



Digital

Makers & Shapers

FINTECH INNOVATION: A BALANCING ACT BETWEEN DISRUPTION AND REGULATION



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INTRODUCTION

The Financial Stability Board (FSB) defines FinTech as “technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services”¹. This is a very general definition that does not capture the diversified range of FinTech specific segments that have emerged in the last five years. Looking at FinTech companies self-definition and also at several

FinTech specialised portals and media, as many as 12 segments were identified.

As can be seen from the table above, besides companies entering traditional area of the financial sector (payments, funds management, and insurance), there are others that offer what we could call support ancillary services both to other FinTechs and to traditional financial institutions, such as for instance the

Segment	Self-definition by companies/FinTech specialised media sources	Examples
Paytech	Companies offering broadly defined payments services/apps both B2C and B2B	Shopify (CA), Adyen (NL)
WealthTech	Companies offering services/apps designed to facilitate the processes of wealth management (i.e., tax planning, wealth protection, estate planning, succession planning, and family governance, wealth structuring and planning).	FNZ (UK), eToro (UK)
Infrastructure	Companies providing, to both other FinTechs and to traditional banks, the underlying technology powers FinTech products and services. They offer a variety of services like: banking-as-a-service, payment infrastructure, compliance technology.	Qonto (FR), Backbase (NL)
Challenger Bank ²	FinTech companies that have their banking licenses given by the banking regulator to offer the traditional banking services	Revolut (UK), N26 (DE)
InsureTech	Companies offering insurance	Wefox (DE), Acisure (US)
Cryptocurrencies	Companies engaging in payments, and/or trading, and/or lending, all of which involve cryptocurrencies.	Binance (MT), Coinbase (US)
Accounting	Companies providing accounting and other services (HR, payroll management, etc) to both other FinTechs and to traditional banks.	Zenefits (US), TaxFix (DE)
Lending	Companies offering digital solutions to facilitate the process of seeking out, applying for and repaying loans.	Lendable (US), Greensky (US)
Open Banking	Open Banking is the secure sharing of financial data, subject to customer consent.	Zopa (UK), Plaid (US)
RegTech	Companies offering, mostly to traditional banks but also to FinTechs, the regulatory technology to regulatory compliance (including for instance security and verification services)	Verafin (CA), Shift (FR)
BNPL (Buy Now Pay Later)	Companies offering payments services embedding consumer credit.	Afterpay (AU), Affirm (US)
Blockchain	Companies using blockchain ledger technology to provide DeFi (decentralized finance) in various domains.	Blockchain.com (UK)

Table 1 FinTech segments, Source: web search³

following segments: 'Infrastructure', 'RegTech', 'Accounting', and to a large extent also 'WealthTech'. Using the ranking (based on market capitalisation) of the allegedly top 335 unicorns worldwide updated as of June 2023, the next graph shows a proxy of the dimensions of the various segments. FinTech companies in the payment segment are by far the biggest group (93 out of 335), followed by 'WealthTech' (47 out of 335), 'Infrastructure' (39 out of 335), and 'Challenger Bank' (35 out of 335).

FinTechs involved in payments dominate in number and also in terms of market capitalisation occupying six of the top 10 unicorns (see full table with market cap of each of the 335 unicorns of this ranking in Annex). Only two 'Challenger Bank' (Revolut and Nubank) make it to the top 10, with the other two being Afterpay (Buy Now Pay Later segment) and Binance (Cryptocurrencies segment). Open Banking, which is widely discussed as a segment potentially disrupting the entire financial sector⁴, according to this ranking has only 8 companies in the top 335 FinTech unicorns.

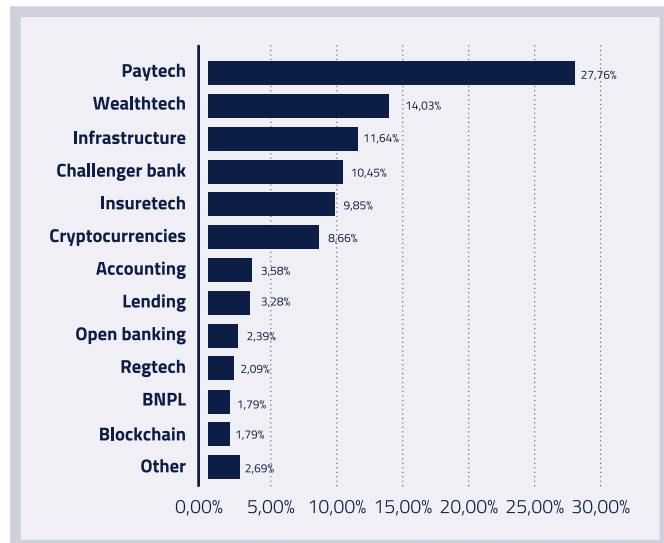


Figure 1 Top 335 FinTech unicorns by segment, Source: Authors' elaboration from <https://FinTechlabs.com/FinTech-unicorns-of-the-21st-century/>

