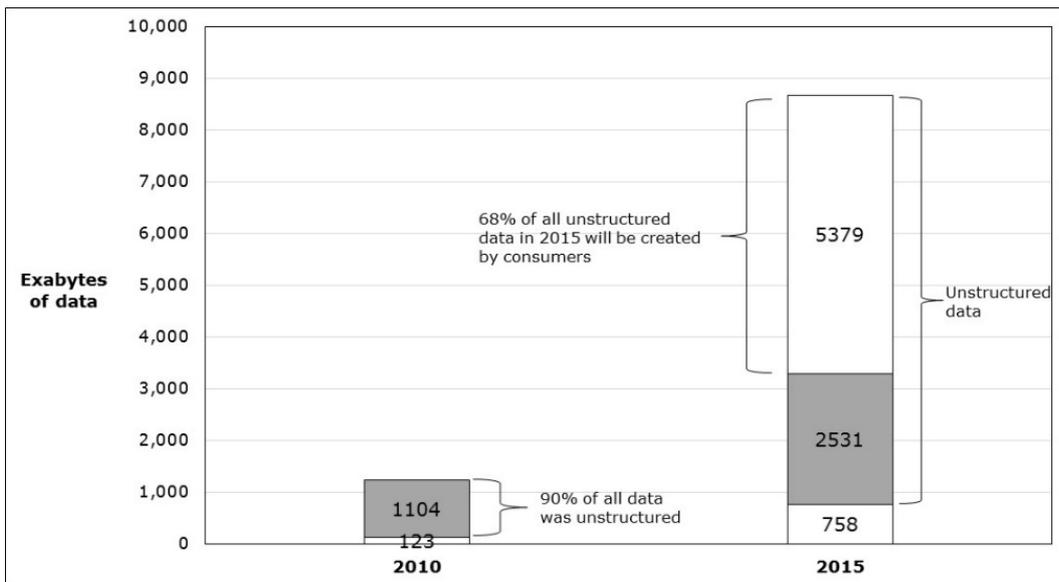
## Annex 4. Digitalisation of consumers

Figure A4.1 Share of EU28 households with Internet access (in %)



Source: Eurostat.

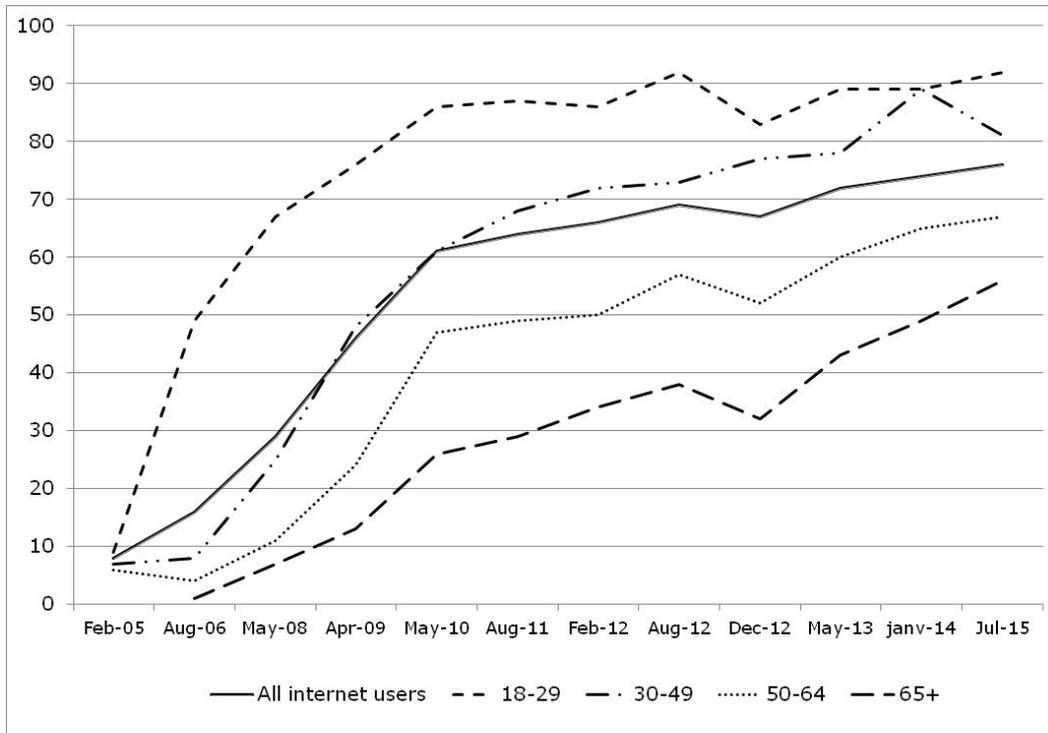
Figure A4.2 Volume of digital data stored



Notes: 1 exabyte (EB) = 1 million terabytes (TB). For context, Facebook ingests 500 Yottabytes of data each day.

