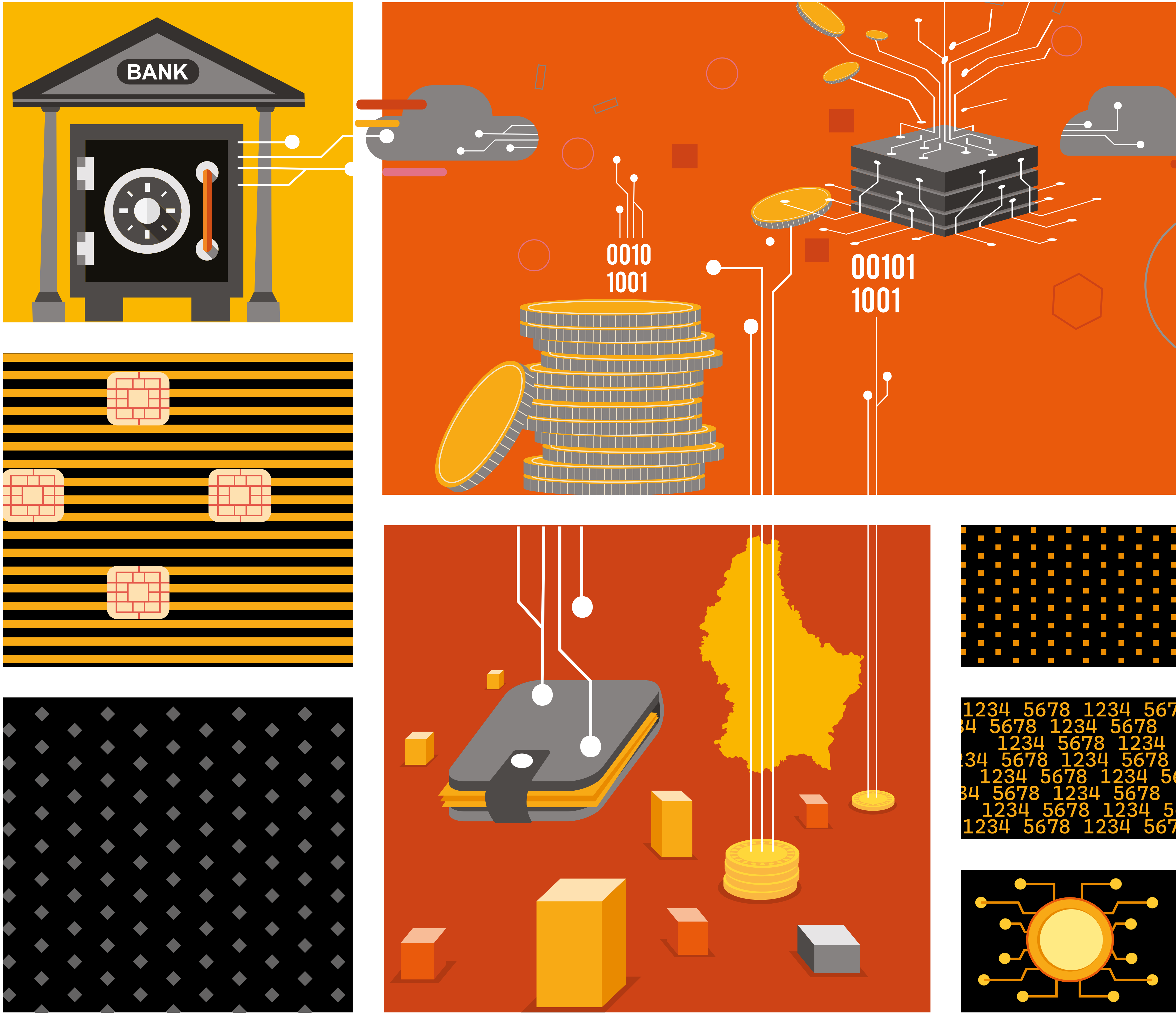
Banking Trends & Figures 2022

The Payment Revolution – An opportunity to enhance Banks’ Digital Transformation



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Foreword

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The banking sector has undoubtedly established itself as a veritable paragon of resilience and adaptability over time, striving through various disruptions such as regulatory changes, new players, and technological innovations to maintain its relevance to the global financial system. Among these radical changes being witnessed is the digitalisation wave that is sweeping across the European banking landscape – particularly within payments. This payments revolution, which began over three decades ago, has taken on renewed vigour in recent years, fostered by technological changes and shifts in market dynamics.

In this new phase, factors such as the demand for instant payments, the entry of fintech and big tech players, and the AI-enabled integration of financial service offerings within traditionally non-financial platforms have accelerated the digitalisation of payments and effectively limited the use of physical cash. This is why we have decided to look at the impacts of the payments revolution on the financial services industry and how banks are facing up to the market changes in this emerging landscape. This is particularly important within the context of Luxembourg, given the country's significant role in financial services, its transition towards cloud banking and sustainability – with the high level of transferable skills and expertise in these segments being applicable to the payments realm, as well as its positioning as home to some of the leading technology players driving the evolution of payments methods.

The first part of this year's report takes a deep dive into the payments revolution and the opportunity it offers to banks to accelerate or enhance their adaptation. To this end, we have identified some factors that are pushing the rapid innovation of the payments sector:

Changes in consumer payment practices are urging a demand surge for more seamless and convenient payments processing. This, together with the advent and the growing influence of fintech and big tech firms and a flurry of regulatory initiatives, is increasingly fostering greater innovation within B2C and B2B payments. At the same time, emerging players are intensifying competitive pressures for banks, who must navigate a tighter regulatory scope, the operational limitations of legacy infrastructure and processes, and changing demand-supply dynamics that are challenging their customer retention potential.

Nevertheless, the key role of banks within the payments landscape makes it imperative for them to ramp up the digital transformation of their payments business, particularly in the B2B segment. To do this, they should consider leveraging corporate relationships to improve their range of value-add product and service offerings. This would differentiate them from their peers and also help them create and build on strategic partnerships with emerging tech players so as to facilitate their innovation transition. Further, given their range of expertise, extensive network, and influence, banks are favourably positioned to anticipate future changes in the payments landscape and champion the development of globally acceptable or tailor-made solutions. We truly believe that the implementation of these measures can secure banks' position as leaders within the payments sphere.

As with previous issues, the second part of this report provides an analysis of the financial statements of the largest country segments of banks in Luxembourg. This review aims to shed more light on the dynamics within the different country segments, as well as their relative developments relative to the overall Luxembourg market. To ensure continuity, we have maintained the composition of the six main country segments: UK/North American, Chinese, French, Swiss, German and Luxembourg banks, which constitute our 'home' segment. For each of these segments, we highlight any changes and developments from the previous year and discuss observed trends.

I wish you a pleasant reading, new insights and fruitful inspirations!

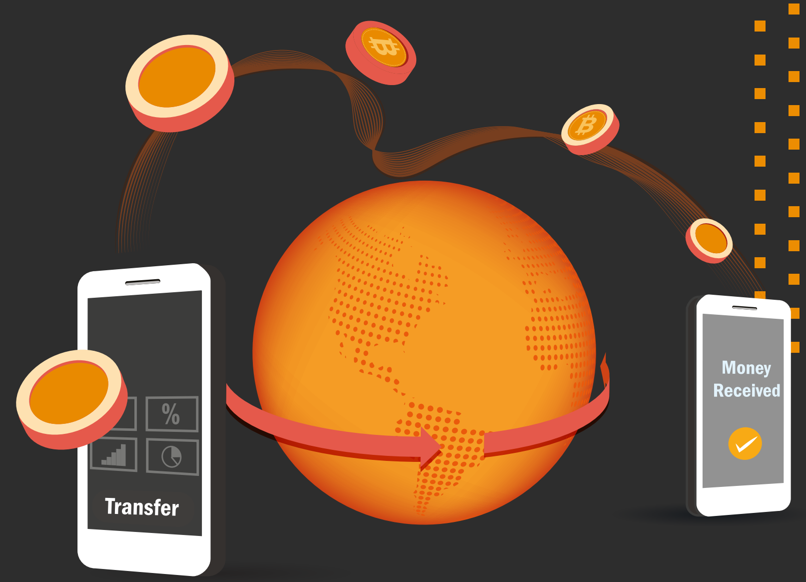
Executive summary

The Luxembourg banking sector continues to operate a formidable and dynamic banking ecosystem, marked by consistent growth in assets and evolving business models largely focused on client proximity. Even though the year 2021 saw a slight decrease in the total number of authorised banks, overall banking assets grew by 11.9% to hit EUR 951.7bn from EUR 850.1bn the previous year - a testament to the high performance of the country's banks and private banking segment especially. The sector is also undergoing a structural reshaping, with the ongoing disruption brought about by rapid technological innovation intensifying the need for new business models, operations and processes. Of all the sub-sectors within this sector, the payment sector perhaps stands as the archetype of how technological innovation can reshape an industry's approach and create an obligation to change.

As a sector that has historically proven to be resilient amid market disruptions and various evolutions, the payment revolution has opened up new and uncharted territory for banking. The entrance of fintech and big tech competitors profiting from quicker adaptation to new technologies and less stringent regulation, the advent of new business models requiring long internal and structural overhauls, and a slew of regulations meant to effectively balance this new terrain, are but a few of the radical changes that banks must navigate in their attempts to reinvent and expand their value-add.

As a financial centre with immense global focus, Luxembourg has not been exempt from the impacts of this payment revolution. The country has established itself as a major European hub for payments innovation, with enabling factors such as a strong national digitalisation drive, cross-border payment expertise, effective regulation and the presence of required infrastructure attracting many multinational payment service providers.

In this report, we outline three main shifts that are underpinning this new payments landscape, instigating the structural growth and transformation of banks and pushing the boundaries of digitalisation towards the strengthening of their value proposition:



DEMAND FOR INSTANT PAYMENTS DISRUPTS THE ECOSYSTEM AND INFRASTRUCTURE

The disruption of the payments ecosystem is mostly fuelled by digital innovation in the domains of infrastructure and transaction services, with a demand and supply side focus on instant payments underpinning changes in the first domain. The European SCT Scheme and TARGET Instant Payments Settlement are some of the initiatives prompting enhanced access to fast and convenient digital B2C and B2B payment channels. The rise of alternative payment infrastructure has also led to the exploration of decentralised finance in developing new digital financial products which could disrupt traditional payment processes. In the second domain of transaction services, we are seeing the rise of aggregated platforms and fast payment solutions aimed at improving the customer experience, as well as functionalities for customer data accumulation and retrieval for use with other application services.

BIG TECH'S ENTRY PRESENTS A NEW AND COMPLEX LAYER OF COMPETITION WITHIN THE PAYMENTS ECOSYSTEM

The high volume nature of payments renders it highly compatible with disruptive technology, which makes it unsurprising that the shift towards innovation being observed in this segment is being driven more by fintech and big tech players than banks. These emerging technologically-native players are increasingly utilising open banking infrastructure and strategically leveraging M&A and other forms of partnerships to appeal to consumers and expand their market share. Particularly, they are also championing the integration of financial tools within non-financial solutions through embedded finance, which is increasingly being considered as a viable means of fostering greater and further B2B payment innovation.

INNOVATION OF B2B PAYMENTS REPRESENTS THE NEW FRONTIER OF PAYMENTS

Historically, the B2C segment has been the focus of the digital transformation of payments, catalysed by a large scale shift towards e-commerce and surging consumer demand for seamless payment methods. The B2B sphere, however, has not seen a similar pace of innovation advancements due to the characteristically high volume and frequency of payments in this segment, and paper cheques still account for over 50% of B2B transaction value. Nevertheless, rising customer concerns about the quality and effectiveness of banks' B2B payments services are gradually steering attention towards this segment and are pushing banks and other PSPs to ramp up their B2B digitalisation efforts.

While the emerging payments sector presents a chance for banks' growth and a greater understanding of their role, efforts to brave this new frontier of payments have been all but smooth sailing. Key operational and functional barriers are restricting banks' ability to move at a rapid pace in their payments innovation journey and leading to further questioning of their erstwhile monopoly and ability to sustain their customer retention power. Our report identifies the following unique barriers to banks' payments transformation:

TIGHTER REGULATION HAS CREATED AN UNEVEN PLAYING FIELD FOR BANKS

As directives like the PSD2 foster inclusion via the regulation of third-party involvement and banks' role in allowing these firms access to client data through APIs, there exists a palpable dichotomy between the less stringent regulatory sphere of these new entrants and the tighter regulatory environment faced by traditional banks, stifling the latter's ability to innovate at the same pace as their less regulated competitors. If left unaddressed, this existing regulatory gap could widen further, leaving new entrants more prone to attracting and profiting from a larger market share and effectively challenging banks' position in this sphere.

BANKS FACE A PLETHORA OF AMBIGUITIES IN THE ATTEMPT TO UPGRADE LEGACY SYSTEMS

While the inherent benefits of innovation within payments appeal to banks, their efforts in this direction - specifically when it comes to the upgrading of their legacy systems - have been hampered by organisational complexities. It is therefore not surprising that as high as 43% of current banking infrastructure is still based on COBOL (Common Business Oriented Language) which was developed in 1959. However, the importance of banks strategically choosing to upgrade these systems in order to keep in step with BigTech/ Fintech cannot be more stressed.

CHANGES IN MARKET DYNAMICS POSE A RISK TO BANKS' CUSTOMER RETENTION POWER

The rapid rate of technological advancements is not only leading to an evolution of demand-supply dynamics but is redefining customers' expectations of their payment service providers. The growing need for instant, seamless payments as well as data sharing functionalities is set to persist, bolstered by growth in e-commerce and e-payments. These demands are increasingly drawing technologically native players who are fast attracting customers with their range of dynamic payments solutions, exerting further pressure on banks to accelerate their own payments digitalisation drive.

Moreover, Luxembourg banks are increasingly realising difficulties in cross-border servicing and the need to double down on client proximity through the setting up of local branches or digital relationship management systems. In this respect, the payments innovation presents a real challenge to banks as it creates further disruption in the way that banks, more so private banks, traditionally engage with customers.

Executive summary

Overall, the disruption of the payment ecosystem affords a greater opportunity for Banks, Fintechs, Big tech firms, and Regulators alike to re-assess their strategy for greater value yield. More importantly, it is allowing banks to transform or upgrade – in every sense of the word – in order to consolidate their position as market innovators and leaders. In this context, we have identified five strategic considerations that will advance banks' adaptation and set them up for greater value-creation in this new payments segment:

DIFFERENTIATE YOUR BUSINESS/ORGANISATION BY LEVERAGING OPPORTUNITIES WITHIN THE B2B LANDSCAPE

Given the relative nascency of innovative advancements within the B2B payments sphere, banks have an opportunity to reinvent themselves in alignment with core and unique strengths such as long-term business relationships with corporates. They could strategically focus on providing ancillary services, improving cross-border payments procedures, extending cyber-security expertise, and adopting a fee-based revenue model. By assessing what differentiation is needed to compete in this technologically-advanced environment and finding improved ways to present their existing services, banks are in a prime position to enhance their value-add potential exponentially, compared to their peers in the payments segment who are more limited in this context.

PARTNERSHIPS WITH FINTECH WILL LEAD TO A WIN-WIN SITUATION

In the emerging payments landscape, banks would have to foster greater engagement with fintech and big tech firms in order to upgrade their infrastructure and accelerate the materialisation of their innovation initiatives. Collaboration also holds potential for new product development and outsourcing benefits and could help to enhance operational efficiency without massive cost increases, which is especially true for smaller banks for whom the financial commitment of upgrading infrastructure could be too high. Although these partnerships will require both banks and tech players to adjust and adapt their risk approach and strategic objectives, increasing collaboration to further payments innovation holds benefits for both parties.

ANTICIPATE FURTHER CHANGES IN THE PAYMENTS LANDSCAPE

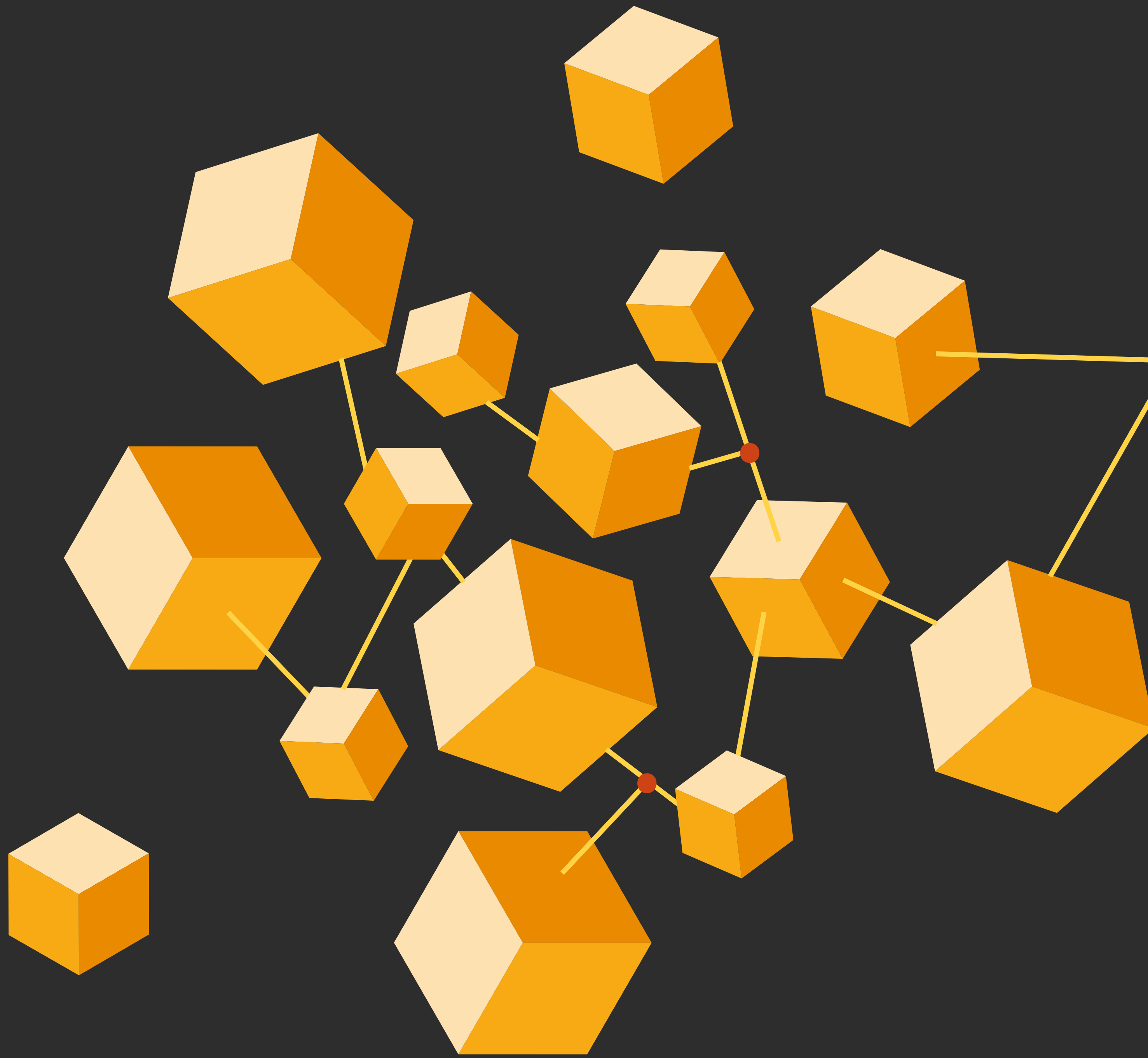
To consolidate their position as proactive players, banks need to anticipate potential disruptions within the payment landscape and be at the forefront of driving future innovations. With significant changes such as embedded finance, the 'uberisation' of payments, and open banking APIs being employable tools that will allow banks to increase their value-add and create additional offerings, it is clear that effectively surveying the current landscape and looking beyond the future will serve as a vital thriving mechanism.

DRIVE THE DEVELOPMENT OF GLOBAL PAYMENTS SOLUTIONS

As highly-regulated institutions with an extensive network and immense influence, banks are well-positioned to facilitate common or standardised agreements in order to reduce the ambiguity surrounding the implementation of existing payment systems and regulations like the PSD2. With the threat of further fragmentation within the payments system, the respectability and credibility of traditional banks remain valuable assets that could enable them to drive the development of safer and more inclusive payments solutions.

REGULATORS HAVE A ROLE TO PLAY IN LEVELLING THE PLAYING FIELD

To ensure homogeneity in the regulatory landscape and urge equal access to payment innovation opportunities for both banks and their fintech counterparts, regulators would have to double down on efforts to enforce industry-wide compliance by all players. They also need to ensure that regulation is dynamic enough to encourage further technological innovation and that consumers are safeguarded regardless of who has their data.



Introduction

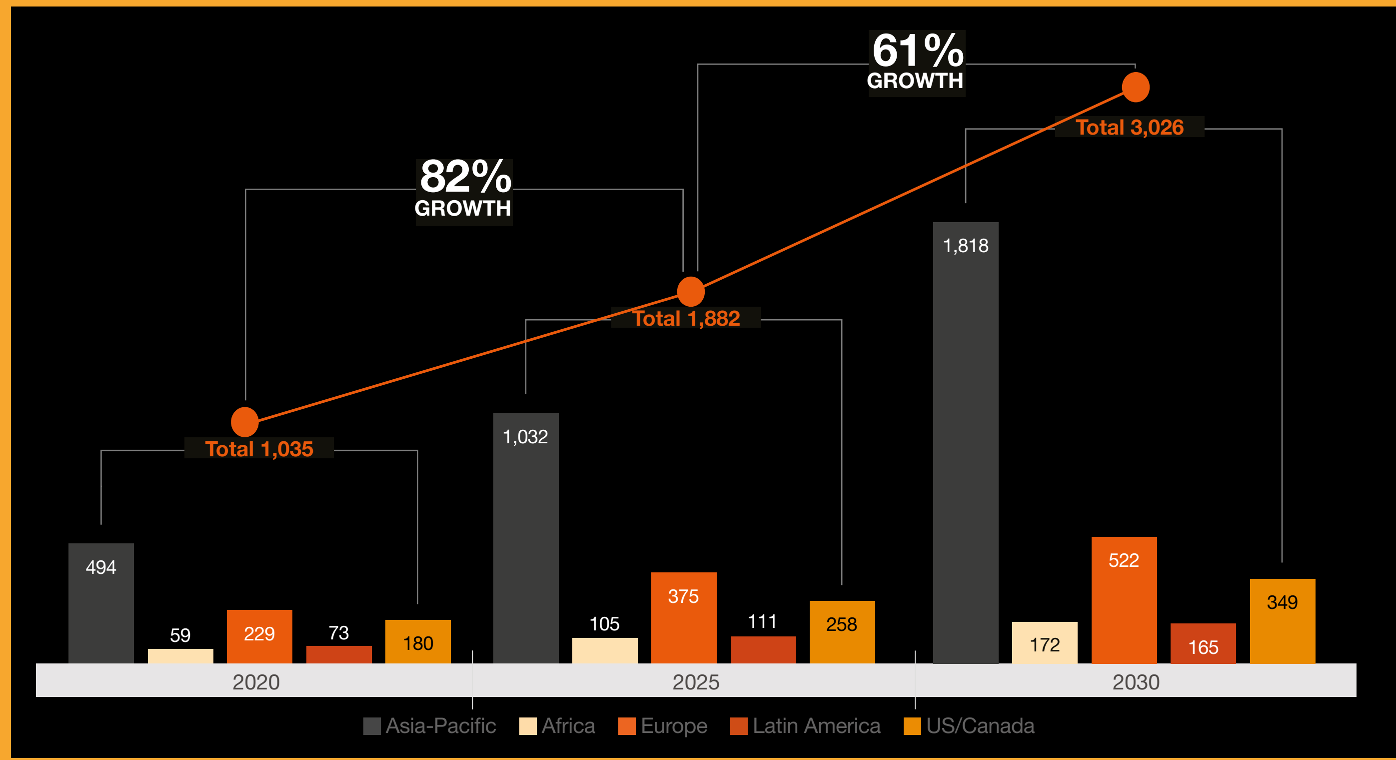
The European payments landscape is experiencing a watershed moment, marked by increased demand for instant payments and a shift toward electronic payments and mobile wallets. New, more innovative payment providers are challenging traditional incumbents for market share and are increasingly leveraging fintech and big tech to drive disruption and introduce new business models across B2C and B2B payments. Modern payment platforms are crowding out legacy infrastructure systems, while regulation is revving up to drive greater transformation and tighten consumer data protection. The sum of all these points to a clear realisation: **The payments revolution is in full swing and will not reverse anytime soon.**

Even though we can attest to a significant pandemic-induced acceleration of the widespread digitalisation of the global financial economy, the trend is not entirely novel. This is particularly the case for the payments sector, where the drastic transformation in consumer spending and payment practices has been underway for some time now. We are not only seeing the increased use of payments cards and e-wallets at the expense of cash and paper cheques, but also a reshaping of traditional payments infrastructure, characterised by the emergence of new business models, and further potential disruption with the imminent development of CBDCs.