The potential of FinTech (we use this expression to refer to the sector as a whole, and 'FinTechs' when referring to companies) to impact services offered by incumbents is made possible by cost reductions through digital technology allowing to offer lower fees, and improved and better delivery (i.e., customer experience) of services to consumers. Digital technology means that FinTechs have lower search cost and more efficient matching, economies of scale in collecting and using large amount of data to gain customers insights and steadily personalise their offering, no cost for physical distribution channels, lower costs of verification.

In the past five years there has been a lot of hype around the FinTech sector. FinTechs reporting in the news talked about them being "disruptive", "revolutionary" and endowed with digital advantages that will tear down the barriers that protect the incumbents of financial markets (i.e., banks). But the evolution of FinTech no longer supports a 'us versus them' narrative pitting FinTechs against the incumbents. There is competition but there is also collaboration in what seems a new ecosystem with a very diversified and specialised set of players, which can integrate their services. The presence of many FinTechs providing B2B supporting infrastructural and corporate services also to traditional banks is an indication of this evolution. It is also noteworthy that, out of the about 250 challenger banks operating in the world, only 5% have broken even⁵. Having recognized the diversification of the FinTech domain and the increasing collaboration between FinTechs and incumbent, however, the scope of this report is on those segments that impact the banking sector, and where competition and disruption may occur. So, the report focuses on payments, challenger banks, cryptocurrencies, and open banking. Reviewing all the other segments is beyond our scope, and 'InsureTech' is not considered in this report since the insurance sector has different actors and specific regulations, which would require a separate analysis.

In the early stage of FinTech development, policy makers focussed mostly on the positive effects of innovation in terms of consumer

benefits (also in terms of better social inclusion) and market efficiency. Then, the first big default of German FinTech Wirecard in 2018 started to raise concerns on the lack of adequate oversight and regulation of FinTech companies⁶. The advent of FinTech has opened mostly uncharted territories for regulators and supervisors of financial institutions and markets both at the EU and at national level. In the case of Wirecard, the default was not caused by a classic accounting fraud but it was the result of lack of comprehensive and integrated oversight of its activities, as well as lack of adequate auditing practices. Wirecard's business model and its regulation and supervision left several loopholes which might have led to serious problems for its customers under different conditions. Other scandals in the FinTech industry, such as the default of one of the largest US cryptocurrencies, TerraUSD, or the collapse of the centralized cryptocurrency exchange FTX, with severe impacts on customers⁷, have shown that regulators and supervisors worldwide must adapt to this new landscape and update their regulatory approaches. Traditionally, 'shapers' (regulators) of financial activities face the trade-off between competition/innovation and financial stability. Lighter regulation would increase innovation and competition but increase risks for financial stability. In the case of FinTechs, information and access to data (with their implications for privacy and consumers' protection) enter the picture as a third dimension that shapers must deal with.

This report builds on secondary sources, analytical and theoretical reasoning, and also on experts' knowledge. A first version of this report was discussed in a Roundtable with industry experts on June 19, 2023. As a result of the inputs received by the experts, the report was substantially reviewed and reframed. In Section 2 the report provides a synthetic analysis of the landscape of both FinTech trends and of regulation. In Section 3, four possible future scenarios for the development of the financial market are presented, which are then assessed in Section 4 and complemented with a few policy relevant implications.

INDUSTRY AND REGULATORY LANDSCAPE

INDUSTRY LANDSCAPE

Overall trends

The current wave of digital transformation has created three profound effects on the financial industry. First, it has led to a radical shift in consumers' expectations. Consumers now expect from providers of financial services the same user experience, immediate, ubiquitous, and seamless delivery they get use to with other digital services (e.g., social media or e-commerce). This enabled new providers to exploit the opportunity of entering the financial space with more cost-effective digital distribution models. Second, digital transformation is marked by an exponential technological change, mainly due to the appearance of enabling technologies that are increasing computing power while

reducing its cost. This is lowering barriers to entry markets that make an intensive use of IT, such as the financial sector. Third, the exponential growth in the volume of data generated is enabling processing and analysis of vast volumes of financial data. The combination of these factors has thus led to the opening of the financial services market to new providers, namely the FinTech companies.