Source: International Data Corporation, BI Intelligence Estimates.

Figure A4.3 Social networking use, 2005–15 (% of adults using the Internet)



Source: Pew Research Centre.

## Annex 5. Questionnaire for financial organisations and consulting firms

### 1. Evolution in the costs and values within retail banks

An organisation covering retail bank activities can be involved in payments for households, savings/current accounts for households and consumer/housing loans, as well as in treasury and cash management for SMEs.

For each of the below questions, provide your best estimate from 1 to 5 based on the following scale: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a high extent; or (5) to the fullest extent. Select DK/NO if you don't know or you have no opinion. For each of the below questions, please justify your answers.

#### Q1. Role of retail banking

|   |   |   |   |   |   |       |
|---|---|---|---|---|---|-------|
| Has the role of the retail banking sector in the economy and society in general changed significantly in the last decade? | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:   |   |   |   |   |   |       |

#### Q2. What are the indispensable activities of an organisation providing retail banking services? Which activities cannot be easily outsourced?

|              |   |   |   |   |   |       |             |   |   |   |   |   |       |
|--------------|---|---|---|---|---|-------|-------------|---|---|---|---|---|-------|
| Marketing    | 1 | 2 | 3 | 4 | 5 | DK/NO | Pricing     | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Distribution | 1 | 2 | 3 | 4 | 5 | DK/NO | Contracting | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Advice       | 1 | 2 | 3 | 4 | 5 | DK/NO | Recovery    | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:    |   |   |   |   |   |       |             |   |   |   |   |   |       |

#### Q3. Ability to report financial performance of the business lines

|  |   |   |   |   |   |       |
|--|---|---|---|---|---|-------|
| Can the success of specific business lines within retail banking be easily reported?   | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Can consistent cost to income ratios be developed across the different business lines? | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:  |   |   |   |   |   |       |

The cost to income ratio is the ratio between operating costs (administrative and fixed costs, such as salaries and property expenses, but not bad debts that have been written off) and operating income.

## 2. Main drivers behind costs and values

Q4. What are the main drivers of operating expenses for retail banking? *In this respect, please rank the following drivers from the most significant to the least significant. [Please feel free to indicate other factors that are significant.]*

| Factors  | Rank |
|--|------|
| A. Employee compensation and benefits                                  |      |
| B. Fixed assets  |      |
| C. Compliance  |      |
| D. Funding   |      |
| E. Information technology  |      |
| F. Legal fees  |      |
| G. Consulting  |      |
| H. Depreciation of financial assets (related to defaulted loans, etc.) |      |
| Comments   |      |

Q5. Impact of interbank market's interest rates

|   |   |   |   |   |   |       |
|---|---|---|---|---|---|-------|
| A. Are changes in interest rates on the interbank market a significant disruptor in the total costs and values of retail banking?                         | 1 | 2 | 3 | 4 | 5 | DK/NO |
| B. Do changes in interest rates on the interbank market usually result in a significant reorganisation of the different business lines of retail banking? | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:   |   |   |   |   |   |       |

## 3. Impact of digitalisation on costs and values so far

Q6. So far, how and to which extent has digitalisation contributed to reduce operational cost?

|  |   |   |   |   |   |       |
|--|---|---|---|---|---|-------|
| A. Overall contribution so far   | 1 | 2 | 3 | 4 | 5 | DK/NO |
| B. Has the growing reliance on online distribution channels contributed to a significant cut in operational costs? | 1 | 2 | 3 | 4 | 5 | DK/NO |
| C. Has digitalisation overall contributed to a significant decrease in the cost of compliance?                     | 1 | 2 | 3 | 4 | 5 | DK/NO |
| D. Has the growing reliance on cloud technologies contributed to reduce IT costs?                                  | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:  |   |   |   |   |   |       |

Q7. Overall, in terms of Fintech strategy, is it more beneficial for retail banks to develop Fintech capabilities internally rather than to outsource them?

- Yes
- No

Comments:

Q8. General comments

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## Annex 6. Questionnaire for treasurers of non-financial corporations

### 1. Satisfaction with banks' services

The financial organisations analysed in the present study are involved in the distribution of specific services to large corporations (cash management, liquidity, pooling/netting, payments, FX, credit, trade finance and depository services).