The abovementioned trends have not been merely coincidental. A number of change catalysts – consumers' need for faster, easier, and more convenient payments; regulatory initiatives such as the PSD2; the rise of technology-based crypto-currencies; and the emergence of smart technologies – have reinforced the necessity for the rapid total transformation of payments systems for business continuity, especially as the ability to exchange or pay for services in physical cash increasingly approaches obsolescence. As of end-2020, total volume of global non-cash transactions stood at 1.0tn, and are forecasted to hit 1.9tn and 3.0tn by 2025 and 2030 respectively(Exhibit 1).[1] Asia has been leading this shift toward cashless payments, followed by Europe. In fact, ECB estimates showed that in the Euro area alone, the number of non-cash transactions increased by 35% from 82.2bn in 2017 to 111.2bn in 2021, with transaction value totaling EUR 196tn.[2]

1. PwC Strategy&
2. The total number and value of cashless payments are based on ECB Payment statistics but have been slightly adapted to exclude undefined sources designated as "Other payment services"

Exhibit 1 Global number of cashless transactions (total number of transactions in bn)



Source: PwC AWM Market Research Centre, PwC Strategy&

This evolution and revolution unfolding within the payments landscape have not been without impacts on banks. The emergence of fintech and big tech-enabled EMIs and PIs is ramping up competition and promoting innovation among players, challenging traditional means and methods of payments – particularly in the B2C segment. Not wanting to be left behind, banks are increasing efforts to expand their footprints within e-commerce and mobile payments. Nevertheless, despite the advancement of the payments revolution within the B2C context, there still appears to be a transformation lag within banks' B2B activities, with volume and frequency of payments, industry dynamics, and participants acting as barriers.

In this context, the emergence of smart technologies stands to completely overturn how banks serve their corporate and institutional clients in the B2B payments sphere. Currently, within the payments value chain, API-enabled 'as-a-service' models are gaining ground across multiple functions such as payments processing, data verification, settlements, clearing and reporting. This is leading to the expansion of banks' payments offerings as well as a rise in the integration of payments functions within non-bank players' businesses.

Against this backdrop of increasing competitive pressure, this year's report provides PwC banking experts' views on the payments revolution. It points out how banks can maintain relevance and even lead in the emerging payments landscape as the proliferation of fintech and big tech firms challenges their role. To continue striving and bringing value to customers, banks have to define a strategy and implement solutions that extend beyond payments only, considering how changes in this segment impact other B2B activities of banks, business models, revenue structures, and internal organisations. The report also shows Luxembourg's payments transformation to be at an advanced stage – a fact reflected by the increasing recognition of the Grand Duchy as the choice location for banks and fintech companies to build win-win relationships and advance together in the new payments ecosystem.

1

Evolution vs Revolution:
The new payments landscape

The payments landscape as we know it today has undergone a long evolution with banks traditionally at the epicentre. From an era of mail orders, telephone orders, and long authorisation processes, the arrival of the internet advanced the evolution of payments with the popularisation of e-commerce – which opened up access to trade and finance to a broader client base (Exhibit 2). Today, the rise of electronic verification systems is also propelling the use of e-wallets, a form of digital cash, in the aftermath of the adoption of digital and mobile payment channels such as Apple Pay and Google Pay. At the same time, we are observing the disruptive potential of cryptocurrencies within traditional infrastructures for payments processing, clearing, and settlements.

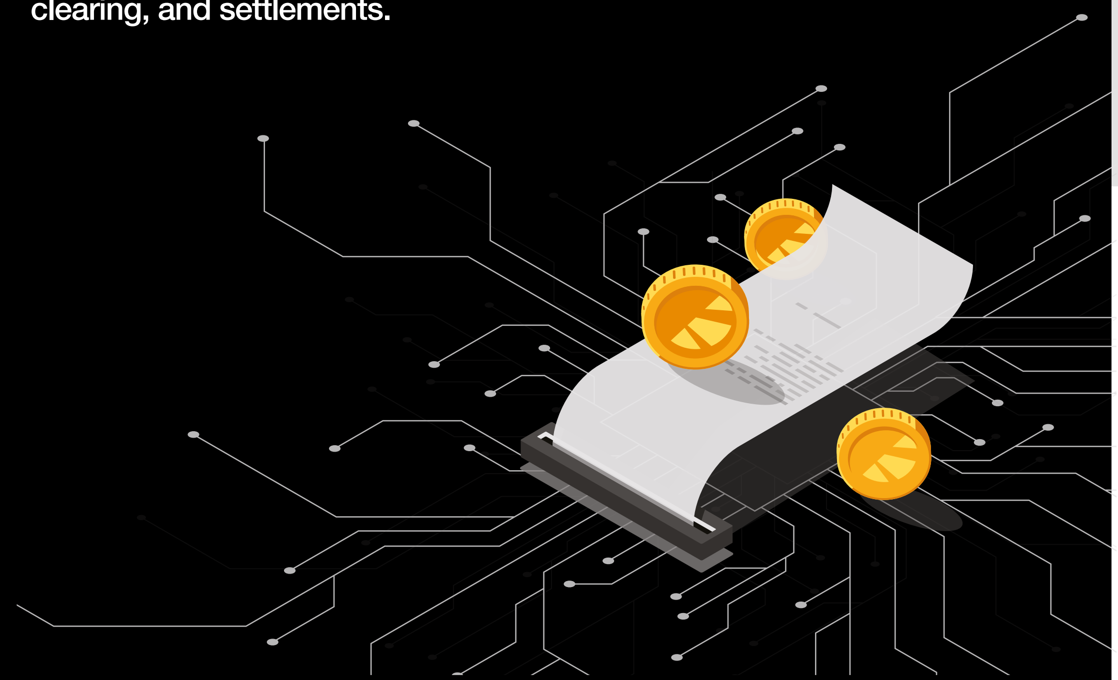


Exhibit 2: Evolution of the Electronic Payments System

- **1871** – Western Union Telegraph company launches Electronic Funds Transfer (ETFs) as payment method for exchange of funds
- **1910's** – US Fed introduces money transfers via telegram
- **1914** – Western Union introduces change accounts and change cards that can be used at a variety of businesses. Previous iterations had been restricted to the individual stores that provided them
- **1950's** – Diners Club invents first credit cards, setting the foundation for the credit card revolution
- **1958** – Bank of America creates the first modern-day credit card. Payments required merchants to call issuing bank which then called the credit card company to manually verify customer's name and credit balance before transactions were approved
- **1970's** – Digitisation of credit card information begins
- **1972** – The Automated Clearing House is developed to process large transaction volumes in batches
- **1994** – Stanford Federal Credit Union begins to offer online internet banking services requiring specific encryption and data transfer protocols. In the same period, the advent of e-commerce brings about efficient transaction process with electronic verification systems
- **2000's** – Adoption of the Electronic Money Directive, introduction of mobile purchases, invention of bitcoin
- **2010-present** – Introduction of instant mobile payments via mobile wallets such as Apple Pay and Google Pay, PSD2 is launched, influx of digital currencies and alternative payment systems and structures, etc

Source: PwC AWM Market Research Centre

Regulation has been immensely pivotal in the digital transformation of the payments landscape, with the adaptation of the PSD2 and DORA creating a secure and harmonised framework for innovation to thrive. The imminent ratification and adoption of MiCA – for the regulation of EU-based crypto assets – could very well usher in the next explosive phase of payments innovation as it also doubles down on concerns surrounding investor protection (Exhibit 3).

In this section, we consider the extent to which disruptive innovation is deepening interconnections within the current payments sphere. We take a deep dive into the entrance of Big Tech and its potential to ignite greater levels of digitalisation and amplify competitive pressures for traditional institutions. We then highlight how the B2B segment is evolving, with the demand for easier, faster and seamless payments processes urging a greater innovative drive within banks' B2B activities.

Exhibit 3: Overview of EU payments-related regulations

PSD2

- European regulation aimed at securing payments, boosting innovation and helping banking institutions adapt to new technologies.
- Primarily applies to consumers in all EU member nations, EU banks and payment processors.
- Effective as from January 2018.
- According to a PwC survey, two out of three banks say they want to leverage PSD2 to change their strategic positioning.
- Currently under review, with a potential PSD3 to be developed to address concerns raised on the PSD2 while further enhancing the digital transformation of payment systems.

DORA

- The Digital Operational Resilience Act (DORA) has been designed to upgrade ICT risk requirements throughout the financial sector by creating a harmonised regulatory framework for the management of ICT risks.
- It applies to all financial entities such as credit and payment institutions, electronic money institutions, investment firms, etc.
- Although it may increase the compliance costs of banks, it is also an opportunity to address deep legacy issues and reduce costs in the long term. It is expected to be effective as from 2023.

MiCA

- Through the Markets in Crypto-Assets (MiCA) proposal, the EU is set to bring crypto-assets, crypto-assets issuers and crypto-asset service providers under a single regulatory framework.
- The objective is to foster innovation in the crypto asset sector while ensuring investors protection. It will apply to all entities issuing or providing services (such as custody) on crypto-assets. It will not apply to CBDCS but will have other significant requirements on other stablecoins.
- This regulation belongs to the overall Digital Finance Strategy of the EU along with DORA. It is expected to be effective between 2023-2024.

1.1 Demand for instant payments disrupts the ecosystem and infrastructure

The unprecedented disruption of the payments ecosystem is marked by greater speed and connectivity and the introduction of diversified services. The resulting interlinks thus show the impact of digital innovation within two major domains. The first domain represents payments infrastructure (instruments, processing and settlement) while the second represents payments transaction services (Exhibit 4).

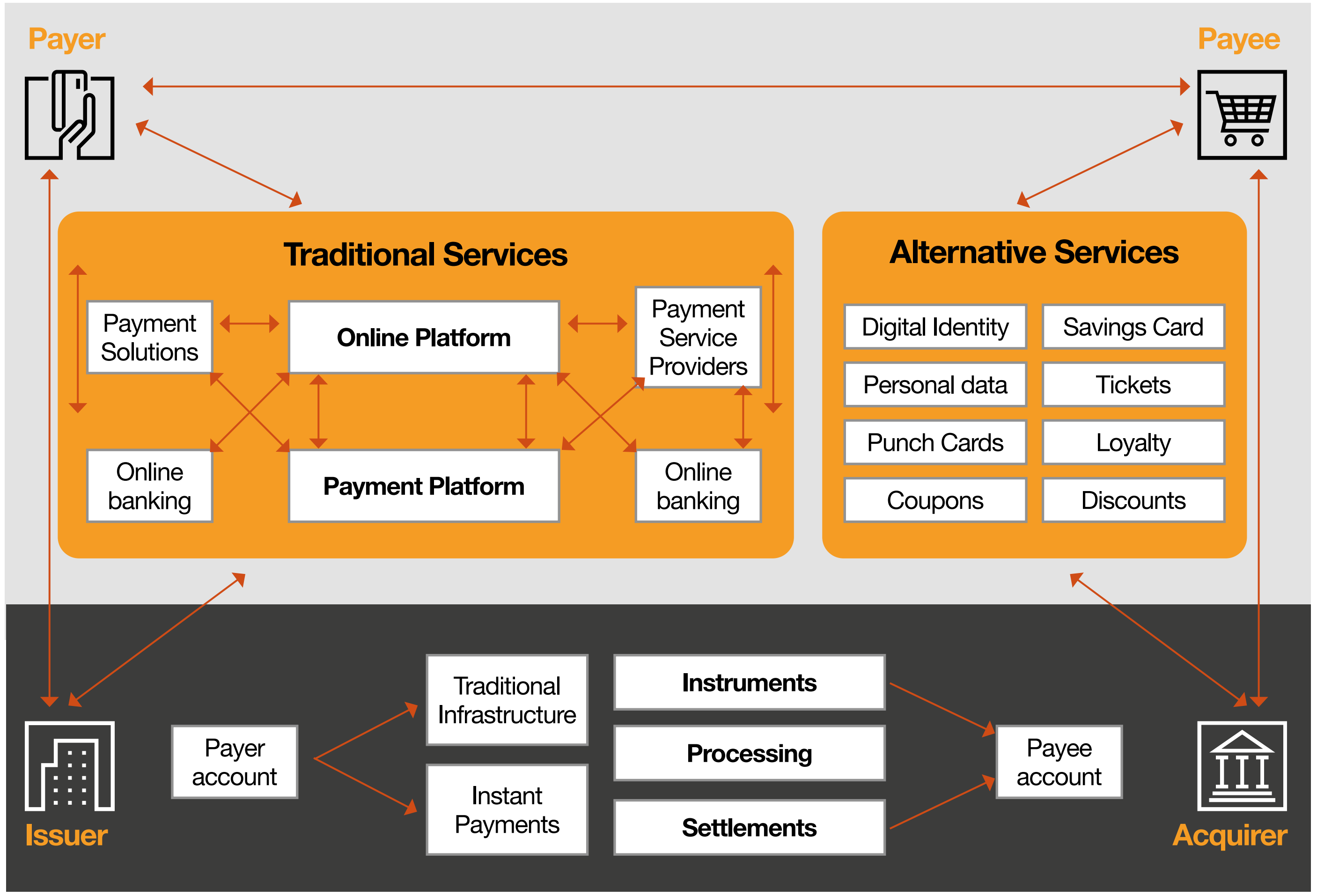
Within the infrastructure domain, the facilitation of instant payments processing via alternative infrastructure is fast catching on as the new norm on both the demand and supply sides. Not only are these cheaper, more flexible, and constantly available compared to the traditional systems which involve batch processing and cut-off times, they also present development opportunities for speeding up cross-border payments. The launch of the European SCT Inst Scheme and TARGET Instant Payments Settlement – for instance – are set to catalyse real-time cross-border payments and accelerate the defragmentation of European payments. Compared to TARGET2, which facilitates settlement of large value payments between central banks and financial institutions connected on a single shared platform (SSP), the SCT Inst scheme in particular seeks to broaden access to instant digital payments services across the euro area for both B2C and B2B customers. It eliminates the need for an intermediary platform and also delivers the benefit of 24/7 processing, unlike the traditional infrastructure operated under TARGET2.

The introduction of alternative payments infrastructure, which typically consists of a separate disruptive block that could rival or combine with any traditional, online, or mobile payments method, also aims to reduce dependence on traditional players and shift trust from organisations towards infrastructure instead.

In this context, there is a huge emphasis on the potential of decentralised finance (DeFi) to disrupt traditional payments processes, characterised by a growing consideration of digital currencies such as cryptocurrencies. DeFi recreates financial products and services based on decentralised units not controlled by the government and financial intermediaries but by distributed ledger technologies(DLT)-based protocols such as smart contracts and blockchain, creating a peer-to-peer financial system. Its adoption would allow wallet holders to effect payments directly without approvals and clearance from banks and third-party PSPs within the payments value chain. This could significantly improve efficiencies in transaction costs and processing times – as well as other functions like back office, remittance payments, and trading – while expanding access to financial services. It is for this reason that, despite the initial hesitation and scepticism toward these currencies due to their potential disruption to central banks' oversight of payments, they are now being increasingly evaluated for their impacts on fostering easier, faster, and more secure payments. Banks and other financial intermediaries are also gradually looking to capitalise on the benefits of these technologies, with players such as Mastercard, Visa, and BNY Mellon already indicating a readiness to facilitate the use of such assets. Some central banks are also assessing the centralisation and use of digital currencies through CBDCs, with a recent BIS survey[3] showing 60% of central banks to be considering CBDCs while 14% are actively conducting pilot tests. The materialisation of the latter will likely see the introduction of government-backed digital tokens to revolutionise B2C, B2B as well as cross-border payments. While this further demonstrates banks' increasing attempts to speed up their payments innovation drive and harness the benefits of DLT within a more centralised framework, it remains to be seen how associated data protection, AML, legal and regulatory concerns about banking disintermediation and the disruption of the free market economy are addressed in this context.

3. Bank for International Settlements, 2021

Exhibit 4: The rise of alternative payments infrastructure and services



Source: Pwc AWM Market Research Centre, European Payments Association

In the domain of transaction services, we are seeing increased efforts by payments players to offer improved customer experiences, with the proliferation of increased interactions via aggregated platforms and fast payments solutions. Innovation is driving the development of new business models and applications for existing payments infrastructure, resulting in a network of credible and regulated units or products (online banking and e-payments platforms, payments service providers, mobile payments, digital wallets, etc). In addition, there is a rise in alternative services that accumulate customers data for later retrieval either by the customer or for use with other applications for services such as onboarding, log-in actions, risk profiling and scoring for loan applications, etc. Amazon Pay represents an example of these alternative transaction services in the B2C segment. While the service primarily allows customers to create and load e-wallets to be used for purchases on the Amazon platform, it also offers payments data storage and sharing services that allows customers to use the payment details stored on their platform to pay for purchases on other platforms. Although not as nearly advanced, we are observing similar efforts in this direction in the B2B segment, with firms like Stripe not just providing fast and secure B2B payments services but also supporting business growth by enabling new business models and extending financial service functionalities for accounting, payroll management, and card fraud detection. Other support services include virtual card issuances and lending options.

Overall, the interconnection between payments ecosystem and infrastructure is emphasised by the fact that alternative services serve as a way to retain customers and increase the amount of services provided to them, while infrastructure initiatives such as the launch of the ISO 20022 could further facilitate this by introducing a common model for generating richer, more harmonised and more granular payments data, serving to enhance interoperability, integration, and harmonisation.

1.2 Big Tech's entry presents a new and complex layer of competition within the payments ecosystem

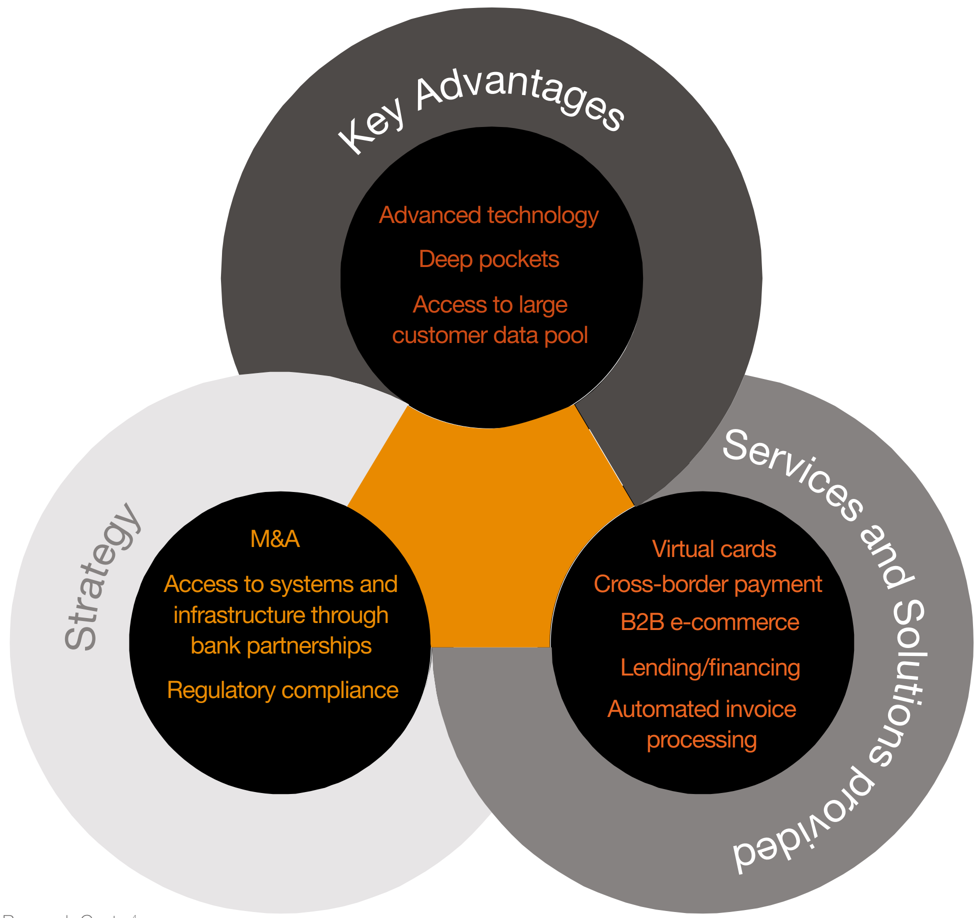
By its characteristically high-volume nature, the payments sector lends itself well to the disruption associated with technological innovation. And while banks continue to be part of this emerging landscape, it is fintech/big tech, PIs, EMIs, and other platform providers who are at the forefront of the payments revolution and driving the most significant innovation changes, leveraging API and open banking infrastructure to ease and quicken various aspects of the payments process.

Big tech firms specifically - while they do not operate primarily as banks or financial institutions – are increasingly offering several financial services across payments, lending, asset management, and insurance services. Within payments, they offer an array of faster and easier end-to-end payments solutions to demanding customers and businesses. A good example of this is Alipay's "super-app" which facilitates payments across different e-commerce platforms, and has developed from an e-commerce platform to a financing and investments provider.