The graph above shows how in the past five years, both worldwide and in Europe, FinTech firms attracting considerable investments.

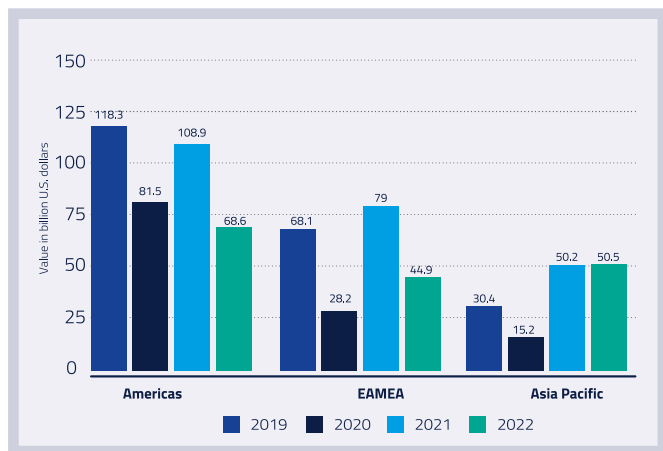


Figure 2 Value of investments in FinTech companies worldwide from 2019 to 2022, by region (in billion U.S. dollars), Source: Statista.com

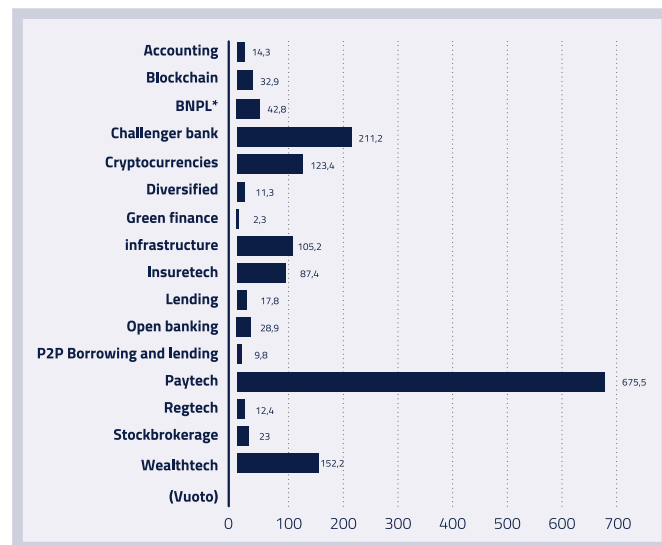


Figure 3 Top 335 FinTech unicorns Market Capitalisation, by segment (in billions of U.S. dollar) Source: Authors' elaboration from <https://FinTechlabs.com/FinTech-unicorns-of-the-21st-century/>

The 335 FinTech unicorns worldwide have a total market capitalisation of USD 1,550 billion. Just as a term of comparison only Visa and Mastercard together capitalise USD 800 billion.

As shown in the graph above, the payment segment dominates in terms of market capitalisation, with \$675,5 billion. The other sectors are substantially detached, led by the challenger banks (\$211,2 billion), followed by ‘Wealthtech’ (\$152,2 billion), and cryptocurrencies (\$123,4 billion). The FinTech sectors with the lowest values of market capitalisation are green finance (\$2,3 billion), P2P borrowing and lending (\$9,8 billion) and ‘RegTech’ (\$12,4 billion).