For each of the below questions, provide your best estimate from 1 to 5 based on the following scale: (1) not at all; (2) to a limited extent; (3) to some extent; (4) to a high extent; or (5) to the fullest extent. Select DK/NO if you don't know or you have no opinion. For each of the below questions, please justify your answers.

Q1. Overall satisfaction with services provided by banks

|           |   |   |   |   |   |       |
|-----------|---|---|---|---|---|-------|
|           | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments: |   |   |   |   |   |       |

Q2. Are you satisfied with the below services provided by banks?

|                 |   |   |   |   |   |       |   |   |   |   |   |   |       |
|-----------------|---|---|---|---|---|-------|---|---|---|---|---|---|-------|
| Cash management | 1 | 2 | 3 | 4 | 5 | DK/NO | Trade finance (letters of credit, collection) | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Pooling/netting | 1 | 2 | 3 | 4 | 5 | DK/NO | Depository services                           | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Liquidity       | 1 | 2 | 3 | 4 | 5 | DK/NO | FX (including hedging)                        | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Payments        | 1 | 2 | 3 | 4 | 5 | DK/NO | Credit  | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:       |   |   |   |   |   |       |   |   |   |   |   |   |       |

Q3. What are the main factors you consider before establishing a relationship with a bank? *In this respect, please rank the following factors from the most significant to the least significant. [Please feel free to indicate other factors that are significant.]*

| Factors  | Rank |
|--|------|
| I. Financial stability of the bank                                 |      |
| J. Ability of the bank to support the strategy of the organisation |      |
| K. Technology platform and capabilities                            |      |
| L. Online and mobile solutions                                     |      |
| M. Selection of the best in class providers for each product       |      |
| N. Global footprint of the bank                                    |      |
| O. Selection of the lowest costs                                   |      |
| P. Historical relationship between the organisation and the bank   |      |
| Comments   |      |

## 2. Digitalisation of services

Q4. Are you satisfied with the online and mobile solutions developed by banks for the below services?

|                        |   |   |   |   |   |       |   |   |   |   |   |   |       |
|------------------------|---|---|---|---|---|-------|---|---|---|---|---|---|-------|
| Cash management        | 1 | 2 | 3 | 4 | 5 | DK/NO | Trade finance (letters of credit, collection) | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Payments               | 1 | 2 | 3 | 4 | 5 | DK/NO | Depository services                           | 1 | 2 | 3 | 4 | 5 | DK/NO |
| FX (including hedging) | 1 | 2 | 3 | 4 | 5 | DK/NO | Pooling/netting                               | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Credit                 | 1 | 2 | 3 | 4 | 5 | DK/NO | Liquidity                                     | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:              |   |   |   |   |   |       |   |   |   |   |   |   |       |

Q5. Are these non-bank providers and new technologies reliable?

|   |   |   |   |   |   |       |                        |   |   |   |   |   |       |
|---|---|---|---|---|---|-------|------------------------|---|---|---|---|---|-------|
| Mobile wallet or similar providers      | 1 | 2 | 3 | 4 | 5 | DK/NO | NFC Enabled Mobile Pay | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Alternative (non-bank) payment networks | 1 | 2 | 3 | 4 | 5 | DK/NO | Blockchain             | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Non-bank FX providers                   | 1 | 2 | 3 | 4 | 5 | DK/NO | Cryptocurrencies       | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:                               |   |   |   |   |   |       |                        |   |   |   |   |   |       |

## 3. Areas of improvement

Q6. In which areas should banks improve?

|  |   |   |   |   |   |       |   |   |   |   |   |   |       |
|--|---|---|---|---|---|-------|---|---|---|---|---|---|-------|
| Harmonisation of standards between banks | 1 | 2 | 3 | 4 | 5 | DK/NO | Payment (remittance) tracking and reconciliation                  | 1 | 2 | 3 | 4 | 5 | DK/NO |
| More timely information                  | 1 | 2 | 3 | 4 | 5 | DK/NO | Single entry of corporate data and preferences (for all services) | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Streamlined KYC process                  | 1 | 2 | 3 | 4 | 5 | DK/NO | Proactive guidance and advice                                     | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Integration of data from many banks      | 1 | 2 | 3 | 4 | 5 | DK/NO | Improved ability to compare alternative services and prices       | 1 | 2 | 3 | 4 | 5 | DK/NO |
| Comments:                                |   |   |   |   |   |       |   |   |   |   |   |   |       |

Q7. General comments

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