Since Amazon first entered the European payments landscape in 2010, we have seen an influx of big tech firms, such as Google, Facebook, and Apple, seeking to make headways in their fintech expansion through payments by leveraging their primary strengths of access to advanced technology, a large pool of customer data, and the required investment capacity (deep pockets). Through strategic M&A and partnerships with regulatory-compliant banks, these firms are able to access the required capabilities and infrastructure to support their payments offerings with products and services such as virtual cards, lending/financing, cross-border payments functionalities, B2B e-commerce, and automated invoice processing (Exhibit 5). This has not only led to the decentralisation of the payments process but has also intensified competition for banks and other incumbent payments institutions.

In this respect, Big Tech firms could collectively accelerate the already radical transformation of the payments landscape. They have an opportunity to fully explore the integration of payments and other financial solutions within their usual service offerings – whether related to financial services or not – by harnessing the potential of embedded finance.

Exhibit 5: How big tech firms are embarking on their payments journey



Source: PwC AWM Market Research Centre[4]

4. Adapted from Capgemini Financial Services Analysis 2021

With developed solutions cutting across the payments, lending, and insurance landscapes, embedded finance is not only being increasingly considered as a way to modernise B2B activities but also as a natural evolution of the financial system. Moreover, big tech firms that take this route do not have to face the barrier of legacy systems and can also leverage their existing client base to expand their market reach. Accordingly, 96% of businesses plan to launch an embedded finance offering by 2026.[5] The materialisation of this would present an additional layer of complexity to the competitive landscape that banks must yet navigate, in addition to the higher compliance costs and the needed investments to further digitalise their systems and offerings.

Embedded finance refers to the incorporation of financial tools and services within existing non-financial solutions. An example in the B2C segment is the Buy-Now-Pay-Later (BNPL) model operated by Swedish company Klarna. This is a credit provision service that allows e-commerce customers to split their purchase costs into four interest-free instalments to be paid every two weeks. Embedded finance is also increasingly becoming the most formidable means to revitalise B2B payments transactions, as it involves assessing existing tools and services, and identifying which ones could be easily leveraged with a financial service solution to meet customers needs. The current framework for embedded finance is seen in three main areas:

Embedded Payments

The integration of payments solutions in mobile applications and e-commerce websites. This has led to the 'uberisation' of the payments ecosystem by enabling contact-free and mobile payments and instant online purchases, effectively rendering the payments experience almost invisible.

Embedded Lending

Broadly defined by the increasingly popular Buy-Now-Pay-Later model, this encompasses the integration of short-term credit or financing services within non-financial service offerings.

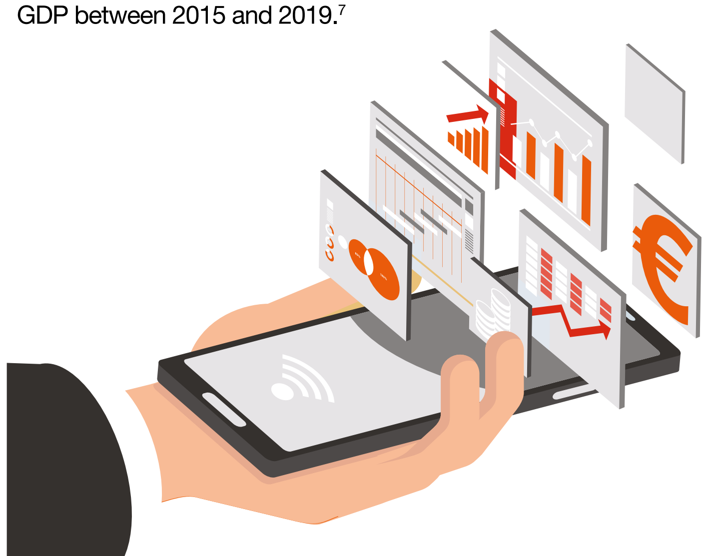
Embedded Insurance

While relatively new, this is emerging as a seamless way to sell insurance by bundling the sale of insurance services together with products or services at the point of sale.

1.3 Innovation of B2B payments represents the new frontier of payments

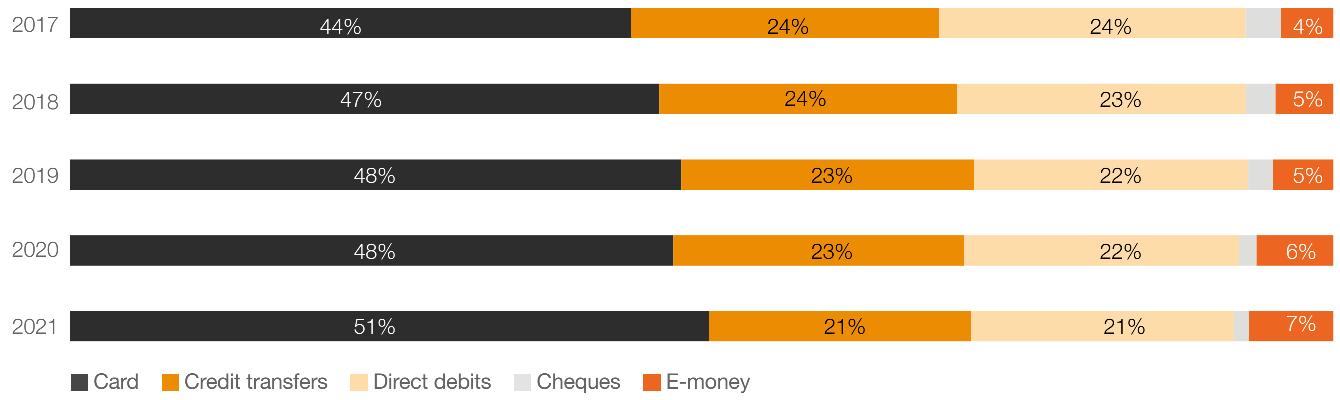
The European payments services industry is not only supporting global digital transformation and driving innovation; it has also been seen to be pivotal to the way consumers and corporations conduct business in recent times.

The greatest impact of this has been in the B2C sphere, where we have observed a wide-scale shift towards e-commerce and surging demand for seamless trade settlements and remittance processing. Demand for non-cash transactions has been growing in recent years, with card payments, credit transfers, and direct debits representing the major means of effecting payments and accounting for 51%, 21%, and 21% respectively of all cashless payments in the Euro area in 2021.[6] That being said, e-money payments have recorded the fastest growth rate, with its share as a percentage of total non-cash transactions increasing from 4% to 7% between 2017 and 2021 (Exhibit 6). A study by Moody's Analytics and VISA further highlights the importance of e-money – not only as an increasingly preferred means of payments but also as a significant propellent of GDP growth – showing e-money to add up to USD 245bn to global GDP between 2015 and 2019.[7]



5. Embedded Payments and the Reinvention of Customer Experiences, OpenPay, 2021
6. The total number of cashless payments is based on ECB Payment statistics but have been slightly adapted to exclude undefined sources designated as "Other payment services"
7. https://usa.visa.com/visa-everywhere/global-impact/moodys-graphic.html

Exhibit 6: Main non-cash payments methods in the Euro area



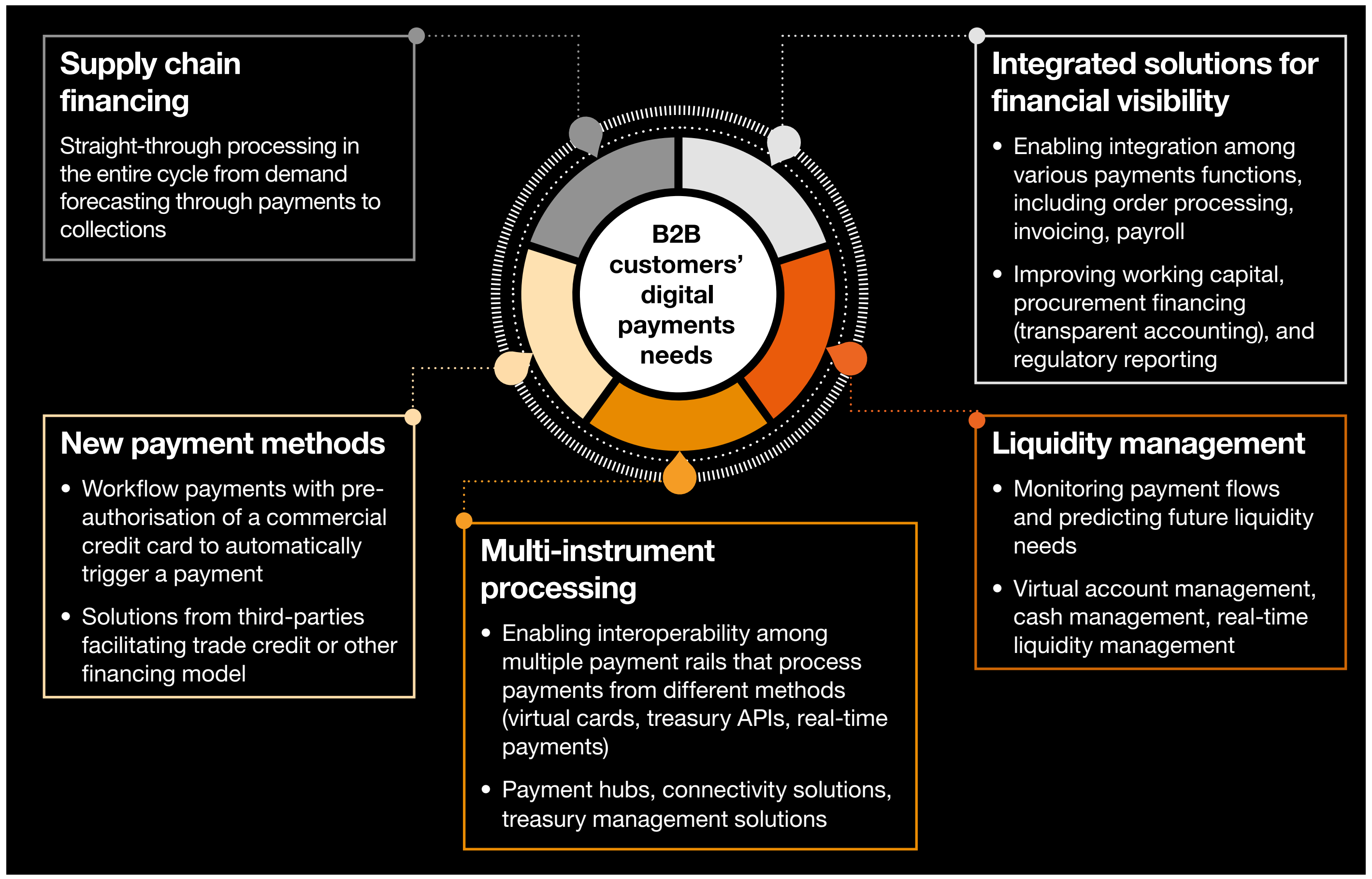
Source: PwC AWM Market Research Centre, European Central Bank

Nevertheless, while the payments revolution has advanced within the B2C context and remains a vital aspect of banks' retail customers' transactions, there still appears to be a lag when it comes to banks' B2B activities. This is likely due to factors such as high payments volume and frequency, industry dynamics, and participants. Even though the past year has seen a gradual move by businesses towards the digitalisation of their B2B businesses, most remain prone to the use of traditional infrastructure and are heavily reliant on paper cheque processing. A 2022 Mastercard study provides further evidence of this, estimating paper cheques to still account for more than 50% of the overall transaction value of B2B payments.[8]

That being said, recent times have seen heightened attention drawn to the quality and effectiveness of banks' existing B2B payments service offerings. Customer concerns around supply chain lending/financing, visibility, cash and treasury liquidity management solutions, transaction risk mitigation through multi-factor authentication, and cross-border payments delays, are also some of the factors pushing banks on the fast track towards more digitalisation initiatives in the B2B segment (Exhibit 7).

8. How Industry 4.0 is defining the future of business payments, MasterCard Foundation, 2022
9. Adapted from Capgemini Financial Services Analysis 2021

Exhibit 7: B2B customers are demanding more end-to-end digital solutions



Source: PwC AWM Market Research Centre[9]

The greater adoption of instant payments, agile infrastructure, and value-added services associated with digital payments methods are thus regarded as necessary next steps in the evolution of B2B payments, given their potential to mitigate the challenges of traditional and largely paper-based payments processes, manage operational and regulatory compliance costs, and enhance profitability. In this context, payments become crucial to banks' overall value proposition and revenue generation potential in light of mounting competition and the challenge to traditional payments methods. This is even more the case as various EMIs and other non-bank PSPs increasingly leverage technology to radically transform how B2C and, in more recent times, B2B payments are carried out.

Exhibit 8: Distribution of Payments Institutions in Luxembourg

192
Payment Institutions (with offices in Luxembourg)

123
Electronic Money Institutions (with offices in Luxembourg

13
Payment Institutions (based in Luxembourg)

9
Electronic Money Institutions (based in Luxembourg)

Sources: PwC AWM Market Research Centre, LFF, Statista

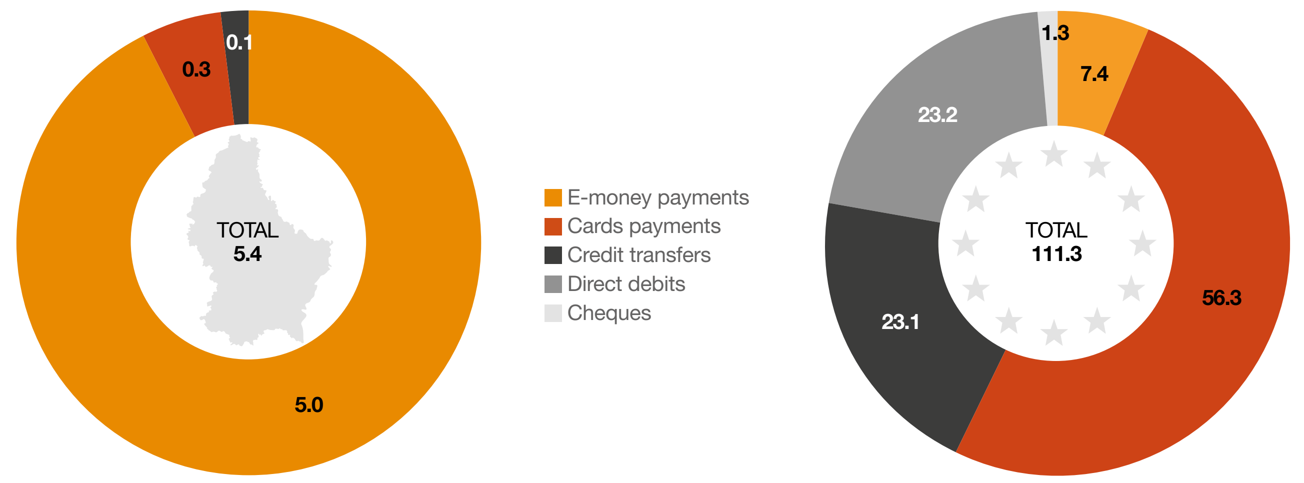
1.4 Focus on Luxembourg

As a global and well-connected financial services centre, Luxembourg has adapted well to the evolution of payments. Its payment sector, while initially dominated by only a few retail banks and mainly focused on the domestic market and the Greater Region, has witnessed a strong digitalisation of its services offerings since 2010. This has led to the influx of new and innovative services such as e-money, mobile payments, and cryptocurrency exchanges, highlighting the country's attractiveness as a major European hub to many multinational EMIs and PIs like PayPal, Alipay, and eBay (Exhibit 8).

Despite not being as advanced as Nordic countries like Norway, Denmark, and Sweden – who are forecasted to become nearly cashless by 2025[10] on the back of greater government trust and financial market stability, higher digital literacy levels even among older generations, and more proactive efforts by banks to adapt to digital transformation – Luxembourg's agility has allowed it to leverage innovation to make headway within the payments landscape compared to several other counterparts in the Euro area. These innovations have ignited a rapid digitalisation of the payments services offered by the country to domestic, European and international markets. As of end-2021, Luxembourg's 5.4bn cashless payments transactions represented 5% of the 111.2bn total non-cash payments in the Euro area[11] (Exhibit 9). But it is when one considers E-money that the country's significance within the Euro area's payments landscape becomes more prominent. ECB estimates show that the total number of e-money transactions in Luxembourg increased annually from 2.6bn in 2017 to 5bn in 2021.

10. Key Players in the EU Payments Landscape 2022, EU Payments Association
11. The total number of cashless payments based on ECB Payment statistics but have been slightly adapted to exclude undefined sources designated as "Other payment services"

Exhibit 9: Number of cashless payments per payment method (total number of transactions in bn) - Luxembourg vs Euro area for 2021



Source: European Central Bank

This figure represents 93% of all cashless payments transactions in the country and nearly 68% of all e-money payments transactions within the Euro area in the period. The large volume of cross-border e-payments effected via dominant Luxembourg-based institutions such as Amazon, eBay and Airbnb primarily contribute to this and highlights Luxembourg's role as a key contributor to the circulation of E-money within the Euro area. Factors like the country's potent innovation drive, favourable regulatory landscape, the presence of highly secured tier 4 data centres and other specialised IT infrastructure, and the strongly connected network of banks, PIs, EMIs, and fintech and big tech players also favour the development of payments innovations in Luxembourg.

Moreover, bolstered by its geographical proximity to other major e-commerce centres and the attractiveness of its cross-border competencies to international merchants, the proliferation of Luxembourg's e-commerce segment is set to persist - with a forecasted 5.6% CAGR growth up to 2023 from 2019.[12] In line with this, we expect the number and volume of non-cash transactions to accelerate in the coming years, with JP Morgan forecasting Cashless payments (cards, bank transfers and digital wallets) to constitute up to 90% of all payments in the country in 2023.[13]

Luxembourg's enabling environment has encouraged the emergence of several start-ups that are utilising API and open banking infrastructure to transform payments, especially within the B2C segment. A major example of this is Payconiq, a platform provider driving the seamless integration of API infrastructure within the European payments ecosystem through stand-alone applications and bank platform integrations. As the demand for instant and real-time payments among B2B players becomes even more urgent, Luxembourg is seen to be moving at pace, with the fintech and big tech firms that pioneered the digitalisation of B2C payments increasingly turning their attention to the B2B segment.

At the forefront of this shift in Luxembourg is Banking Circle,[14] a licensed payments bank that allows banks and payments institutions to offer B2B payments and other banking services to their customers without costly infrastructure requirements. This involves the provision of API-enabled connections to local clearing systems – both independent clearing houses and those of partner banks – to facilitate international cross-border payments in 25 currencies. In recent times, we have also seen the development of professional B2B payments platform ENPAY by Finlogee.[15] This platform allows banks and corporations to streamline and automate payments and reporting processes. Using its multi-bank account access and connection to SWIFT, B2B customers can effectively conduct and monitor different payments functions from anywhere in the world via a single and secure API.

Luxembourg's contributory role to the advancement of sustainability within the asset and wealth management sector also holds potential for the sustainable transformation of the payments ecosystem. Through its efforts within the AWM realm, the country has amassed a wealth of knowledge and expertise on the legal, societal and business implications of further sustainability integration. In this respect, Luxembourg is already well positioned to provide the right context and develop the platforms for embedding various aspects of sustainability (environmental, social and governance) within the payments ecosystem.Similarly, there's the potential to create a secure regulatory environment for the greater adoption of cloud technologies within Luxembourg's banking sphere, with further implications for increased cloud payment services.

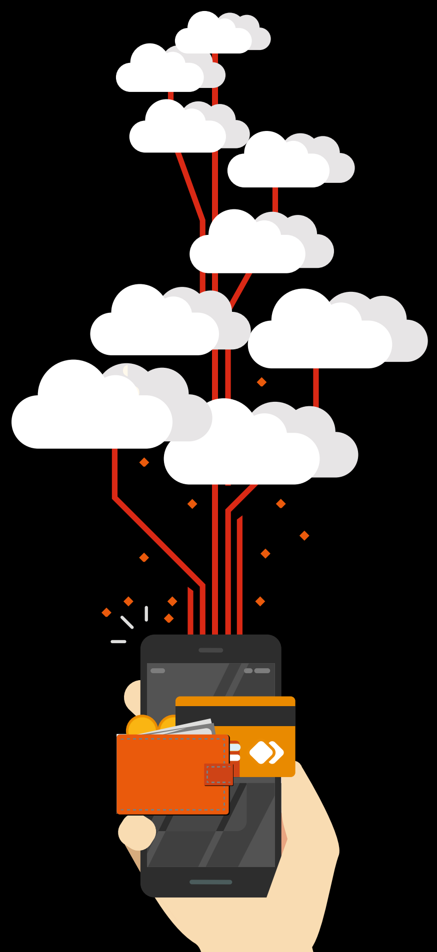
Given its unique location, cross-border expertise and market access to a European and increasingly global customer base, Luxembourg finds itself favourably positioned as a core hub for payments firms to deliver unified payments services across the EU, thus providing opportunities for greater collaboration between banks and fintech players and driving the further innovation of B2B payments.

12. 2020 E-commerce Payments Trends Report: Luxembourg, JP Morgan
13. 2020 E-commerce Payments Trends Report: Luxembourg, JP Morgan
14. https://www.bankingcircle.com/company
15. https://finologee.com/enpay/

2 The Payments Revolution challenges banks' role

The 'speed to innovation' in the B2B payments landscape has opened up a new wave of unique and fast-changing customer demands requiring adaptability and responsiveness from their PSPs. And while most service providers are doubling down on their efforts to adapt to these demands, banks find themselves particularly less prone to move at the same pace as their more digitally-attuned peers in this respect.

In this section, we identify unique barriers to banks such as tighter regulation and the drawbacks of legacy infrastructure and systems. We highlight how these are restricting banks' ability to rapidly provide the more agile and custom-tailored solutions that are typical of Baas/PaaS solutions offered by fintech and big tech. They are also leading to an imbalance in the competitive landscape as banks' more digitally native and less restricted PI counterparts leverage these gaps to attract more customers - challenging their monopoly within the payments system and bringing their current and future customer retention potential into question.



2.1 Tighter regulation has created an uneven playing field for banks

As the payments revolution picks up momentum, banks continue to face a number of structural hurdles that have to be managed in order to compete effectively in the emerging payments landscape, enhance customer retention and maintain their profitability. Of these, regulation perhaps stands as the most significant. Regulation in itself has largely underpinned the digital transformation of payments observed in the payments ecosystem. The PSD2 directive, for instance, has played a significant role in promoting innovative competition and enhancing inclusion through standardisation. This regulation compels banks to allow third party providers access clients' bank accounts through APIs, underscoring the expansion of fintech and bigtech in driving financial management, payments speed and ease.

At the same time, banks, by reason of their operations and their impacts on overall financial stability, are subject to heavier and tighter scrutiny and regulatory oversight than their fintech and big tech competitors. Thus, we see that further regulation, if not equally implemented across all financial and NBFIs, could further widen the regulatory gap between banks and their competitors by subjecting them to higher compliance costs.