Europe’s FinTech sector has moved quickly from the fringes of the financial landscape to its core. New venture capital FinTech investments in Europe have been growing rapidly since the emergence of the Covid-19 pandemic, and today the FinTech sector represents the largest venture capital investment category receiving 20% of all venture capital funding in Europe. That also influenced FinTech start-ups valuations, as there are now more than 40 FinTech unicorns in Europe, and more may soon reach the USD 1 billion milestones. Despite this, Europe is still lagging

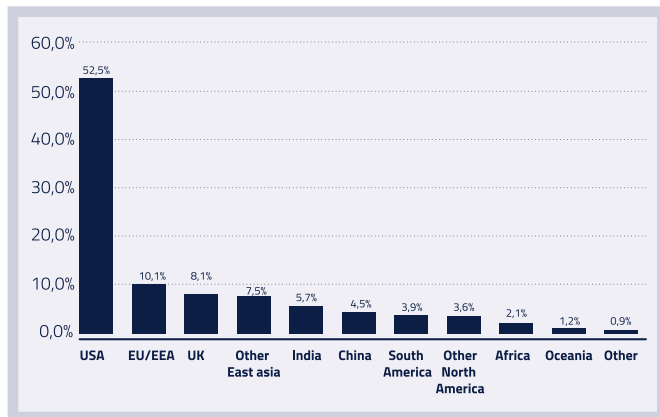


Figure 4 Top 335 FinTech unicorns by Region/Country, Source: Authors’ elaboration from <https://FinTechlabs.com/FinTech-unicorns-of-the-21st-century/>

behind other regions, as it makes only 17% of the global cumulative valuation of FinTech⁹.

As can be seen from the above graph, out of the 335 top FinTech unicorns 52,5% (176) are US based, 34 are in the EU/EEA (34), and as many as 27 in the UK alone. In each of the seven largest European economies by GDP – France, Germany, Italy, the Netherlands, Spain, Switzerland, and the United Kingdom – there is now at least one FinTech among the top five banking services institutions, as measured by market value⁹. However, there is a huge variance across European FinTech ecosystems. For example, the United Kingdom, the Netherlands and Sweden significantly outperform their European peers across all critical performance areas. Among the top 10 FinTech unicorns in Europe, 7 are based in the UK, while the remaining 3 are based in Germany (N26), Sweden (Klarna), and the Netherland (Adyen). As of June 2023, Adyen is the FinTech company with the highest market valuation in Europe (53 billion USD), followed by Revolut. This London-based ‘challenger bank’ has a market valuation of 33 billion USD. Revolut has more than 25 million customers, making it the most widely used challenger bank in Europe.

These valuations, however, have suffered from a drastic shock that the FinTech sector has been experiencing since 2022. Despite the general positive trend of the last five years, during 2022 investors have become concerned because of increasing interest rates. The shift started in the public markets, where the ten largest FinTechs have lost 850 billion USD in value in the past year. As the route to initial-public offerings became more difficult, the biggest private FinTech firms began to be affected. Some FinTech companies, including Klarna, have seen their valuations reduced by more than 80% in “down” funding rounds. All of this is common to other tech sectors, which have experienced a significant shrink from 2022. But FinTechs look especially vulnerable because many are directly exposed to the risk of recession.

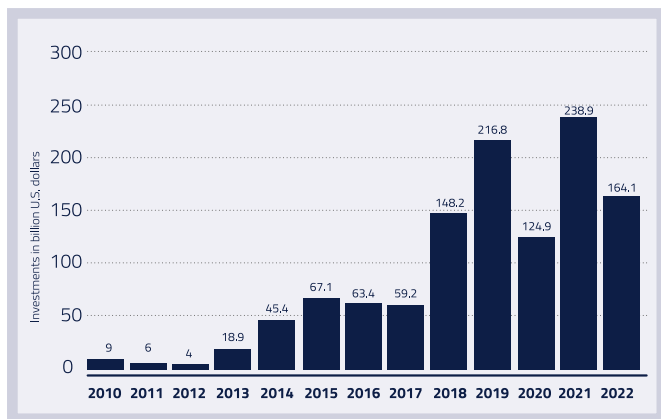


Figure 5 Total value of investments into FinTech companies worldwide from 2010 to 2022 (in billion USD), Source: Statista.com

Despite the current shrink in the market valuation, the Figure above shows that in the past 5 years the FinTech sector has attracted significant investments. This new competitive environment is composed of different actors, ranging from start-ups, as well as increasingly large technology companies. The first that appeared in the market were small, digital-native start-ups which have come to be referred to as FinTechs. These new entrants are characterized by their specialization, as they tend to concentrate on specific segments of the banks' value chain. They rarely offer bundled services. FinTechs provide indeed the same services as banks, possibly more efficiently because of technologies, but in a different and unbundled way. For example, like banks, crowdfunding platforms transform savings into loans and investments. Yet, differently from banks, the information they use is based on big data not on long term relationships.

One final element worth mentioning as part of the general trends is the positive role that FinTechs played in terms of including less privileged unbanked population groups (e.g., undocumented migrants). Several authors have argued that FinTech is a key driver for financial inclusion¹⁰. The adoption of digital wallet and

of lending services have made life easier for those who are not owner of credit cards and/or are unbanked. As shown by the World Bank, over the last decade, 1.2 billion previously unbanked adults gained access to financial services, and the unbanked population fell by 35%, primarily boosted by the increase in mobile money accounts. While globally 1.7 billion adults remain unbanked, FinTech is helping make financial services more accessible to an increasing number of people¹¹. However, despite the benefits that FinTech provides for the unbanked population, there are concerns related to the expansion of the new digital forms of credit, as the Buy Now and Pay Later (BNPL) services. Since these services are very similar to payment technologies, like Google Pay, Apple Pay or Amazon One Click, consumers may apply lax scrutiny in their decision-making process for BNPL purchases, when compared to the more cautious approach they take when considering other credit products. NGOs working in the field of financial inclusions have warned that BNPL could lead to over-indebtedness, particularly for vulnerable groups with low and/or unpredictable incomes and poor understanding of the risks. For instance, in the UK, around a third of customers using BNPL products report that repayments have become unmanageable¹². Despite these risks, the impact of FinTech on financial inclusion is mainly positive, not only in developing countries, but also in Europe where there are some countries close to being cashless and with high penetration of credit cards and banking alongside with others that are still cash reliant and have lower ownership of credit cards and bigger shares of unbanked population.

European countries close to cashless society			
	Credit Card owners	Cash-based payments	% Unbanked population
Norway	71%	2%	0%
Finland	63%	2%	0%
Sweden	45%	1%	0%
Denmark	45%	1%	0%
Switzerland	66%	2%	2%
UK	65%	1%	3%
Netherlands	39%	4%	0%
European countries still reliant on cash			
	Credit Card owners	Cash-based payments	% Unbanked population
Bulgaria	14%	74%	28%
Romania	12%	9%	42%
Greece	12%	54%	14%
Portugal	34%	13%	8%
Czech Republic	25%	36%	19%
Hungary	13%	6%	25%
Slovakia	22%	32%	16%
Poland	17%	5%	13%
Italy	43%	4%	5%

Table 2 Cashless and cash-reliant countries in Europe, Source: Merchant Machine¹³

Payments

We have shown that FinTechs involved in payments are at the top of market capitalisation and represent the biggest segment if we consider the June 2023 ranking used so far. Although the

data are not so updated, the graph below shows this from the perspective of number users.

It appears clearly how money transfers and payments are where FinTechs attracted most consumers, whereas savings, investments, and borrowing still have a more limited pool of users.

So, the question that comes naturally is whether in payment and money transfer FinTechs have disrupted and completely wiped-out incumbents. For what concerns the sub-segment of remittances and money transfer the answer is positive. For payments, on the other hand, according to the Financial Times the answer is 'not yet'¹⁴. Visa and Mastercard are still thriving with a combined market capitalisation of about \$800bn and they are included as the two top FinTechs in an alternative ranking to the one this report has used¹⁵. Their value has not changed in the last couple of years, even as the broader market has declined sharply. The challengers were hit more strongly than the these 'old' players. This suggests, then, that at least until now FinTechs have not disrupted the market but rather 'they are merely slotting themselves into the existing payments architecture'¹⁶. FinTechs deliver better and faster, but not to the expenses of Visa and Mastercard that still own the electronic 'rails' on which almost all players rely. In the future this could change first and foremost if, despite the recent FTX failure, the use of cryptocurrencies for mainstream payment will gain traction. Second, BigTechs may change the situation. Apple, for instance, offers with its Apple Wallet also a credit card in collaboration with Goldman Sachs and is also entering the Buy Now Pay Later segment. Finally, it cannot be ruled out that big traditional banks may enter this market, as the plan by JPMorgan, of developing a rival pay-by-bank facility allowing easy bank transfers, shows¹⁷.