The impact of the aforementioned regulatory gap is that banks find themselves operating in an uneven playing field where non-bank payments players have more flexibility for faster technological adoption and innovation and thus more market appeal. Consequently, these players are not only able to take on more risk but also intensify competitive pressure on their more traditional and long-established bank peers. Moreover, with digital transformation underpinning their core business model, these firms are able to secure vast investment allocations towards advanced digital innovations. In fact, as of end-2020, the top 50 European fintech companies had raised more than EUR 14.3bn in funding and were collectively valued at over EUR 78bn.[16] It is no wonder then that they are increasingly attracting a greater proportion of retail and corporate customers, and consolidating their position as market challengers in this sector – with the potential to impact banks' future profitability should this trend persist and accelerate.

16. *A Look at the Top 50 Fintech Companies in Europe*, Finovate, 2020
17. Thomson Reuters
18. *Gartner Says Digitalization Will Make Most Heritage Financial Firms Irrelevant by 2030*, GARTNER, 2018

2.2 Banks face a plethora of ambiguities in the attempt to upgrade legacy systems

While it can be agreed that further innovation inevitably holds massive benefits for banks, it also imposes upon banks the task of repurposing and upgrading their aged technology and infrastructure in order to keep up with the surge in transaction volumes and customers' demand for faster payments processing and other advanced functionalities. This has become particularly imperative as digital innovations like Artificial Intelligence (AI) and big data are rapidly transforming the payments landscape, evidenced by the emergence of a plethora of digital payments channels. Currently, not all banks have access to the agile infrastructure required to execute rapid and real-time iterations or facilitate the rapid embedding of modern technologies within their systems. A Reuters study supports this, showing that 43% of banking infrastructure is still based on the Common Business Oriented Language (COBOL),[17] a programming language devised in 1959.

In the coming years, navigating this complex terrain would be inherent to banks' ability to move at a similar pace as their non-bank counterparts. Indeed, it would be necessary to their very survival, with 80% of banks that still use legacy systems forecasted to be extinct by 2030 unless they amplify and accelerate their digitalisation efforts.[18] This need to upgrade banks' infrastructure is reinforced when one considers that not doing so could raise compatibility issues when attempting to implement new standards and payment channels on the outdated systems currently operated by banks. The global ISO 20022 financial messaging standard set to be adopted from November 2022 (Exhibit 10) is an example of such new standards. It was developed in response to the inconsistencies and lack of customisation associated with existing financial messaging standards such as SWIFT. Further, the ratification and implementation of CBDCs, which are being considered increasingly by several central banks, could also result in new payment channels with impacts on reducing the need for banks' intermediation between central banks and customers/businesses.

That being said, embarking on this infrastructure upgrade is far from easy. Banks have to contend with hefty financial costs, complex organisational bureaucracies, and stringent and sluggish regulatory frameworks. They also have to unravel several ambiguities surrounding integration with layered and intertwined existing systems, data migration challenges, technical standards for data management and sharing, as well as the choice of payment channels to adopt.

2.3 Changes in market dynamics pose a risk to banks' customer retention power

The payments evolution and revolution have sparked innovative disruption at multiple levels, with impacts on customers' experience, limiting intermediation in the payments process, and improving profits for PSPs. The main catalysts of this are shifting socio-economic factors, regulation, and technology – all of which are underpinning various demand and supply factors that are accelerating the rate of disruption within the payments landscape (Exhibit 10).

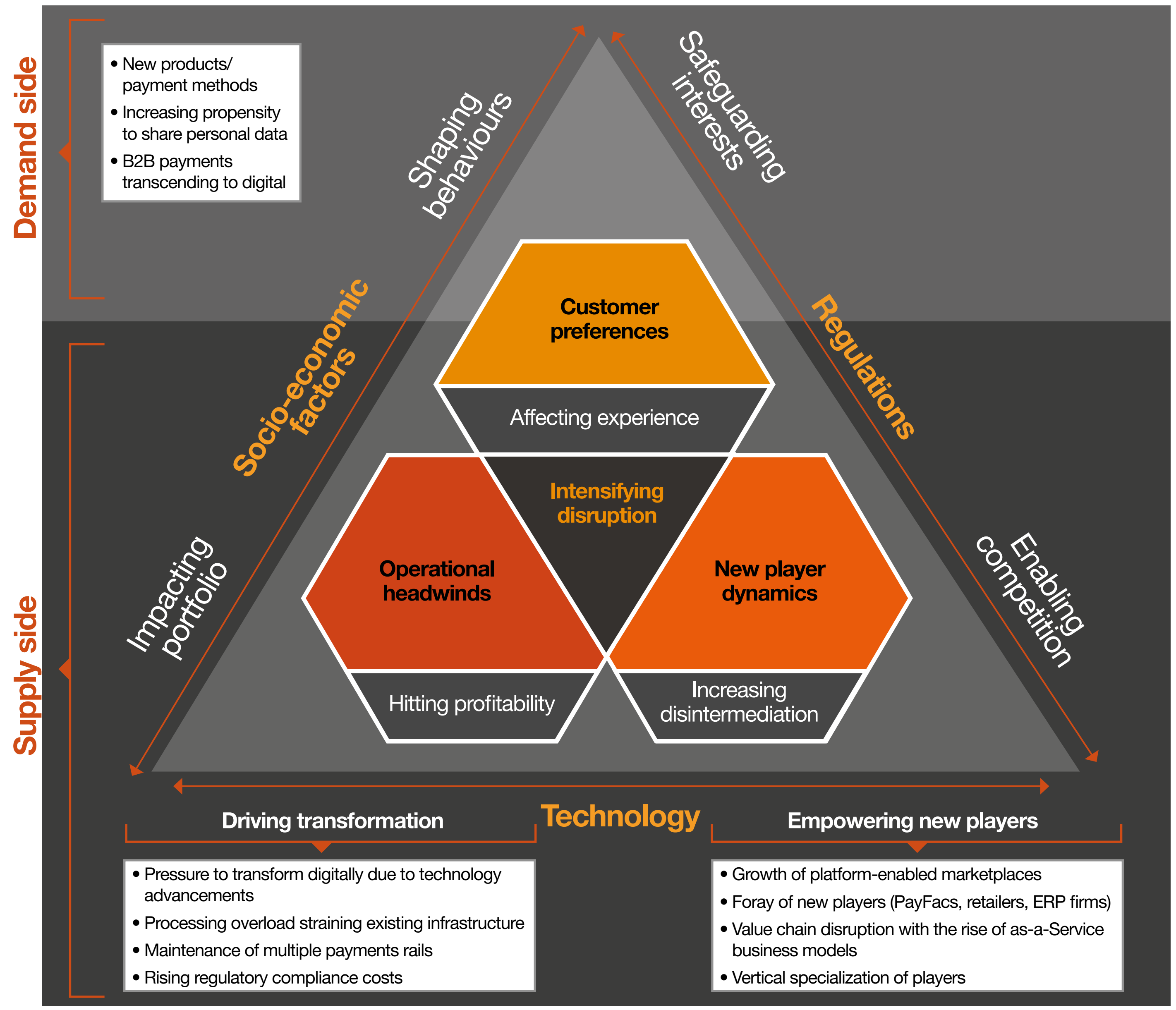
The changing socio-economic landscape is increasingly shaping customers' behaviours. Preference for a more seamless payments experience is almost considered non-negotiable, especially by younger, more tech-savvy generations who expect to be able to carry out all activities conveniently from their mobile devices - including payments- and are more willing to share personal data to facilitate this process. Meanwhile, the surge in transaction volumes and demand for instant and direct payments is placing pressure on banks' legacy systems and amplifying costs (operational headwinds).

Regulation is also being seen to have a double-sided impact on the payments ecosystem. On one hand, it is driving innovation, fostering competition and the entrance of new players, and incentivising banks to pursue greater digitalisation. At the same time, its increased focus on investor and customer protection and the resilience of emerging payments systems through strict compliance requirements is resulting in tighter regulation of banks - not only in terms of capital ratios, amount of guaranteed deposits, and leverage ratios but also in restricting banks' ability to explore certain forms of crypto-assets for example.

Technology represents the third dimension, underpinning the digitalisation of the payments ecosystem in response to market changes and leveraging regulation to open up the ecosystem for further innovation by new players, who are quicker to provide more tailored and customer-centric payments solutions. This is not only spurring changes in demand and supply dynamics but is also redefining the scope of customer engagement in the process, with banks' laggard reactions to the latter proving to be a big test of their customer retention abilities. Demand side changes such as the growing need for instant payments and data sharing have seen companies in the B2B segment in search of more efficient and suitable cross-border payments systems – necessary to make better treasury decisions and obtain greater business visibility. This is anticipated to continue, with 42% of respondents in a PwC survey expecting an acceleration of cross-border, cross-currency instant, and B2B payments. The continuous shift toward e-commerce and e-payments – expected by 89% of respondents in the same survey – is also expected to yield further B2B demand for digital payment solutions. Another dimension of technology-driven pressures within the cross-border payments sphere can be seen in the impacts of the former on disrupting existing business models, particularly when it comes to client relationship management (CRM). From this perspective, we are seeing an evolution of client engagement mechanisms, moving from the era of the telephone to current substantial business model adjustments with the use of online direct relationship tools, and more broadly digitally enhanced relationship management. While proximity to the client remains central to these adjustments, the disruption of payments and the perceived disconnect with banks from clients' perspectives may be an additional challenge for banks, regardless of their level of engagement in the payments sphere.

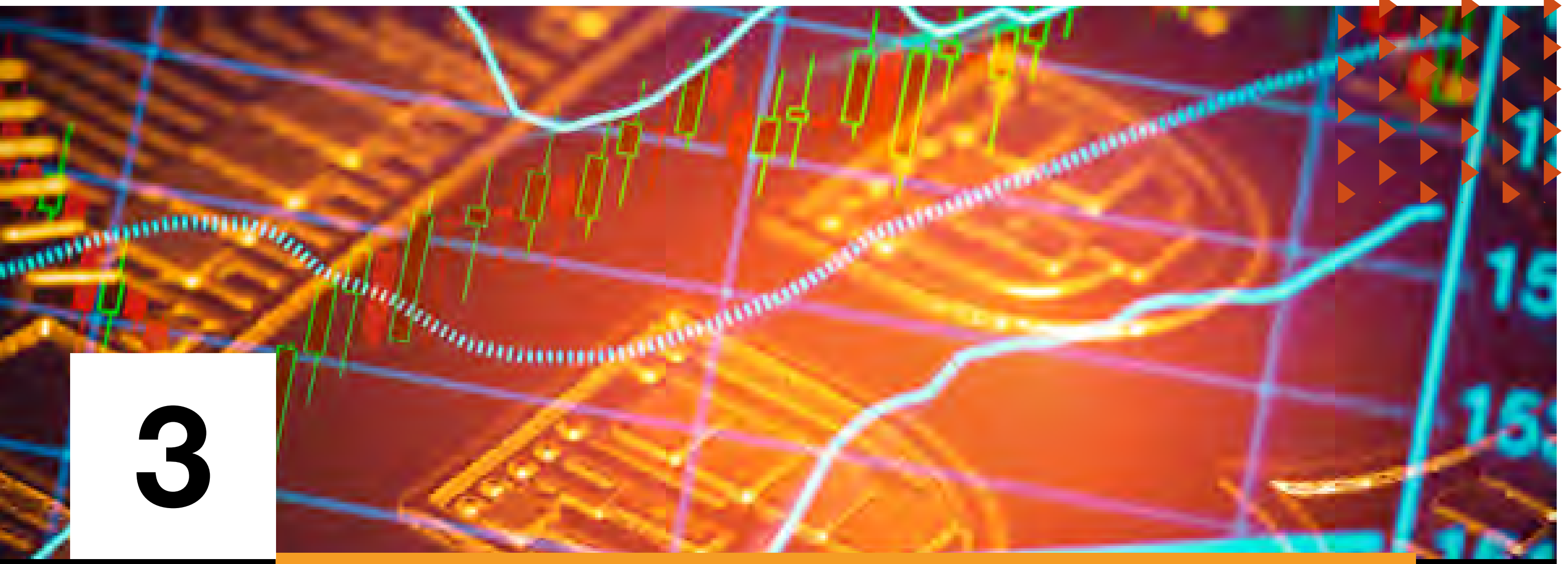
On the supply side, banks and traditional PSPs are encountering pressures to accelerate their digital transformation and alleviate processing strains on existing infrastructure. These pressures are bolstered significantly by the influx of more digitally native players who are increasingly challenging their business models with quicker and more tailored customer-centric payment solutions. Not only that, but with a greater ability to fully explore the use of mobile payments and other disruptive technologies, these new entrants within the payments realm are clearly pointing out that much progress remains to be made by banks in this respect.

Exhibit 10: The Payments Industry faces multi-dimensional disruption



Source: PwC AWM Market Research Centre[19]

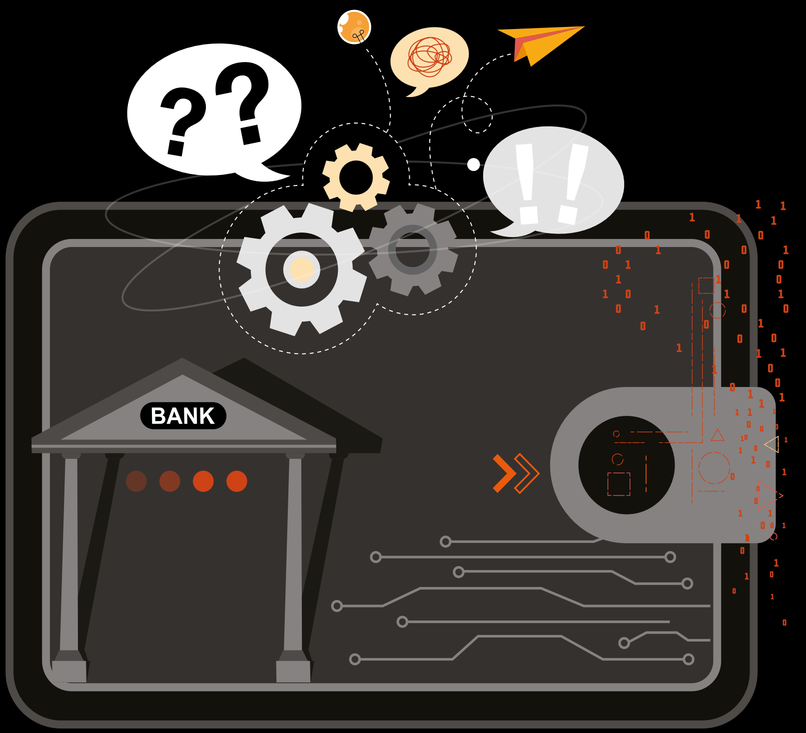
19. Adapted from Capgemini Financial Analysis 2021



3

Banks can thrive by rethinking their solutions and models

As the B2B activities of banks evolve, driven by the payments revolution, it becomes evident that banks need to carefully consider and define what their role would be in the coming years within this landscape. Having demonstrated strong resilience and characteristic ability to manoeuvre various challenges in previous times, there is no doubt that banks have the potential to successfully navigate this emerging payments ecosystem. Thus in this section, we propose certain strategic actions for banks' consideration that would accelerate the pace of their next adaptation phase and consolidate their position in this emerging payments landscape.



3.1 Differentiate your business/ organisation by leveraging opportunities within the B2B landscape

Given that the advancement of payments innovation within the B2B sphere is still nascent, banks have an opportunity to capitalise on their status as all-round financial service providers to differentiate themselves in specific segments in the payments ecosystem (Exhibit 11).

Compared to other PSPs, banks' unique position allows them to identify and assess emerging B2B needs of corporations in other areas outside of payments, and then look for ways to differentiate their current and future offerings. Treasury and cash management services are typical examples of areas in which banks can consider providing ancillary services. Within treasury management systems, for instance, treasurers can leverage greater deployment of automation fintech and emerging software tools to access information and optimise administrative processes through greater e-commerce integration and the use of alternative payments instruments. The implementation of the ISO 20022 could further support this, boosting the feasibility of instant payments if adopted globally. For cash management, innovation in payments could help to provide greater security through the integration of smart cash management software like the recently developed Zen Cash Management Software Suite,[20] which offers heightened connectivity, remote management, and immense adaptability for banks' cash management operations. The SafeStore Auto software from Gunnebo's SmartSafe solutions, which is currently used by Danish bank Danske for instance, is also another example of an automated and secure cash deposit locker that allows bank customers to manage their deposits virtually.[21]

Cross-border payments represent another key area in which banks could differentiate themselves. Here, they could leverage existing networks and emerging technology systems to improve processing speed and seamlessness in order to catch up to the competition. The Immediate Cross-Border Payments (IXB) initiative launched by the EBA CLEARING, SWIFT and The Clearing House is a major step in this direction.[22] Developed in collaboration with 24 banks and with seven banks involved in the proof of concept, this initiative will allow existing infrastructure and connections to be combined with new technology to bring about real-time and instant cross-border payments with a focus on speed, access, cost and transparency. It is expected to begin piloting at the end of this year with 24 participating banks already enlisted.

As the digitalisation of payments advances, concerns surrounding associated cybersecurity risks are also likely to intensify. This is not surprising, with 48% of business leaders in a PwC survey citing cybersecurity as their topmost concern. Given that banks already boast greater experience and expertise in managing cybersecurity risks, it becomes evident that they have an opportunity here to lead the way. Not only that, but banks' cybersecurity expertise could increasingly become a significant connecting point with other industry players, with these new players depending on collaboration with banks to not only strengthen their cybersecurity risk management frameworks but also enhance their credibility with clients.

Overall, re-inventing their roles in strategic areas does not only allow banks to favourably position themselves to secure and maintain leadership within the market. By differentiating themselves as experts in these 'hybrid' fields that merge specialised banking services and technology, banks could also transition from a transaction-based revenue model to a revenue scheme based on value-added services. This approach would drive them to provide maximum value on all their transactions, leading to an increase in loyal customers who are willing to pay a premium for these value-add services, as well as significant market share with positive impacts on profitability.

Exhibit 11: Banks can reinvent their roles in strategic areas

Ancillary services	Cross-border payments	Cyber-security	Revenue model
Consider value-creation additions to existing B2B solutions (loans, treasury, cash management, invoice management, etc)	Leverage existing networks and emerging technology to improve payment processing speed and reduce bottlenecks	Extend partnerships with non-bank fintech players to provide cyber security risk management expertise	Transition from a transaction-based model to a fee-based revenue model

Source: PwC AWM Market Research Centre

20. https://www.gunnebocashmanagement.com/en/zen-cash-management-software-suite/
21. https://news.cision.com/gunnebo/r/major-danish-bank-installs-gunnebo-s-automated-safe-deposit-locker-solution,c2671876
22. EBA CLEARING, 2021

3.2 Partnerships with fintech will lead to a win-win situation

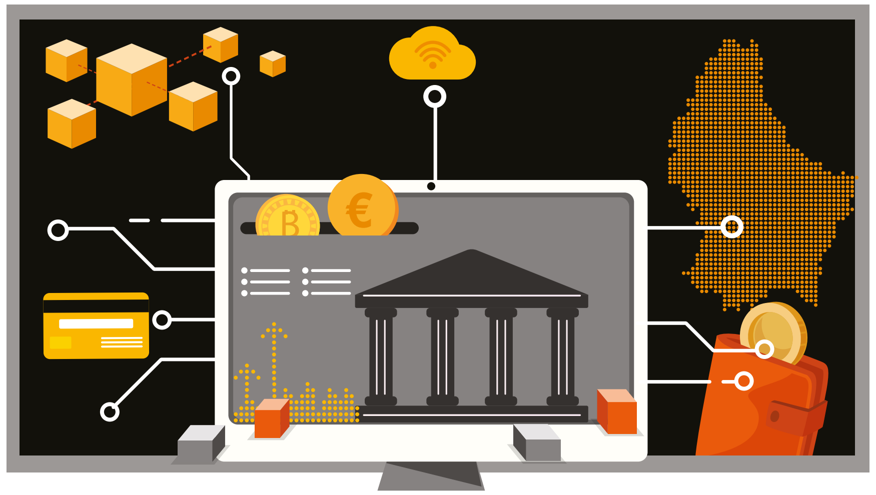
Now more than ever, it has become imperative for banks to seriously explore opportunities for collaboration with other players within the payments ecosystem. Partnering with the vast number of fintech and emerging big tech players holds immense potential to enhance banks' agility and innovation initiatives at much lower costs, as well as improve their internal operational efficiency. Banks already appear to agree on this, with nearly 55% of banks in a survey by Banking Circle already collaborating or intending to collaborate with partners in the area of payments.[23]

Further collaboration could also encourage the development of joint digital payments offerings between banks and fintech and big tech firms, which could allow banks to better capitalise on innovation-driven regulatory changes. With such partnerships in place, banks would be compelled to revisit their product structure and packaging. This could lead them to explore new product offerings such as Buy-Now-Pay-Later (BNPL) or develop attractive BaaS propositions, while also allowing them to not only reach but also retain access to a diverse client pool. Banks like Goldman Sachs are already looking into these vast possibilities within the B2C segment, partnering with Apple Inc. to offer the Apple Credit card which operates as a smart consumer credit card. The bank handles all matters related to the platform such as underwriting, customer service, and regulatory compliance, and the card users benefit from doubled efforts to ensure consumer data security and privacy via Apple's advanced technologies such as Face ID and Touch ID.

Banks could also partner with fintech firms to consolidate processing volumes using Payment-as-a-service (PaaS) platforms. Outsourcing or insourcing part of their payments value chain would allow them to develop dispensing systems that ensure continued transaction flow at a lower cost. This could be especially beneficial for small and mid-sized banks that are unable to commit the required investment to upgrade or adapt their infrastructure to new open API systems.

In the B2B segment, we are also seeing the rise of promising partnerships aimed at driving payments innovation further. ING Bank, for instance, acquired a minority stake in TransferMate, a leading cross-border B2B payments service provider, in 2018. This partnership provides ING bank's SME and corporate customers access to TransferMate's full suite of payables and receivables solutions. The bank also benefits from TransferMate's cross-border API technology and payments licence which helps to reduce costs associated with international payments. As recently as 2021, JP Morgan has partnered with Alipay, the B2B platform of Alibaba Group, to provide digital card payments services for US-based SMBs. In Luxembourg, an increasing number of banks are offering open banking solutions to their customers through Payconiq's application. This includes B2B customers, who now have access to the PAX A920 electronic payments terminal, an accelerated mobile payments solution developed through a strategic collaboration between Payconiq and Servipay in 2020.

In deciding to expand partnerships with pure-play fintech firms, however, banks need to consider potential challenges. These range from differences between banks' more conservative approach to risk-taking and fintechs' entrepreneurial approach and high-risk capacity, long project timelines which fintechs may not be used to but are required to ensure that banks can implement necessary compliance, legal and risk mitigation controls, and having to decide between upgrading legacy systems and integrating new technologies at scale. To tackle these challenges, it is imperative that both parties clearly define and align on the strategic objectives of the collaboration, securing the commitment of all related stakeholders. Banks would also have to be more flexible in adapting their often rigid internal structures and procedures to the more dynamic and agile systems associated with emerging technologies.