Cryptocurrencies

The cryptocurrency market deserves a separate analysis, as its growth has been mostly driven by investors speculating in the future possibilities of this new technology, but the lack of regulation has raised concerns about the stability of this sector. The blockchain

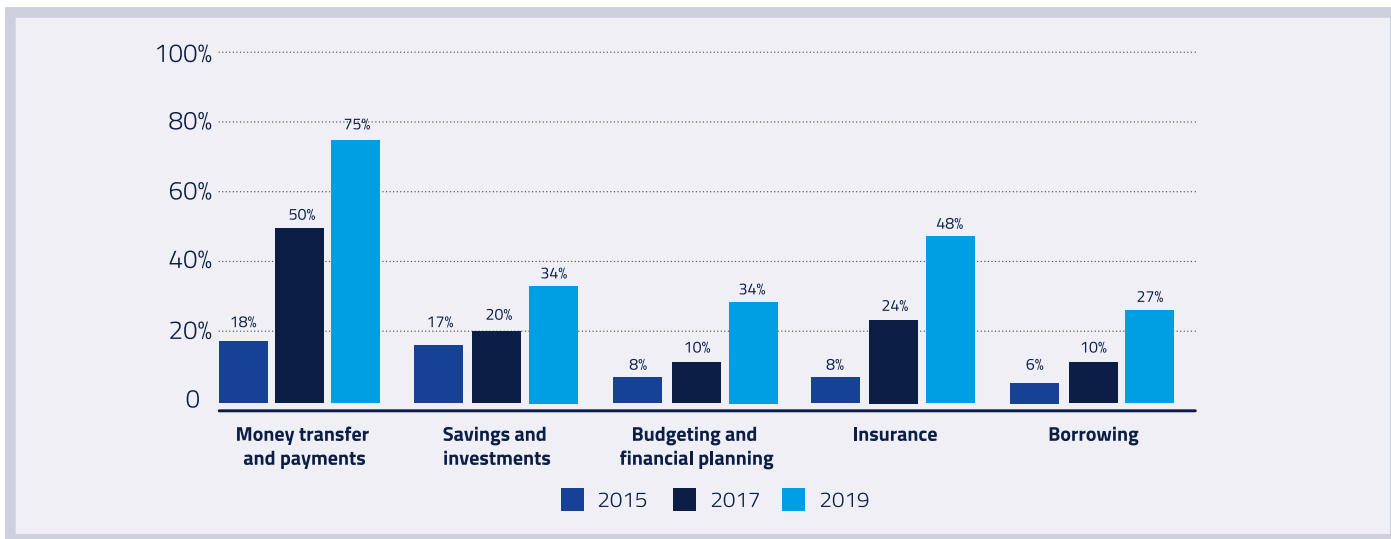


Figure 6 Consumer FinTech adoption rates globally from 2015 to 2019, by category, Source: Statista.com