23. *Better Business Banking: Collaborating for Success*, Banking Circle, 2020

3.3 Anticipate further changes in the payments landscape

There is sufficient evidence that embedded finance is opening up new frontiers within the payments landscape, with big tech and fintech firms currently leading the pack in fully probing the expansion opportunities this technology offers. Indeed, since the launch of Apple Pay in 2014, digital wallets have become an increasingly popular means of payments, accounting for nearly half (49%) of global e-commerce transactions as of end-2021 - with this figure forecasted to hit approximately 53% by 2025.[24] Embedded lending – in the form of BNPL – is also fast rising within the consumer lending segment, thanks to the efforts of players like Klarna, Clearpay and Affirm. In this context, it becomes clear that banks would have to accelerate their efforts and actively leverage embedded finance technologies in order to retain market relevance and market share.

To this end, the 'uberisation' of payments – a knock-on effect of embedded finance – represents a typical example of how banks can potentially employ embedded finance to create scale within the payments sector. The influx of 'super apps' like WeChat in Asia proves this – being seen to significantly bolster e-wallet adoption and drive new business models through enhanced integration with PSPs, expanded service offerings and access to customer data. With B2B customers urging for a seamless and convenient means of effecting their payments, banks could already look into ways to develop similar offerings within their payments services.

Within the open banking sphere, banks should also consider using open banking APIs to integrate additional services features and services to improve the overall user experience. This could be implemented in areas like market investment management, liquidity management, invoice financing and/or management, as well as supply-chain financing options. Some banks have already jumped on this train, with HSBC launching its Connected Money App in 2018, which allows customers to view various bank accounts, loans, mortgages, and credit cards, on a single platform. In the same year, BBVA also launched its Open platform, a BaaS platform that uses API to connect customers to third parties offering financial products.

That being said, it is important to note that while the technology holds numerous cost and efficiency benefits and could likely be the next phase of the payments revolution, the exploration and replication of embedded finance-based innovations like super apps in Europe would not be without hurdles. Banks and other payments sector players would be required to navigate stringent data privacy concerns and GDPR restrictions. They would also have to demonstrate mastery over the data challenge, particularly in enhancing end-to-end transparency to secure data protection of customers.

3.4 Drive the development of global payments solutions

As the payments ecosystem becomes increasingly connected and digital, it is imperative that the systems and infrastructure underpinning this connectivity are strong enough to withstand the growing impacts of fragmentation and regulatory/systemic divergence. This would be particularly necessary if banks are to operate truly global and interoperable payments systems that seamlessly connect businesses, markets, and economies to the digital world and also facilitate digital integration.

At the moment, several structural and geopolitical risks threaten to force the further fragmentation of the payments system. Paramount among these is the absence of a strict EU-wide framework for the implementation of the PSD2. This has resulted in ambiguity when it comes to interpretation, with each country applying the regulation based on its own defined criteria – creating barriers to the flow of cross-border payments and technologies and having various cost and efficiency impacts on different economies. Recent geopolitical tensions have also intensified the risks of economic and technological fragmentation across the region, with impacts on payments.

Nevertheless, banks stand to assert their relevance and credibility within the payments sphere through their access to institutions and networks that could enable common agreements. They could do this by collaborating among themselves and with regulatory bodies like the ECB and IMF to actively promote the standardisation of international payments systems that are safer, inclusive, more efficient, and less prone to the risk of fragmentation. The European Payments Initiative – launched by 16 European banks to create a unified payments solution for European consumers and businesses – is an example of how banks can drive progress towards a truly global and integrated payments market that facilitates processes across the region and drives economies of scale.

In addition to such initiatives, banks could harness their unique role as experts in cybersecurity risk management to develop innovative and industry-relevant services in this sphere, backed by regulatory initiatives such as DORA. This could be useful not only for identifying and mitigating cyber risks but also for enhancing e-KYC and overall risk management in the payments sphere markets.

Overall, banks in Luxembourg find themselves on the precipice of a monumental and transformational moment, with the skill sets, relationships, and infrastructure to advance significantly in tandem with the payments revolution. Considering the implementation of the above-mentioned points, while keeping in mind the integration of client centricity at the core of adaptation to changing business models, will separate the winners and laggards in this respect. The former stand to attract greater volume in terms of transactions or expand on value-added services, while the latter – should they be too slow in their pace of adaptation – may find themselves outpaced by their peers and restricted to intermediary roles.

24. *5 factors driving the growth of digital wallets*, FISGlobal, 2022

3.5 Regulators have a role to play in levelling the playing field

As already pointed out, the current regulatory landscape does not appear to provide homogeneity for all players within the payments landscape. Banks, being more heavily regulated, tend to encounter more stringent restrictions and greater compliance and implementation requirements. While this often translates into higher costs, this high level of regulation has also helped to enhance banks' trust and credibility with the consumers and businesses that they serve – a status that is further reinforced by banks' proven resilience to crises and their role in maintaining overall financial stability. In fact, research shows that 73% of consumers trust their banks to have their best interests in mind,[25] while a BIS study showed that about 60% of consumers are more likely to trust traditional financial institutions, i.e. banks, than government agencies or fintech companies to protect their data.

For big tech firms, this is far less, with only 1.4% of respondents citing complete trust.[26] This is probably not surprising, seeing that the low level of fintech and big tech firms' regulation makes them more prone to assume risks that could have detrimental impacts on industry participants. The recent volatility of crypto-assets is an example of such impacts stemming from low regulation.

Regulators thus have a responsibility to level the playing field by ensuring all-round compliance with standards by all industry participants (Exhibit 12). This becomes all the more urgent when considering the data protection, liquidity, KYC, and AML risks that could materialise in the absence of stricter regulatory requirements across the board. At the same time, regulators also have an opportunity to dominate the world of payments by harmonising regulations and encouraging technological innovation.

The introduction of new European regulations such as the potential PSD3 could play a role in this respect. Currently being assessed against the existing PSD2, the ratification and potential implementation of this regulation could either open up the payments market for all participants even further or impose greater restrictions on non-traditional players – especially big tech firms – so as to limit their control and use of customer data.

In the same way, the imminent MiCA regulation, while still under consideration, also stands to foster fair competition. If adopted, this regulation would provide a framework to guide the issuance, custody, and administration of crypto-assets currently out of the scope of EU law. It would also help to enforce consumer data protection and address risks associated with the wide scale use of crypto and DLT-based financial services offerings, thus helping to prevent market abuse and other financial crimes.

Exhibit 12: Upcoming regulation could help to level playing regulatory field for industry participants

Digital Transformation

- Within the digital transformation agenda, PSD3 seeks to address regulatory issues and other concerns associated with PSD2. The regulation would promote and partner with banks for their Digital transformation – since even with EU's most advanced markets most banks lack clear open banking strategies.
- MiCA will seek to enforce consumer data protection and also address risks associated with use of crypto and DLT-based financial services offerings as a way of preventing market abuse and other financial crimes. The regulation is expected to be effective between 2023-2024.

Sustainable Finance

- The Sustainable Finance agenda of the EU will continue to expand with important implications for banks.
- It will certainly impact the upcoming MiCA regulation through a code monitoring of the energy consumption of crypto-assets. It will also continue affecting the upcoming capital requirement directive to account for climate risks as well as climate financing needs.
- As all financial market participants have a role to play in financing the transition towards a more sustainable Europe, Sustainable Finance is an opportunity to design upcoming regulations in a way that will level the playing field between banks and non-bank financial institutions.

Source: PwC AWM Research Centre

25. *Survey: Consumers Trust Banks More Than the Federal Government*, DepositAccounts, 2021
26. *Whom do consumers trust with their data? US Survey Evidence*, Bank for International Settlements, 2021

4 Conclusion

Mainly starting in the B2C landscape with the near-displacement of banks from the epicentre of innovation, the payments revolution is only set to accelerate and intensify in the coming years. As it does, it is likely that the innovation of B2B payments would become as integral to banks' core operations and offerings as is currently the case for B2C payments.

The advent of new technologies such as mobile and distributed ledger technologies have facilitated the proliferation of innovative and digitally driven business models. At the same time, one cannot lose sight of the fact that players within the payments sphere, especially big tech companies, have galvanised a new wave of payments services based on client centricity, convenience and the value creation for both retail and business customers. This dual and complementary relationship between technology and business models has thus become fully entrenched within the payments revolution.

In this context, those who stand to win are those who can generate enough transactional volume or propose additional services, thus integrating themselves within this new payments ecosystem, while players who fail to capitalise and double down on client centricity could find themselves confined to an intermediary role. What banks are facing is a situation where clients can change their bank via the app-store within minutes. Banks therefore need to actively engage in the new payments ecosystem and also find new ways to keep proximity with their clients if they want to succeed, or else they'll be disrupted. Banks' process to navigate this emerging landscape involves reinventing themselves with key value-added expansions and additions to their product and service offerings, all while navigating regulatory and compliance complexities. They would also have to actively engage with players in fintech and big tech to accelerate their integration into the tech and platform economies. This would be necessary so as not to be left behind in the increasingly tech-enabled innovation drive that is the core characteristic of the payments revolution and is essential to meet payments users' surging demands for convenience, ease, and agility.

Banks would also have to accelerate their shift from legacy infrastructure to these systems to maintain relevance with customers, especially as open banking APIs and embedded finance increasingly become the primary facilitators of payments users' interactions with the financial services sector. They would also have to take advantage of their historically proven resilience and credibility to drive the standardisation and increased facilitation of cross-border payments procedures.

Although banks have already started embarking on their B2B payments innovation journey, there is a need for more proactiveness in this still-developing segment which is awash with significant opportunities for banks -with those that fail to optimise client proximity and value-added services bound to be left behind. By evolving, collaborating, taking initiatives, and with the necessary regulatory support, banks would not only thrive but will be well-positioned to lead the payments sector of the future.

5 Glossary and List of Acronyms

-A-	**AI**	Artificial Intelligence
	AML	Anti-Money Laundering
	Application Programming Interface (API)	An application programming interface facilitates the sharing of companies' application data and functionalities with internal or external third parties. It sets out the parameters that define how two or more software products and services communicate with each other, leverage data and functionalities from each other and enable the integration of new applications within existing infrastructure.
-B-	**B2B**	Business to Business
	B2C	Business to Consumers
	Banking-as-a-Service (Baas)	Banking-as-a-Service describes the provision of banking products and services by non-bank third parties through API-enabled integration of banking functionalities with non-banking infrastructure.
	Big Tech	A collective term that refers to the largest and most dominant technology companies that have a large amount of influence in areas such as e-commerce, online advertising, and consumer electronics.These companies are increasingly influencing the payments sector through the development of suitable payments platforms.
	BIS	Bank for International Settlements
	Buy-Now-Pay-Later (BNPL)	Buy Now, Pay Later (BNPL) is a short-term financing option offered to consumers at the point of sale that allows them to pay for current purchases at a later period in equal instalments, often without any interest.
-C-	**CBDCs**	Central Bank Digital Currencies
	COBOL	Common Business-Oriented Language
-D-	**Decentralised Finance (DeFI)**	Decentralised finance refers to an emerging financial technology that relies on automated protocols and smart contracts to offer financial products based on distributed ledger technology such as blockchain, and eliminates the need for intermediaries.
	Distributed Ledger Technology (DLT)	Distributed Ledger Technology (DLT) refers to the technological framework and protocols that enable the initiation, authorisation, and updating of asset transactions across a network in multiple locations at the same time, without the need for a centralised administrator or single-point-of-failure.
	Digital Operational Resilience Act (DORA)	The Digital and Operational Resilience Act is a regulation designed to enhance cybersecurity and operational flexibility in the financial universe. It complements other existing regulations such as the Network and Information Security Directive (NISD) and the General Data Protection Regulation (GDPR).
-E-	**EBA**	European Banking Authority
	ECB	European Central Bank
	E-commerce	The ECB defines this as the sale or purchase of goods or services through electronic transactions that are conducted via the internet or other computer-mediated networks. (Link attached)
	E-KYC	Electronic Know Your Customer
	Electronic Money (E-Money)	According to the ECB, this refers to a monetary value, represented by a claim on the issuer, which is: 1) stored on an electronic device (e.g. a card or computer); 2) issued upon receipt of funds in an amount not less in value than the monetary value received; and 3) accepted as a means of payment by undertakings other than the issuer. (Link attached)
	Electronic Money Institutions (EMIs)	This is a term used by the ECB to describe regulated credit institutions whose activities are solely limited to the issuance of electronic funds and the provision of financial and non-financial services related to the issuance of electronic funds. (Link attached)
-G-	**GDP**	Gross Domestic Product
	GDPR	General Data Protection Regulation
-I-	**Independent Sales Organisation 20022 (ISO 20022)**	The ISO 20022 is a new global standard for communicating payment instructions between financial institutions at the local, regional, and international levels. The financial standard specifies the building blocks and design patterns for the creation of payment messages using a standardised platform methodology, process, and storage infrastructure.
-K-	**KYC**	Know Your Customer
-M-	**M&A**	Mergers and Acquisitions
	Markets in Crypto Assets (MiCA)	This is a proposed EU law intended to streamline DLT and virtual asset regulation in the European Union while protecting users and investors and guaranteeing effective and harmonised access to innovative crypto-asset markets across the single market.
-N-	**NBFI**	Non-Bank Financial Institution
	Platform-as-a-Service (PaaS)	Platform-as-a-service (PaaS) is a cloud computing model that allows a third-party service provider to offer a platform-based product or service to customers, which enables customers to develop, run and manage applications without having to build and maintain proprietary infrastructure for application development.
-P-	**PAX A920**	Compact electronic payment terminal powered by the Android operating system.
	Payment	According to the ECB, a payment is a transfer of funds which places an obligation on the part of a payer vis-à-vis a payee. (Link attached)
	Payment Services Directive 2 (PSD2)	This is the latest and revised version of the EU Payment Service Directive, which is administered by the European Commission to monitor and control payment services and payment service providers across the European Union and European Economic Area, with the aim of making retail payments more innovative and competitive, and improving payment transaction security and consumer data protection.
	Payment Institutions (PIs)	This is defined under the PSD2 as a legal entity that is authorised to provide and execute payment services. (Link attached)
	Payment Service Provider (PSPs)	According to the ECB, this is a natural or legal person that provides services (e.g. issuing, acquiring, the authorisation of transactions, the authentication of end users) to facilitate the transfer of value between end users. This also includes crypto-asset service providers that deliver services relating to digital payment tokens (Link attached).
-S-	**SCT Inst Scheme**	Payment scheme that allows the fast transfer of euro credit funds from one account to another in less than 10 seconds across over 36 European countries, and does not require any clearing and settlement procedures from the underlying bank accounts.
	SME	Small and Medium Enterprises
	Super app	Mobile application-based platform that connects users to a wide range of virtual mobile products and services, including payments and financial transaction services, via a single interface.
	SWIFT	Society for Worldwide Interbank Financial Telecommunications
-T-	**TARGET Instant Payment Settlement (TIPS)**	Market service infrastructure developed by Eurosystem as an extension of TARGET2. It allows payment service providers to execute real time fund transfers to their customers at any point in time and settles payments in central bank money.
	Trans-European Automated Real-time Gross settlement Express Transfer 2 (TARGET2)	Second-generation TARGET system that settles euro payments in central bank money and uses a single shared IT platform to accept and process payment orders.
-U-	**Uberisation**	An emerging disruptive trend in which consumers are directly connected to a plethora of product and service providers via a single mobile application or platform, eliminating the need for intermediaries.

6

Overview of the Luxembourg banking sector's evolution

Key takeaways – Overview of the Luxembourg banking sector's evolution[1]

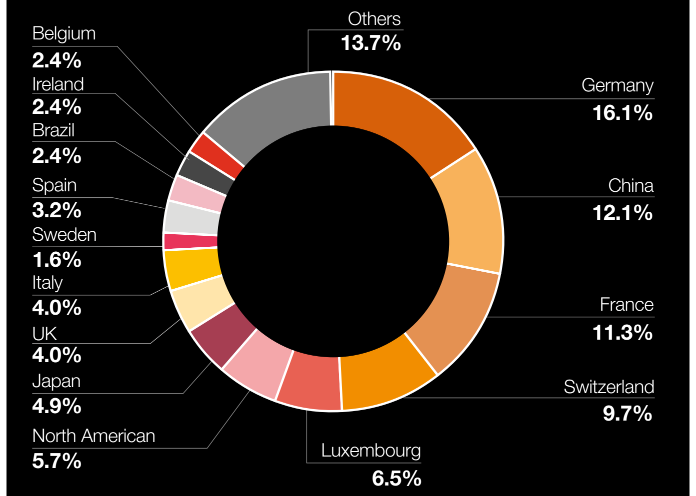
- With 124 authorised banks at the end of the financial year 2021, the number of banks decreased by four.
- Regarding the legal status, 83 banks are under Luxembourg law, 28 are branches of banks from EU Member States and 13 are branches of banks from non-EU Member States.
- In terms of geographical representation in the Luxembourg financial centre, German banks still make up the largest group at 16.1%, followed by Chinese banks with 12.1%, French banks with 11.3% and Swiss banks with 9.7%.
- The following banks have started operations during 2021:
  - China Merchants Bank (Europe) S.A.
  - Allfunds Bank S.A.U., Luxembourg Branch
  - Alpha Bank S.A., Luxembourg Branch
  - Itaú BBA Europe, S.A. - Luxembourg Branch
- The following banks were deregistered in 2021:
  - Hapoalim (Switzerland) Ltd, Luxembourg Branch
  - Joh. Berenberg, Gossler & Co. KG, Niederlassung Luxemburg
  - CATELLA BANK S.A.
  - Banque Hapoalim (Luxembourg) S.A.
  - Öhman Bank S.A.
  - Allfunds Bank International S.A.
  - Alpha Bank A.E., Luxembourg Branch
  - HCOB Securities S.A.

1. Source: CSSF Annual Report 2021

Number of banks

Number of banks	2021	2020
Subsidiaries	81	85
Branches	43	43
Total	124	128

Countries of origin of banks established in Luxembourg



* Classification as per CSSF

Headcount

2021
25,966

2020
26,106

- In 2021, the headcount in the banking sector slightly decreased by 140 staff compared to the prior year.
- Employment increased for 48% of banks, whereas it decreased for 35% of them.
- The gender diversity remains almost unchanged with 45% women and 55% men.

Balance sheet total (in EUR million)

2021
951,708

2020
850,116

- In 2021, the balance sheet total increased by EUR 101.6 billion (+11.9%), confirming an upward trend observed since 2017. In 2021, it has its origin once again from the increase in deposits from customers. However, against the backdrop of COVID-19, the increase in deposits comes not only from investment funds but also from corporates and households.
- On the asset side, the growth was principally driven by the increase in assets held with central banks (+32.72%), followed by the increase in loans and advances to customers (+10.62%). Loans and advances to non-financial corporations rose after the decrease in 2020 due to economic uncertainties in relation to the COVID-19 pandemic.
- On the liabilities side, the banking sector was characterised by an increase in both the amounts owed to credit institutions, with a growth of 21.7 billion (+8.0%), and the amounts owed to customers with a rise of EUR 70.0 billion (+16.5%).

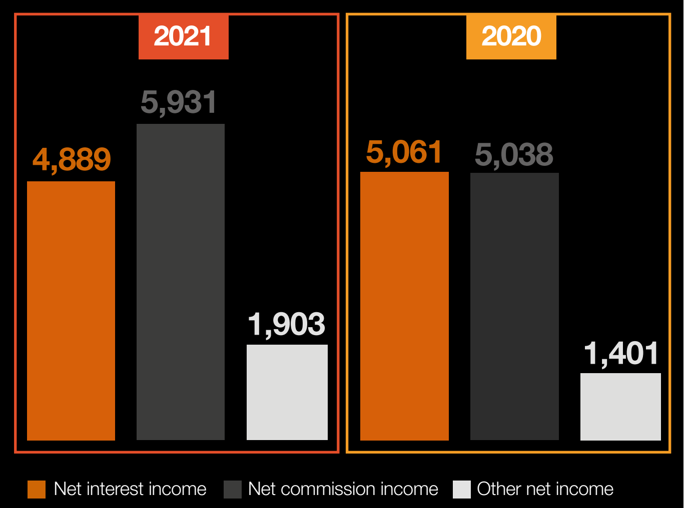
- Net profits increased by EUR 953 million (+30.8%), with 81% of banks having positive results in 2021 (79% in 2020).
- General expenses continued their upward trend with an increase of 10.6%. This growth in general expenses, which concerns both general administrative expenses (+15.3%) and staff costs (+4.6%), was registered by 79% of the banks.
- Net provisions decreased by 72.4%. This reduction is the consequence of the reversal of existing provisions on still performing exposures set up in 2020 due to the anticipated increase in credit risks related to the COVID-19 pandemic.

Annual net profit or loss (in EUR million)

2021
4,044

2020
3,091

Banking income (in EUR million)



- In 2021, the net interest income decreased by 3.4%, mainly due to reduced intermediation margins.
- Net commission income grew by 17.7%; the rise being shared by 72% of banks. This was linked to the increase in the amount of deposited assets which led to a rise in the commissions on custody of assets.
- Other net income increased by 35.8% mainly due to a strong volatility dominated by non-recurring results for a limited number of banks.

Solvency ratio

2021	24.3%
2020	24.6%

- The solvency ratio slightly decreased to 24.3%, due to the rise in the total risk exposure amount at a few banks reflecting the balance sheet growth.
- Moreover, the Luxembourg banks continue to have a high prudential ratio, well above the regulatory ratio requirements.

Return on assets

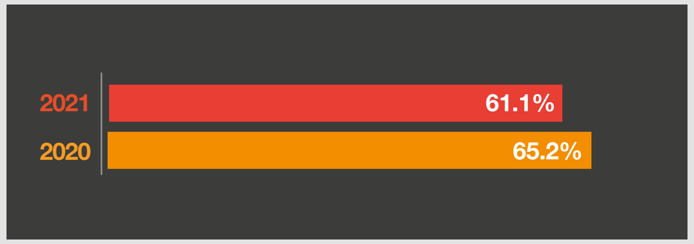
2021	2020
0.42%	0.36%

Return on equity

2021	2020
6.40%	5.15%

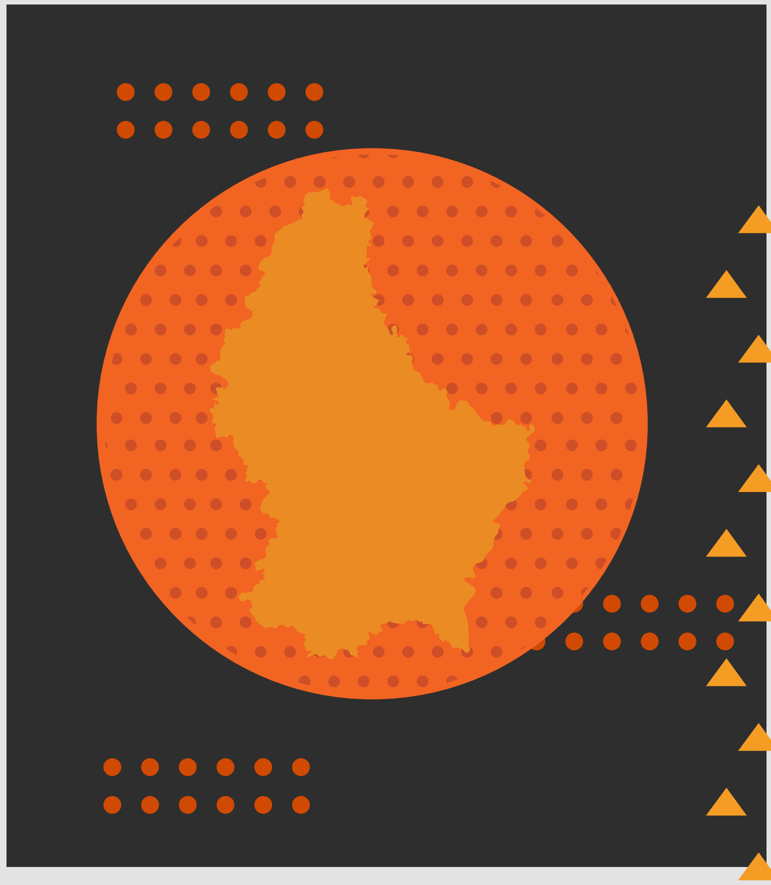
- Both ratios increased, as the annual net profits increased by 30.8%.

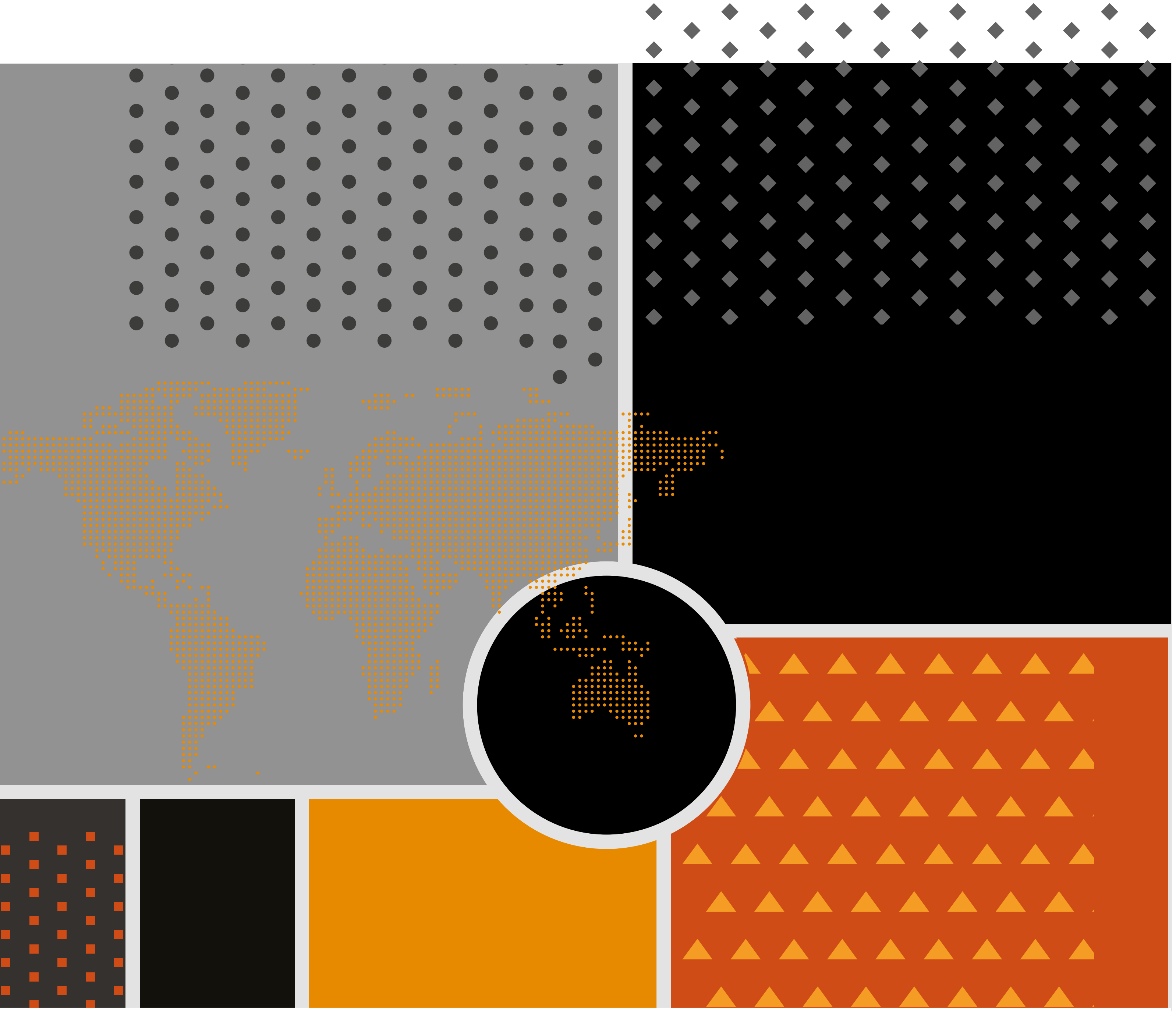
Cost-income ratio



- The cost-income ratio decreased due to the growth of banking income (+10.6%) and decrease of provision (-72.4%).

$$\text{CIR} = \frac{\text{staff costs+administrative costs (incl.depreciation)}}{\text{net interest and commission income +net result on financial operations+other operating result+risk provisioning}}$$





7 Overview of developments in each segment

North American/ UK segment | Chinese segment | French segment | Swiss segment | German segment | Luxembourgish segment

As in previous years, you will also find in this publication an analysis of the financial statements of the largest country segments of banks present in Luxembourg. This review aims at better understanding the dynamics within the different country segments, as well as their relative development against the overall Luxembourg banking market, which recorded a strong performance in 2021 with an increase in net profit by 30.8%.

In order to ensure continuity over time, we have kept the composition of the six main country segments: German, French, Swiss, UK/North American and Chinese banks alongside Luxembourg banks, which are part of the "home segment". For each of these segments, we highlight changes compared to the previous year and discuss observed trends.

The Luxembourg banks continue to exercise a relatively diversified business model in their home market, with a focus on private, retail and corporate banking as well as asset servicing. In comparison to this, the other country segments remain focused on one or two main business areas along the themes of investment fund servicing, depositary banking, private banking, (international) loans businesses or trade financing. The Luxembourg segment recorded the highest increase in net profit from the previous year (+147.7%) across all six segments.

The UK/North American segment remains focused on corporate banking, asset servicing and private banking. This segment leveraged the continuing growth in the Luxembourg fund industry and institutional wealth management and recorded a net profit increase from the previous year (+4.8%).

The group of Swiss banks in Luxembourg also have a focus on asset servicing, as well as a tradition of private banking. The Swiss banks segment showed a significant increase in the net profit (+60.2%).

The Chinese segment, which predominantly focuses on corporate banking activities, is characterised by Chinese banking groups establishing their European hub in Luxembourg, and by extension of its business activities, into the EU via an extended branch network. The segment welcomes a new bank in 2021.

The French segment follows a model of universal banking with a focus on private banking, asset servicing and lending. The French segment recorded a sound increase in net profit from the previous year (+15.1%).

The German segment, which formerly boasted the largest number of banks, saw a drop in this number following the deregistration and cessation of activities of certain subsidiaries and branches. German banks continue to offer a large variety of services that range from private banking via asset services to lending businesses. The German segment recorded a significant increase in net profit from the previous year (+74.5%).

Our analysis of the 2021 annual accounts of Luxembourg banks illustrates once more the diversity in the banks' business models and their adaptation in a fast-changing financial services world.

Key takeaways – North American/UK segment

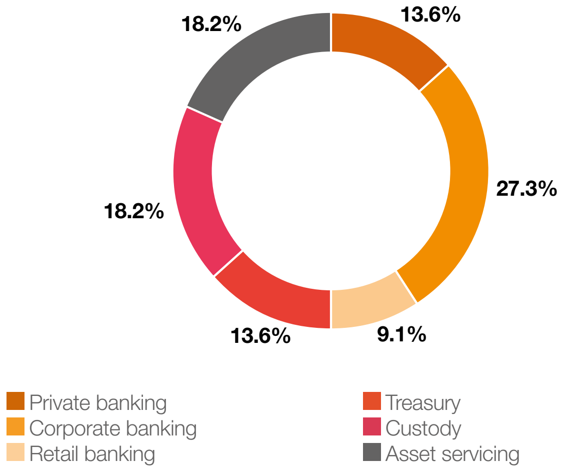
The number of banks in the UK/North American segment remained stable in 2021, with the key business areas remaining corporate banking, asset servicing and private banking.

- The aggregate balance sheet of the UK/North American segment increased by EUR 7.3 billion (+6.2%). Similar to the prior year, this was mainly driven by J.P. Morgan Bank Luxembourg S.A. (JPMBL) which increased its balance sheet by EUR 3.6 billion (+4.9%) supported by an increase in loans and advances to credit institutions by EUR 1.9 billion (+3.2%) and loans and advances to customers by EUR 1.7 billion (+12.4%). The reason behind the JPMBL's balance sheet growth is the higher demand in private bank and wholesale payments clients. During the year all banks within the UK/North American segment have seen a balance sheet increase. Whereas JPMBL represents 49.2% of the segment's aggregate balance sheet growth, there were also notable movements at RBC Investor Services Bank S.A. (EUR +2.0 billion; +10.8%) and PayPal (Europe) S.à r.l. et Cie, S.C.A. (PayPal) (EUR +0.8 billion; +7.3%).
- On the liabilities side, the UK/North American segment was characterised by an increase of the amounts owed to customers by EUR 6.8 billion (+7.1%). Again, the key driver was JPMBL, increasing its amounts owed to customers by EUR 3.5 billion (+5.5%), primarily driven by higher client deposits from increased demand in private bank and wholesale payments.
- The revenue structure in the UK/North American segment historically depended heavily on the net commission income, showing in 2021 a 28.3% increase compared to prior year. The net commission income for the segment mainly stems from PayPal and JPMBL that saw an increase of respectively 89% and 21.5%. The increase is driven from higher fees and commissions income due to the growth in clients' activity.
- Overall, seven out of nine banks were profitable this year, with JPMBL contributing the most with EUR 257.0 million, followed by PayPal with EUR 145.3 million.
- The segment's headcount has slightly increased by 111 FTE (+2.9%), driven by JPMBL (+92 FTE) in order to support business growth and Northern Trust Global Services SE (+86 FTE) due to the inclusion of the Swiss branch, primarily offset by RBC Investor Services Bank S.A. (-65 FTE). Staff costs increased by EUR 108.8 million (+19.4%). Overall administrative expenses increased by EUR 253.4 million (+24.7%), mainly related to investments in transformation and innovation, in order to streamline processes and offer a better customer experience, aligning products with client needs, market developments and regulation.

Number of banks

Number of banks	2021	2020
Subsidiaries	9	9
Branches	9	9
Total	18	18

Business areas



Annual net profit or loss (in EUR million)

2021	2020
578	552

Headcount

2021	2020
3,972	3,861

Cost-income ratio

Balance sheet total (in EUR million)

2021	2020
124,599	117,307

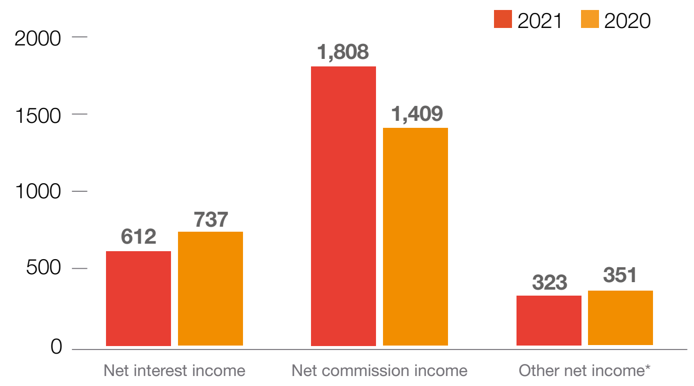
Return on equity

2021	2020
6.35%	6.14%

Return on assets

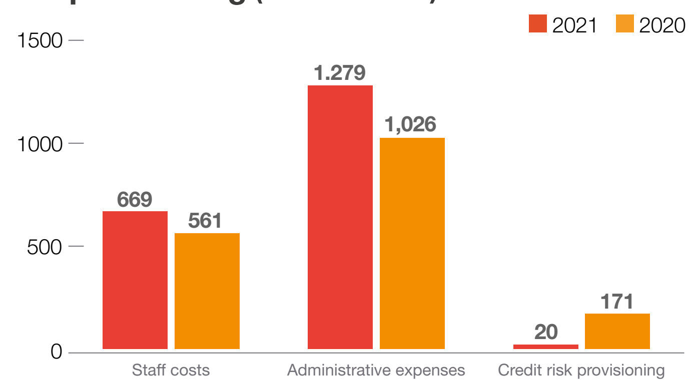
2021	2020
0.46%	0.47%

Banking income (in EUR million)

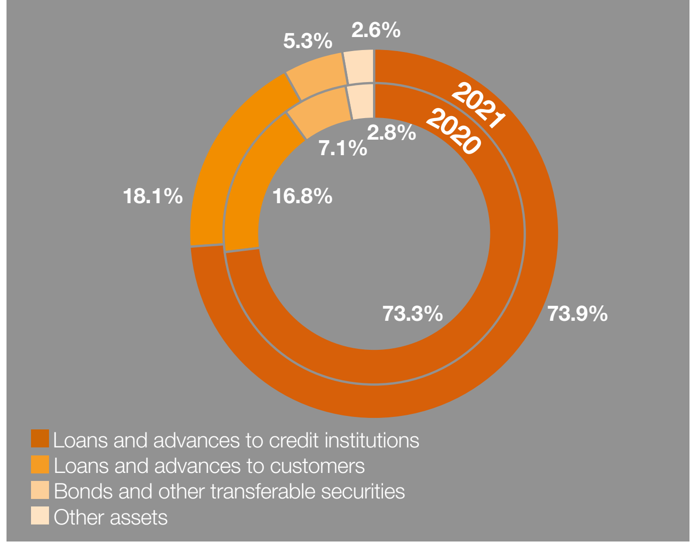


*Other net income includes: net profit/loss on financial operations (including gains/losses on derivatives & revaluation gains/losses), other net operating income and dividend income

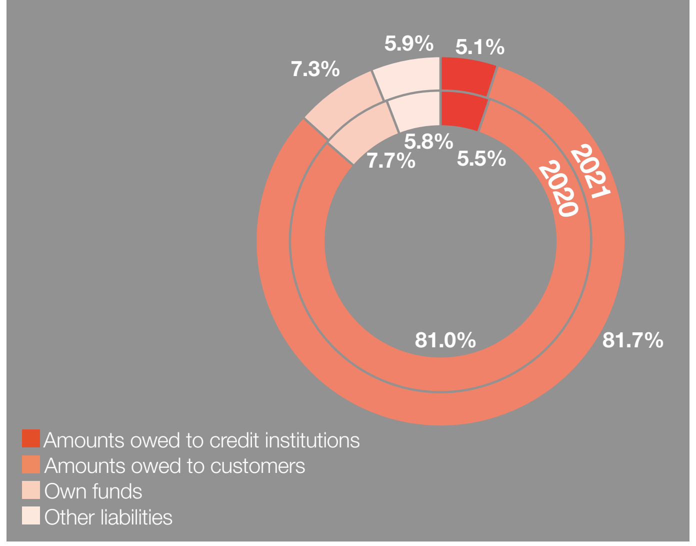
Staff costs, administrative expenses and credit risk provisioning (in EUR million)



Breakdown of assets



Breakdown of liabilities



Ranking of balance sheet totals (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	J.P. Morgan Bank Luxembourg S.A.	76,699	73,113	4.9%	=
2	RBC Investor Services Bank S.A. (*)	20,582	18,582	10.8%	=
3	PayPal (Europe) S.à r.l. et Cie, S.C.A.	11,140	10,382	7.3%	=
4	Northern Trust Global Services SE	7,437	6,859	8.4%	=
5	HSBC Private Bank (Luxembourg) S.A.	5,466	5,184	5.4%	=
6	John Deere Bank S.A. (*)	2,605	2,575	1.2%	=
7	CIBC CAPITAL MARKETS (EUROPE) S.A. (*)	542	507	7.0%	=
8	Brown Brothers Harriman (Luxembourg) S.C.A.	112	90	24.4%	=
9	RBS International Depositary Services S.A.	16	15	5.3%	=
	TOTAL	124,599	117,307	6.2%	

Ranking of annual net profit or loss (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	J.P. Morgan Bank Luxembourg S.A.	257.0	224.9	14.2%	=
2	PayPal (Europe) S.à r.l. et Cie, S.C.A.	145.3	98.6	47.3%	=
3	Northern Trust Global Services SE	72.5	85.4	-15.1%	=
4	Brown Brothers Harriman (Luxembourg) S.C.A.	52.7	48.9	7.8%	▲ +1
5	John Deere Bank S.A. (*)	45.2	38.6	17.0%	▲ +1
6	RBC Investor Services Bank S.A. (*)	14.6	53.2	-72.7%	▼ -2
7	RBS International Depositary Services S.A.	0.4	0.6	-27.9%	▲ +1
8	CIBC CAPITAL MARKETS (EUROPE) S.A.(*)	-3.2	-1.3	-152.0%	▲ +1
9	HSBC Private Bank (Luxembourg) S.A.	-6.1	2.9	-312.2%	▼ -2
	TOTAL	578.3	551.9	4.8%	

* Please note that the bank's Financial Statements closing date is 31 October 2021.

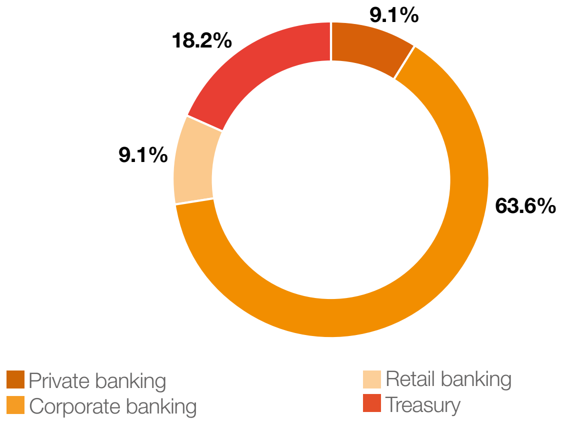
Key takeaways – Chinese segment

- During the year 2021, Chinese banks in Luxembourg increased by one: China Merchants Bank (Europe) S.A. received its banking licence in May 2021. The Chinese banks operate mainly in the corporate banking and service centre sectors.
- The aggregate balance sheet of the Chinese segment increased by EUR 2.6 billion (+18.5%), principally due to an increase in loans and advances to customers of EUR 1.2 billion (+17.0%) and an increase in loans and advances to credit institutions of EUR 0.9 billion (+18.7%). The increase in loans and advances to customers comes mostly from China Construction Bank (Europe) S.A. by EUR 0.6 billion (+51.8%) and Bank of China (Luxembourg) S.A. by EUR 0.3 billion (+10.6%), while the increase in loans and advances to credit institutions comes mostly from Industrial and Commercial Bank of China (Europe) S.A. by EUR 0.7 billion (+55.9%).
- On the liabilities side there is a notable increase in amounts owed to credit institutions +54.1%, from EUR 3.8 million (2020) to EUR 5.9 million (2021), and a decrease in amounts owed to customers -5.7%, from EUR 6.9 million (2020) to EUR 6.5 million (2021). The key driver for this shift is Industrial and Commercial Bank of China (Europe) S.A., increasing its amounts owed to credit institutions by EUR 1.3 billion (+110.3%), while reducing the amounts owed to customers by EUR 0.6 billion compared to the previous year (-16.9%).
- Compared to 2020 figures, the Chinese segment showed an increase in aggregate net profits from loss of EUR 34.1 million in 2020 to a profit of EUR 6.1 million, mainly linked to the profit of Bank of China (Luxembourg) S.A. for EUR 37.6 million, largely due to a decrease in credit risk provisioning. The net interest income increased slightly by EUR 2.5 million (+2.0%) as well as the net commission result by EUR 1.6 million (+2.8%), due to an overall increase in the banks' loan business.
- On the human capital side, there was an increase in staff with a growth of 38 FTE, mainly at Bank of China (Luxembourg) S.A. (+24 FTE) and China Construction Bank (Europe) S.A. (+10 FTE). This resulted in the banks' increased staff costs (EUR +16.8 million) which translates into a +13.6% variation compared to previous year.

Number of banks

Number of banks	2021	2020
Subsidiaries	7	6
Branches	7	7
Total	14	13

Business areas



Annual net profit or loss (in EUR million)

2021: 6
2020: -34

Headcount

2021: 928
2020: 890

Cost-income ratio

Balance sheet total (in EUR million)

2021: 16,829
2020: 14,203

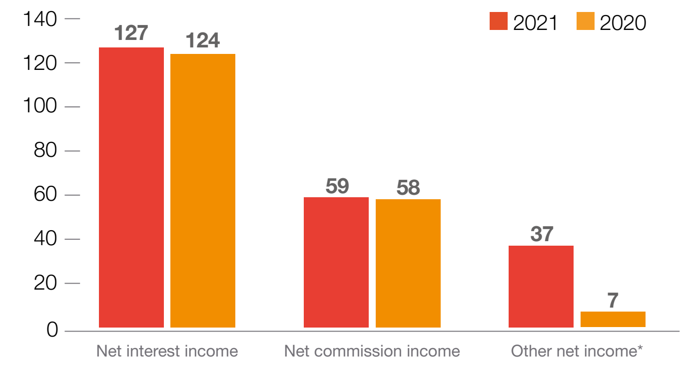
Return on equity

0.31% (2021) | -1.78% (2020)

Return on assets

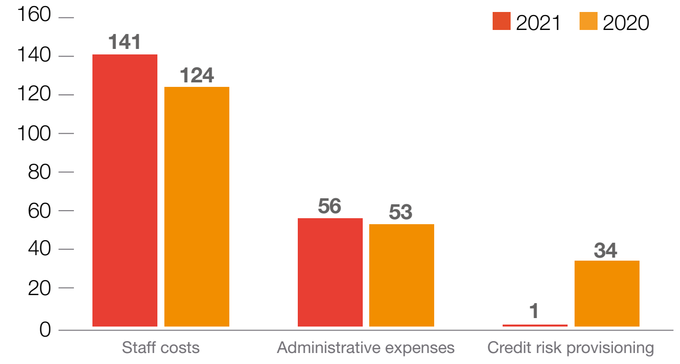
0.04% (2021) | -0.24% (2020)

Banking income (in EUR million)

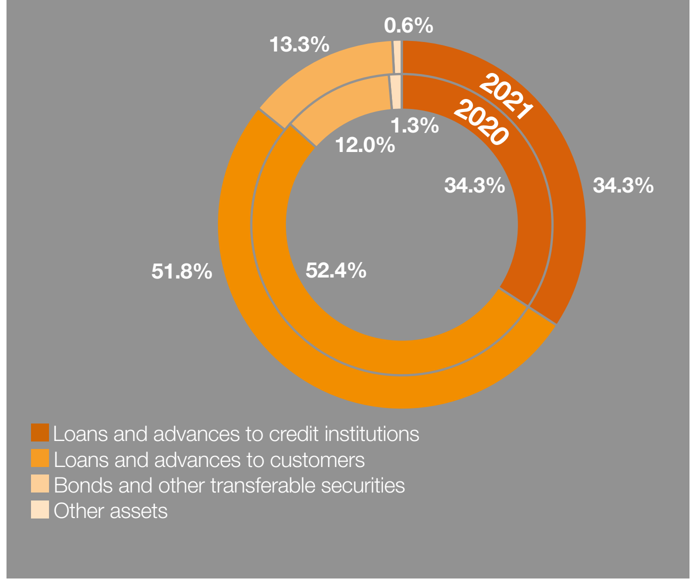


*Other net income includes: net profit/loss on financial operations (including gains/losses on derivatives & revaluation gains/losses), other net operating income and dividend income

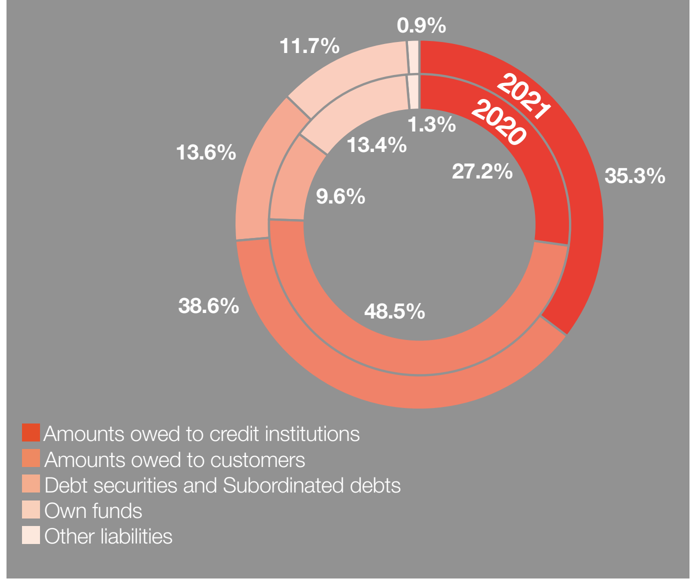
Staff costs, administrative expenses and credit risk provisioning (in EUR million)



Breakdown of assets



Breakdown of liabilities



Ranking of balance sheet totals (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Bank of China (Luxembourg) S.A.	6,894	6,513	5.8%	=
2	Industrial and Commercial Bank of China (Europe) S.A.	6,246	5,460	14.4%	=
3	China Construction Bank (Europe) S.A.	2,688	1,676	60.4%	=
4	Bank of Communications (Luxembourg) S.A.	760	495	53.5%	=
5	China Everbright Bank (Europe) S.A.	152	36	322.2%	=
6	China Merchants Bank (Europe) S.A.	50	-	NA	NEW
7	Agricultural Bank of China (Luxembourg) S.A.	39	23	69.6%	▼ -1
	TOTAL	16,829	14,203	18.5%	

Ranking of annual net profit or loss (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Bank of China (Luxembourg) S.A.	37.6	0.0	NA	▲ +1
2	Industrial and Commercial Bank of China (Europe) S.A.	1.2	-11.8	100.0%	▲ +5
3	Agricultural Bank of China (Luxembourg) S.A.	1.2	0.7	71.4%	▼ -2
4	China Everbright Bank (Europe) S.A.	0.1	-1.2	-108.3%	=
5	China Merchants Bank (Europe) S.A.	-1.0	0.0	NA	NEW
6	Bank of Communications (Luxembourg) S.A.	-11.9	-11.8	-0.8%	=
7	China Construction Bank (Europe) S.A.	-21.1	-10.0	-111.0%	▼ -2
	TOTAL	6.1	-34.1	117.9%	

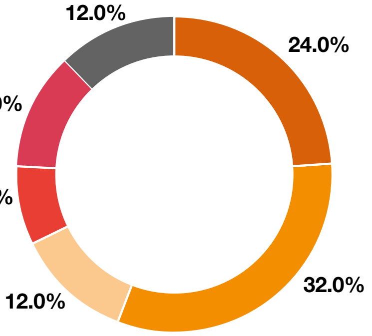
Key takeaways – French segment

- The number of banks in the French segment remained constant in 2021. The aggregate balance sheet increased by EUR 18.6 billion (+23.4%), mainly driven by the growth in loans and advances to credit institutions (EUR +17.5 billion; +42.7%). This was mostly due to Société Générale Luxembourg S. A. (SGL) and CA Indosuez Wealth (Europe) S.A. which increased the loans and advances to credit institutions by EUR 10.7 billion and EUR 5.5 billion respectively.
- On the liability side, French banks increased the amounts owed to credit institutions (EUR +4.8 billion; +15.5%) as well as the deposits by customers (EUR +14.7 billion; +36.1%), primarily driven by SGL's asset reorganisation with Société Générale Paris.
- Net profit grew by EUR 42.5 million (+15.1%), with eight out of nine banks increasing their profit. Net commission income and other net income grew respectively by EUR 47.3 million (+12.1%) and EUR 16.0 million (+5.5%) while net interest income decreased by EUR 28.2 million (-9.1%). The highest increase in net commission income was observed at SGL (EUR +17.9 million; +11.5%), mainly due to a growth in assets under management, followed by Banque de Luxembourg S.A. (EUR +10.5 million; +8.1%). On the cost side, there was a notable increase in the administrative expenses (EUR +25.9 million; +9.3%), driven by the Private Banking transformation plan at SGL, while a decrease in credit risk provisioning was observed (EUR -18.8 million; -19.1%), mainly at CA Indosuez Wealth (Europe) S.A. (EUR -16.1 million; -54.6%). The cost income ratio remained unchanged, since costs grew proportionately with income.
- The headcount increased by 97 FTE (+3.4%), leading to an increase in staff costs (EUR +9.2 million; +2.8%). The most notable increases were at CA Indosuez Wealth (Europe) S.A. (+139 FTE; +28.6%) linked to the new Italian branch, whereas SGL's headcount decreased slightly by 50 FTE (-4.3%).

Number of banks

Number of banks	2021	2020
Subsidiaries	9	9
Branches	3	3
Total	12	12

Business areas



Annual net profit or loss (in EUR million)

2021 323

2020 281

Headcount

2021 2,945

2020 2,848

Cost-income ratio

Balance sheet total (in EUR million)

2021 98,083

2020 79,491

Return on equity

6.51% **2021**

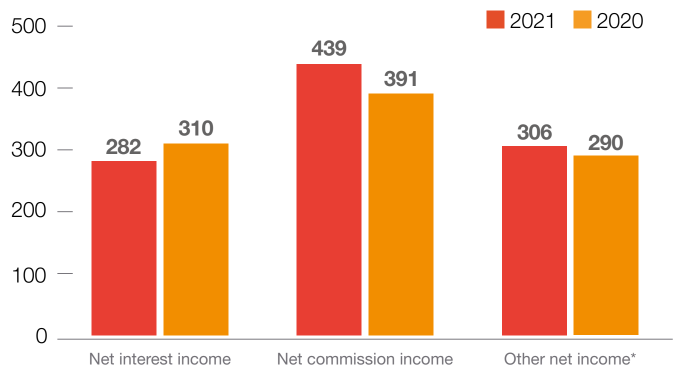
5.68% **2020**

Return on assets

0.33% **2021**

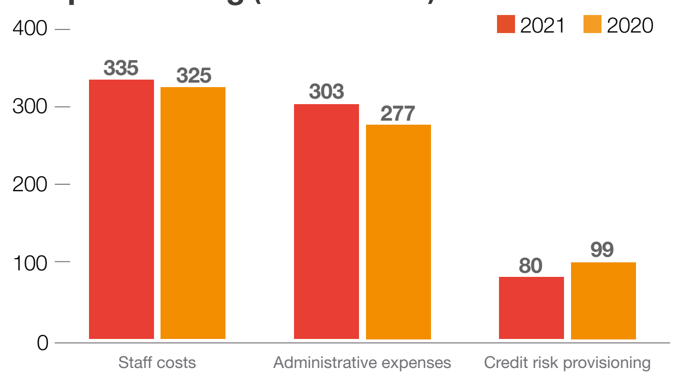
0.35% **2020**

Banking income (in EUR million)

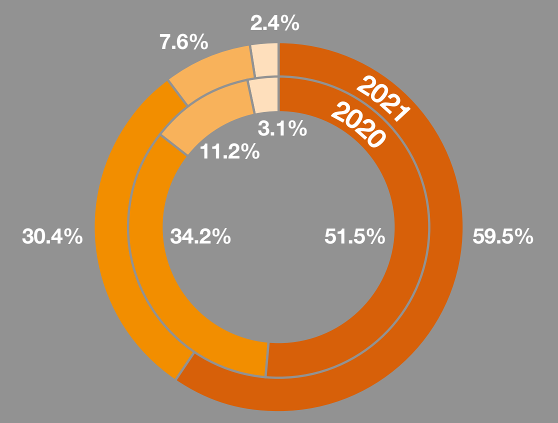


*Other net income includes: net profit/loss on financial operations (including gains/losses on derivatives & revaluation gains/losses), other net operating income and dividend income

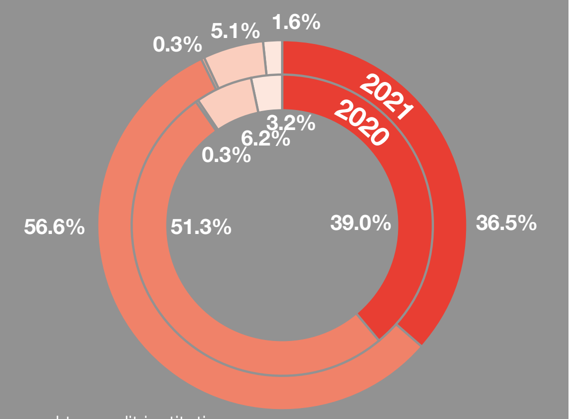
Staff costs, administrative expenses and credit risk provisioning (in EUR million)



Breakdown of assets



Breakdown of liabilities



Ranking of balance sheet totals (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Société Générale Luxembourg S.A.	51,334	43,121	19.0%	=
2	Banque de Luxembourg S.A.	14,178	13,717	3.4%	=
3	CA Indosuez Wealth (Europe) S.A.	10,904	9,262	17.7%	=
4	Société Générale Capital Market Finance S.A.	14,151	7,700	83.8%	=
5	Natixis Wealth Management Luxembourg S.A.	4,811	3,952	21.7%	=
6	Société Générale Financing and Distribution S.A.	784	747	5.0%	=
7	Banque BCP S.A.	754	605	24.6%	=
8	Banque Transatlantique Luxembourg S.A.	366	297	23.2%	=
9	Keytrade Bank Luxembourg S.A.	802	90	791.1%	=
	TOTAL	98,084	79,491	23.4%	

Ranking of annual net profit or loss (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Société Générale Luxembourg S.A.	262.9	224.1	17.3%	=
2	Banque de Luxembourg S.A.	65.1	59.3	9.8%	=
3	CA Indosuez Wealth (Europe) S.A.	6.2	-14.4	143.1%	▲ +6
4	Banque Transatlantique Luxembourg S.A.	3.8	2.3	65.2%	=
5	Keytrade Bank Luxembourg S.A.	1.4	1.2	16.7%	▲ +1
6	Société Générale Financing and Distribution S.A.	0.5	2.2	-77.3%	▼ -1
7	Société Générale Capital Market Finance S.A.	0.0	0.1	-100.0%	▲ +1
8	Natixis Wealth Management Luxembourg S.A.	-3.1	5.2	-159.6%	▼ -5
9	Banque BCP S.A.	-13.6	0.9	<-1.000%	▼ -2
	TOTAL	323.2	280.9	15.1%	

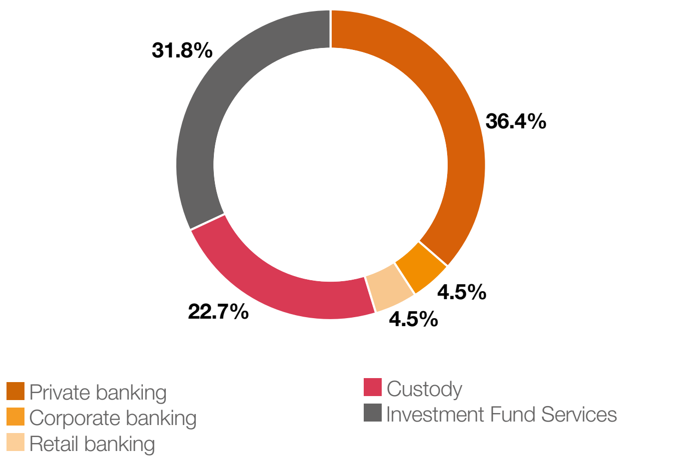
Key takeaways – Swiss segment

- The number of banks in the Swiss segment remained constant in 2021, with the key business areas remaining private banking and asset servicing.
- The aggregate balance sheet total in the Swiss segment increased by EUR 4.2 billion (+13.0%). This was mainly driven by Pictet & Cie (Europe) S.A. (Pictet) which increased its balance sheet by EUR 1.9 billion (+20.5%). The overall growth is mainly driven by an increase as for most of the banks of the Swiss segment in loans and advances to credit institutions by EUR 2.2 billion (+12.4%) and loans and advances to customers by EUR 1.3 billion (+13.2%). On the liability side, there was a further slight shift from amounts owed to credit institutions to amounts owed to customers that now correspond to 86.9% of total liabilities.
- The net banking income continued to show an overall positive trend (EUR +69.6 million; +60.2%). All the banks were able to grow their net commission income by a total of EUR 141.7 million (+25.2%), which clearly remains the key driver for the Swiss segment. Net interest income decreased by EUR 8.6 million (-8.6%), mainly as a result of the low interest rates environment. The most significant increases related to net commission income were at Pictet (EUR +69.9 million; +31.0%) linked to the strong growth of Assets Under Management and Bank Julius Baer Europe S.A. (EUR +29.7 million; +62.1%) , due to the inclusion of the Spanish branch figures and the increase of client assets.
- Overall expenses increased in 2021, driven by both the staff costs (EUR +33.5 million; +7.6%) and administrative expenses (EUR +11.4 million; +4.3%). The administrative expenses increase stems from Bank Julius Baer Europe S.A. (EUR +6.7 million; +23.1%) due to the inclusion of the Spanish branch figures and investments in the IT platform. This also resulted in an increase in staff costs (EUR +17.5 million; +39.5%) at Bank Julius Baer Europe S.A. The overall headcount decreased by 131 FTE (-5.6%), mainly at Pictet (-141 FTE). The Bank operated a branch in Hong-Kong, whose activities were sold to Banque Pictet & Cie SA in the course of 2021. Following this sale, the Bank focuses on its strategic development in Europe.
- The overall positive results of the Swiss segment compensated for the increase in administrative expenses and staff costs, which resulted in decreased cost-income ratio from 81.6% in 2020 to 76.4% in 2021.

Number of banks

Number of banks	2021	2020
Subsidiaries	9	9
Branches	3	3
Total	12	12

Business areas



Annual net profit or loss (in EUR million)

2021: 185
2020: 116

Headcount

2021: 2,226
2020: 2,357

Cost-income ratio

Balance sheet total (in EUR million)

2021: 36,777
2020: 32,552

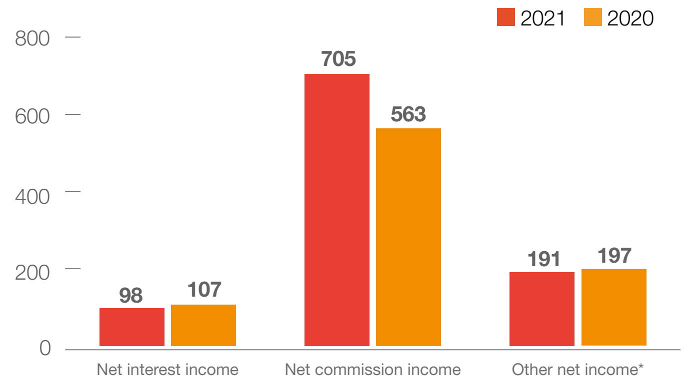
Return on equity

9.56% (2021)
6.89% (2020)

Return on assets

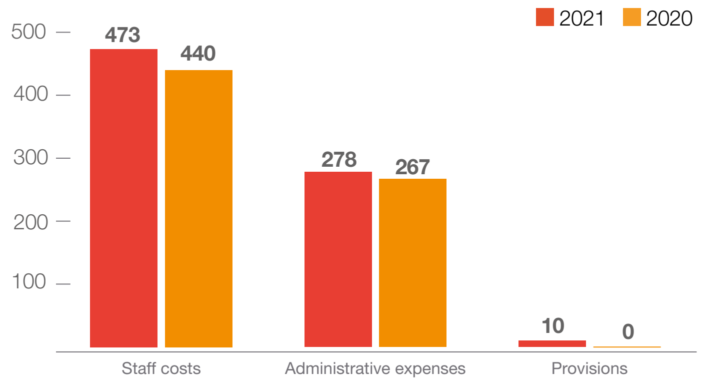
0.50% (2021)
0.36% (2020)

Banking income (in EUR million)

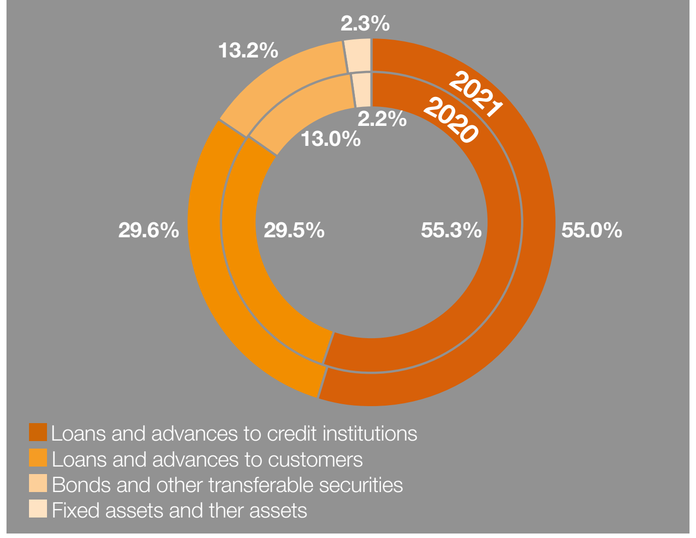


*other net income includes: net profit/loss on financial operations (including gains/losses on derivatives & revaluation gains/losses), other net operating income and dividend income

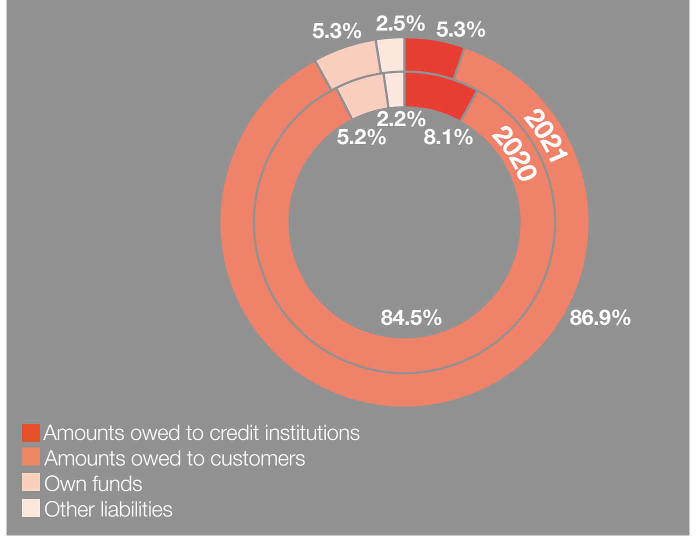
Staff costs, administrative expenses and credit risk provisioning (in EUR million)



Breakdown of assets



Breakdown of liabilities



Ranking of balance sheet totals (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Pictet & Cie (Europe) S.A.	11,588	9,620	20.5%	=
2	Credit Suisse (Luxembourg) S.A.	8,706	8,219	5.9%	=
3	Edmond de Rothschild (Europe) S.A.	5,028	4,564	10.2%	=
4	EFG Bank (Luxembourg) S.A.	3,295	2,965	11.1%	=
5	Bank Julius Baer Europe S.A.	3,016	2,739	10.1%	=
6	Lombard Odier (Europe) S.A.	2,224	1,589	40.0%	+1
7	Union Bancaire Privée (Europe) S.A.	1,875	1,872	0.2%	-1
8	Mirabaud & Cie (Europe) S.A.	618	549	12.6%	=
9	Swissquote Bank Europe S.A.	427	435	-1.8%	=
	TOTAL	36,777	32,552	13.0%	

Ranking of annual net profit or loss (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Pictet & Cie (Europe) S.A.	79.7	72.4	10.1%	=
2	Credit Suisse (Luxembourg) S.A.	50.4	31.5	60.0%	=
3	Edmond de Rothschild (Europe) S.A.	38.1	13.3	186.5%	=
4	Bank Julius Baer Europe S.A.	19.5	7.8	150.0%	=
5	Swissquote Bank Europe S.A.	3.0	3.8	-21.1%	=
6	Mirabaud & Cie (Europe) S.A.	2.2	-1.1	300.0%	=
7	Union Bancaire Privée (Europe) S.A.	1.2	-2.2	154.5%	+1
8	Lombard Odier (Europe) S.A.	-3.4	-8.5	60.0%	+1
9	EFG Bank (Luxembourg) S.A.	-5.4	-1.3	-315.4%	-2
	TOTAL	185.3	115.7	60.2%	

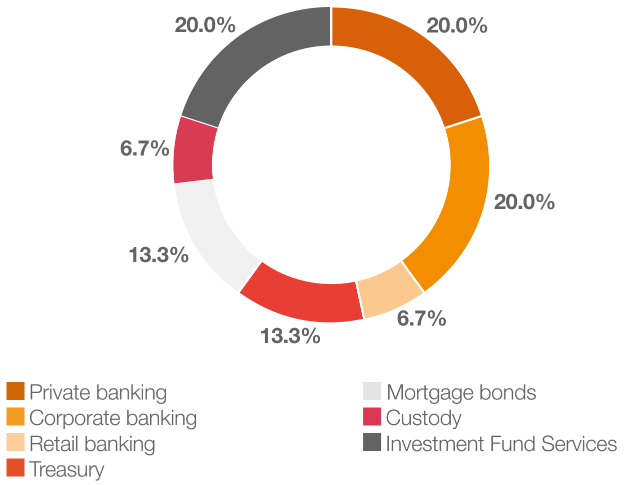
Key takeaways – German segment

- In 2021, HCOB Securities S.A. gave up its banking licence. The bank's 2020 figures have thus been excluded to ensure a better comparability. During the year, Freie Internationale Sparkasse S.A. changed its name to FIS Privatbank S.A. and Joh. Berenberg, Gossler & Co. KG, Niederlassung Luxemburg stopped its activity in Luxembourg.
- The aggregate balance sheet of the German segment has increased by EUR 3.0 billion (+4.6%), as a result of the increase in loans and advances to credit institutions by EUR 6.4 billion (+33.9%), partially compensated by the decrease in bonds and other transferable securities (EUR -1.9 billion; -12.0%). The overall increase was driven by DZ PRIVATBANK S.A. (DZ) (EUR +3.8 billion; +49.8%) and by Deutsche Bank Luxembourg S.A. (DBL) (EUR +2.4 billion; +24.3%). For DBL this is primarily due to intra-group transactions and as a result of additional regulatory liquidity requirements. On the liabilities side, the segment was characterised by an increase of amounts owed to credit institutions by EUR 3.4 billion (+14.4%). The key driver was DBL, increasing its amounts owed to credit institutions by EUR 4.0 billion (+28.6%), partially offset by NORD/LB Luxembourg S.A. Covered Bond Bank (NORD/LB) (EUR -0.9 billion; -25.0%) linked to the group's restructuring.
- The net interest income increased slightly during the year (EUR +1.4 million; +0.3%), remaining the key revenue stream in the German segment, as the lending activity is core for all the banks. However, there were notable increases in the net commission income (EUR +34.3 million; +171.2%), mainly driven by DZ (EUR +13.6 million; +9.9%). This was mainly due to corporate lending, advisory, custody and asset management fees.
- The segment's headcount has slightly increased by 68 FTE (+4.7%), driven by DZ (+79 FTE) and partially offset by NORD/LB (-17 FTE). The rise in staff costs (EUR +4.5 million; +2.6%) was due to DZ (EUR +9.5 million; +8.2%) and countered by NORD/LB (EUR -4.5 million; -23.7%). Moreover, there was a notable decrease in overall credit risk provisioning (EUR -41.1 million; -75.0%), the key driver being DBL with a decrease of EUR 26.1 million (-51.7%). Together with the increase in net commission income, this drove down the cost-income ratio and boosted the overall net profit to EUR 133.3 million (+74.5%).

Number of banks

Number of banks	2021	2020
Subsidiaries	5	6
Branches	10	11
Total	15	17

Business areas



Annual net profit or loss (in EUR million)

2021	2020
133.3	76.4

Headcount

2021	2020
1,496	1,428

Cost-income ratio

Balance sheet total (in EUR million)

2021	2020
67,106	64,146

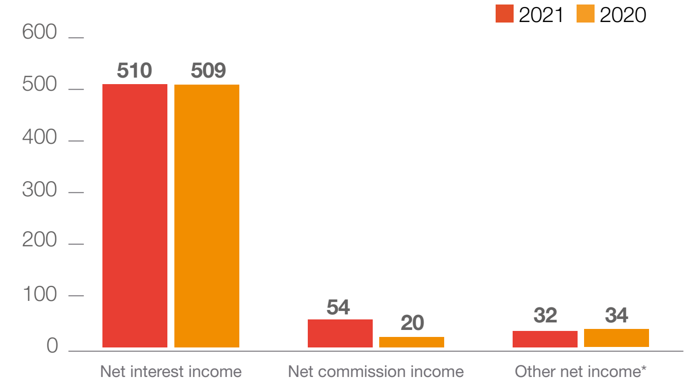
Return on equity

2021	2020
1.78%	1.01%

Return on assets

2021	2020
0.20%	0.12%

Banking income (in EUR million)



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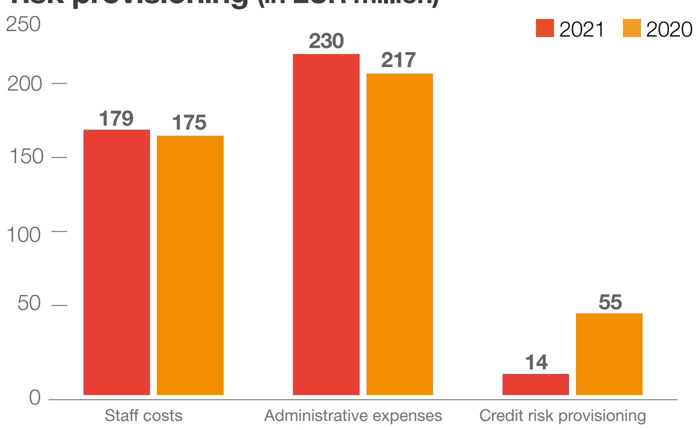
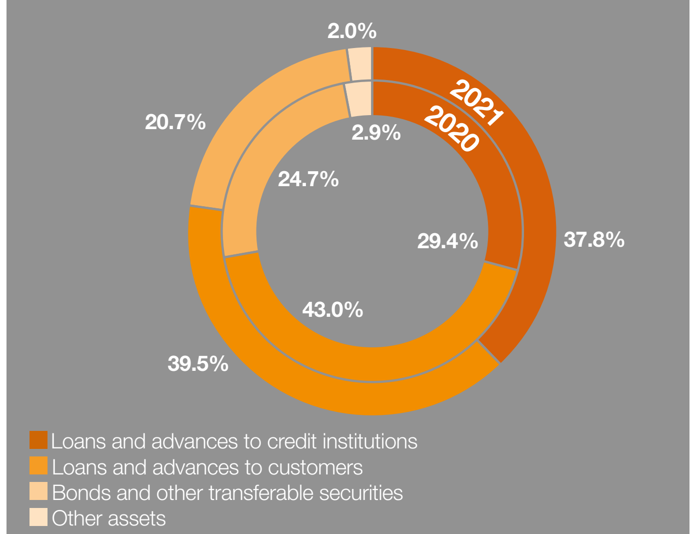
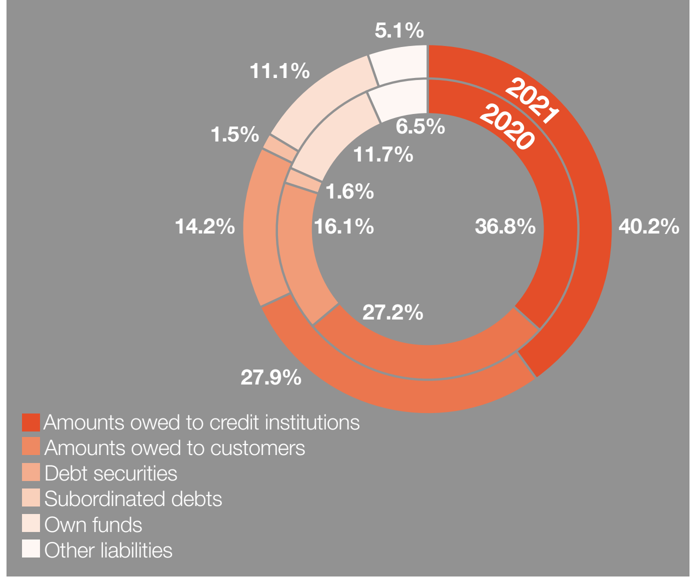
Staff costs, administrative expenses and credit risk provisioning (in EUR million)



Breakdown of assets



Breakdown of liabilities



Ranking of balance sheet totals (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Deutsche Bank Luxembourg S.A.	27,530.0	25,699.0	7.1%	=
2	DZ PRIVATBANK S.A.	20,915.0	17,046.0	22.7%	=
3	NORD/LB Luxembourg S.A. Covered Bond Bank	10,579.0	12,734.0	-16.9%	=
4	Commerzbank Finance & Covered Bond S.A.	8,030.0	8,616.0	-6.8%	=
5	FIS Privatbank S.A.	52.0	51.0	2.6%	=
	TOTAL	67,106.0	64,146.0	4.6%	

Ranking of annual net profit or loss (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Deutsche Bank Luxembourg S.A.	147.6	91.0	62.2%	=
2	DZ PRIVATBANK S.A.	23.4	29.2	-19.9%	=
3	FIS Privatbank S.A.	0.0	-0.1	100.0%	=
4	NORD/LB Luxembourg S.A. Covered Bond Bank	-4.0	-8.8	54.5%	=
5	Commerzbank Finance & Covered Bond S.A.	-33.7	-34.9	3.4%	=
	TOTAL	133.3	76.4	74.5%	

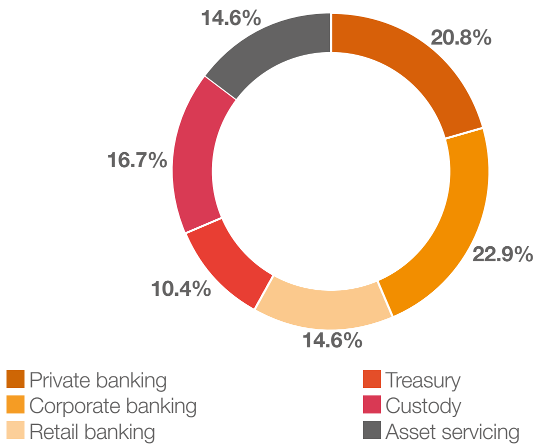
Key takeaways – Luxembourgish segment

- The Luxembourgish segment is characterised by three large players - Banque et Caisse d'Epargne de l'Etat ("BCEE"), BGL BNP Paribas S. A. ("BGL") and Banque Internationale à Luxembourg S. A. ("BIL") - which in 2021 make up to 81.3% of the aggregated balance sheet.
- The aggregated balance sheet showed another year of strong growth, increasing by EUR 11.2 billion (+7.1%), mainly stemming from BGL (EUR +5.0 billion; +10.7%) and BCEE (EUR +3.3 billion; +6.6%). This was mainly due to loans and advances to credit institutions growing by EUR 9.5 billion (+24.6%) and loans and advances to customers growing by EUR +4.5 billion (+ 6.0%).
- On the liability side, there was a notable increase in amounts owed to customers by EUR 6.6 billion (+6.0%) driven largely by BCEE (EUR +2.2 billion; +6.6%) and BGL BNP Paribas S.A. (EUR +2.1 billion; +6.3%). The increase is driven by the dynamism of the collection of deposits from businesses and individuals and in the case of BCEE from significant increase from public sector deposits as well.
- Compared to the 2020 figures, the Luxembourgish segment showed an increase in aggregated net profits by EUR 388.7 million (+147.7%), which resulted both from a significant decrease in credit risk provisioning by EUR 285.6 (-76.7%), as well as net growth in banking income. Whereas the net interest income decreased slightly by EUR 53.3 million (-3.9%), net commission income increased strongly by EUR 99.9 million (+12.7%), driven by Quintet Private Bank (Europe) S.A. (EUR +26.1 million; +12.7%) mainly linked to the increase of client assets and BCEE (EUR +20.7 million; +15.1%) mainly due to the increase in commissions on client trading activities, the favourable trend in income from client's accounts and credit cards, asset management as well as administration and securities custody fees. Other net income increased by EUR 158.7 million (+91.0%).
- The segment's headcount remained stable with a slight net growth of 18 FTE (+0.2%). On the cost side, staff costs slightly increased by EUR 8.3 million (+0.8%), whereas administrative expenses increased by EUR 70.3 million (+9.9%).
- The cost-income ratio decreased by 12.90% due to the growth of banking income (+8.8%) and decrease of provision (-76.7%).

Number of banks

Number of banks	2021	2020
Subsidiaries	13	13
Branches	0	0
Total	13	13

Business areas



Annual net profit or loss (in EUR million)

2021: 652

2020: 263

Headcount

2021: 8,637

2020: 8,619

Cost-income ratio

Balance sheet total (in EUR million)

2021: 168,415

2020: 157,247

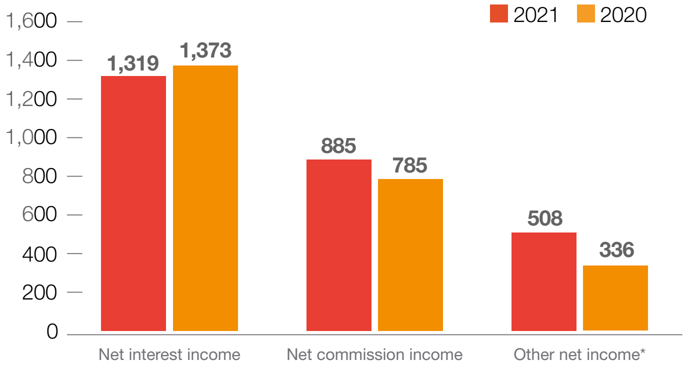
Return on equity

3.98% (2021) | 1.73% (2020)

Return on assets

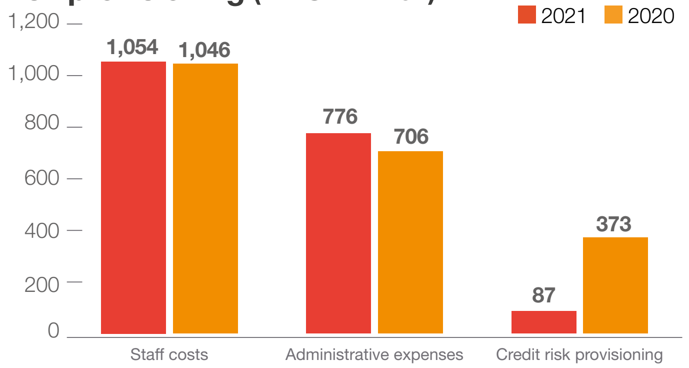
0.39% (2021) | 0.17% (2020)

Banking income (in EUR million)

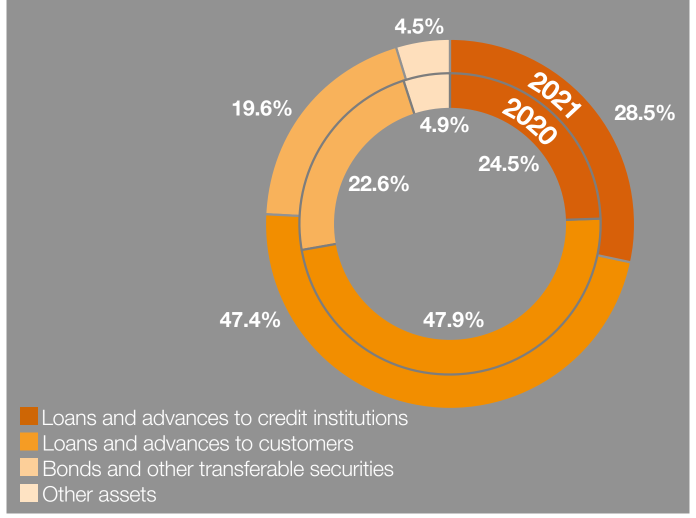


*Other net income includes: net profit/loss on financial operations (including gains/losses on derivatives & revaluation gains/losses), other net operating income and dividend income

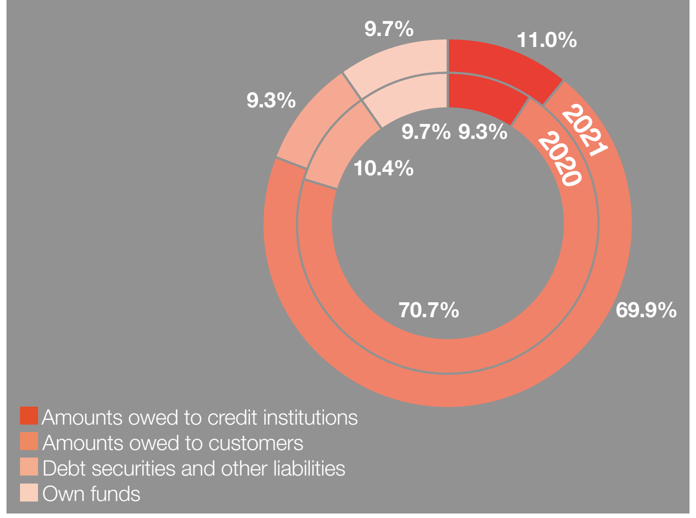
Staff costs, administrative expenses and credit risk provisioning (in EUR million)



Breakdown of assets



Breakdown of liabilities



Ranking of balance sheet totals (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	Banque et Caisse d'Epargne de l'Etat, Luxembourg	53,764	50,436	6.6%	=
2	BGL BNP Paribas S.A.	51,643	46,642	10.7%	=
3	Banque Internationale à Luxembourg S.A.	31,472	29,666	6.1%	=
4	Quintet Private Bank (Europe) S.A.	12,851	12,229	5.1%	=
5	Banque Raiffeisen S.C.	10,156	9,641	5.3%	=
6	Banking Circle S.A	2,138	1,586	34.8%	+2
7	Compagnie de Banque Privée Quilvest S.A.	1,813	1,742	4.1%	=
8	Société Nationale de Crédit et d'Investissement	1,567	1,488	5.3%	+1
9	European Depositary Bank S.A.	1,565	2,111	-25.9%	-3
10	Banque Havilland S.A.	992	997	-0.5%	=
11	Fortuna Banque S.C.	257	252	1.9%	+1
12	RiverBank S.A.	197	128	53.6%	+1
13	Bemo Europe - Banque Privée S.A. (*)	-	329	-100.0%	-2
	TOTAL	168,415	157,247	7.1%	

(*) Please note the 2021 financial statements of Bemo Europe - Banque Privée S.A. were not available during the preparation of this report.

Ranking of annual net profit or loss (in EUR million)

Ranking	Bank	2021	2020	Shift	Change in rank
1	BGL BNP Paribas S.A.	373.0	178.1	109.4%	=
2	Banque et Caisse d'Epargne de l'Etat, Luxembourg	236.8	135.4	74.9%	=
3	Banque Internationale à Luxembourg S.A.	101.6	57.8	75.8%	=
4	Société Nationale de Crédit et d'Investissement	77.9	-22.8	441.7%	+8
5	Banque Raiffeisen S.C.	19.8	18.8	5.3%	-1
6	Compagnie de Banque Privée Quilvest S.A.	9.2	6.8	35.3%	=
7	European Depositary Bank S.A.	8.9	9.3	-4.3%	-2
8	Fortuna Banque S.C.	7.8	-0.7	>1.000%	-1
9	Bemo Europe - Banque Privée S.A. (*)	0.0	-2.1	100.0%	=
10	RiverBank S.A.	-6.5	-5.3	-22.6%	=
11	Banque Havilland S.A.	-16.8	-1.1	<-1.000%	-3
12	Banking Circle S.A	-19.6	-12.7	-54.3%	-1
13	Quintet Private Bank (Europe) S.A.	-140.1	-98	-42.5%	=
	TOTAL	652.0	263.2	147.7%	

(*) Please note the 2021 financial statements of Bemo Europe - Banque Privée S.A. were not available during the preparation of this report.

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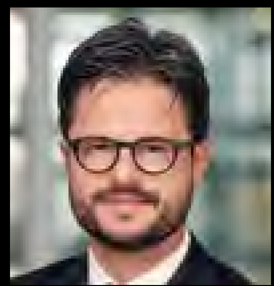

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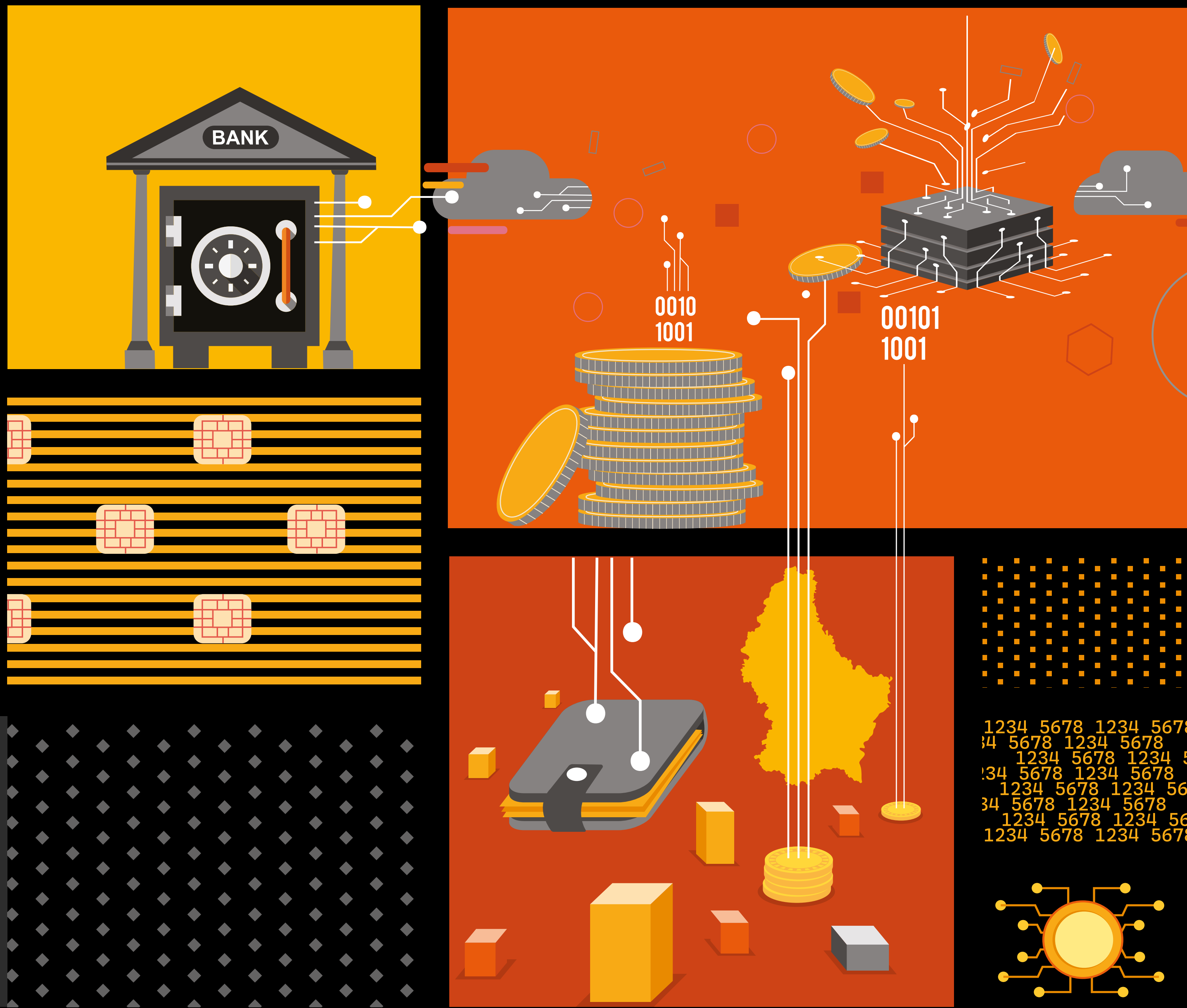

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