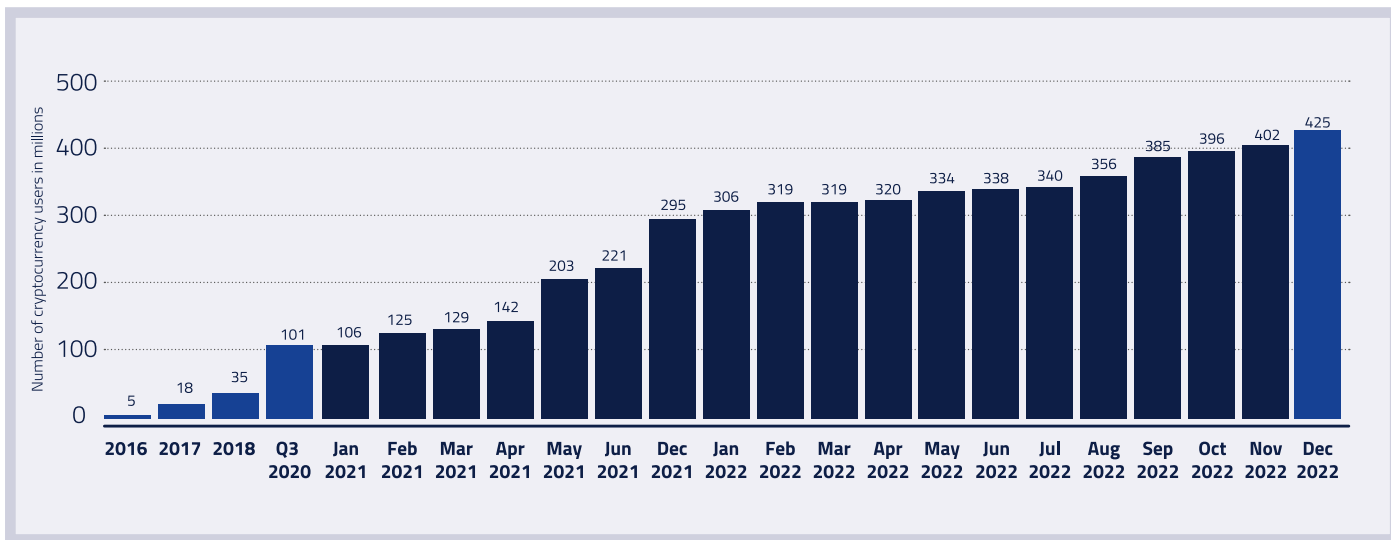


Figure 7 Number of identity-verified cryptoasset users from 2016 to December 2022, in millions, Source: Statista, from Cambridge Judge Business School

public ledger technology (which underlies cryptocurrency) has the potential to disrupt a wide variety of transactions, in addition to the traditional payments system. These include stocks, bonds, and other financial assets. For consumers, cryptocurrencies offer cheaper and faster peer-to-peer payment options than those offered by traditional money services businesses.

The global user base of cryptocurrencies increased by nearly 190 percent between 2018 and 2020, only to accelerate further in 2022. This is according to calculations from various sources, based on information from trading platforms and on-chain wallets. Increasing demographics might initially be attributed to a rise in the number of accounts and improvements in identification. For instance, in the last two years, the US is witnessing a growing number of businesses that now accept cryptocurrency as an official payment method. Additionally, the adoption of digital currency by major corporations such as Tesla Inc. and MasterCard Inc. is anticipated to boost industry expansion. Furthermore, cryptocurrencies such as Bitcoin have been gaining traction in high inflation countries, including Argentina, Zimbabwe, and Brazil, as their local currency devalues. However, while cryptocurrencies continue to gain some acceptance as a payment option, price volatility and the opportunity for speculative investments discourage consumers to use cryptocurrency to purchase goods and services but rather to trade it. Contrary to other FinTechs, which have grown faster in less regulated markets, the growth of this sector is constrained by the lack of regulations and a unified standard for exchanging digital currency. In the following section, we will discuss what the EU regulators have done to create a legal framework for cryptocurrencies and whether this is considered the best approach to limit the risks for consumers and investors.

Challenger banks

The economics of banking is founded on bundling deposits, payments, and lending. Because it is unlikely that depositors unexpectedly withdraw their funds all at once, banks can transform short-term sight deposits into long-term loans. Those

FinTechs not obtaining a banking license (as the challenger banks have done) follow an agency model where they do not retain the risk of the loan they originate. This means that banks generate revenues from the different rates paid to lenders and extracted from borrowers, whereas FinTechs that are not 'challenger banks' make money only on fees and need to rely on network externalities. This means that they must broker as many deals as possible, which runs the risk of adverse selection on both sides of the market: lenders and borrowers. Challenger Banks have taken up the challenge of acting exactly like a bank.

Challenger Banks present several advantages compared to incumbents. They tend to charge lower fees, attracting customers looking to save money. They provide user-friendly mobile apps that enable customers to manage their accounts and conduct transactions while on the go. They often offer innovative features such as budgeting tools, instant payments, and cashback rewards. A few of them are offering competitive interest rates on savings accounts, allowing customers to earn more money. But they also face some disadvantages. First, they cannot yet offer all the wide range of services typical of banking. Second, they are new and consumers are still hesitant, as shown by the smaller user base (compared to payments FinTechs) and by the earlier cited figure that only 5% of the 250 challenger banks operating worldwide have reached break-even. Third, although most of them are digital first and very robust, there remain in the public and among regulator the perception that they may bring some additional sources of risk. Some argue that customers may be put at risk if challenger banks are not subject to the same level of regulation as traditional banks. Their limited physical presence may be inconvenient for customers who prefer face-to-face interactions or need to handle complex financial transactions.

Incumbents have several advantages. They provide a wider range of financial products and services, such as checking and savings accounts, loans, mortgages, credit cards, and investment accounts. They have a network of branches and ATMs, making it easy for

customers to access their money and speak with a representative in person. Government insurance schemes frequently provide support for incumbents, guaranteeing deposits up to a particular level, giving customer more peace of mind compared to challenger banks. Incumbents are a reliable option for customers due to their long history and solid reputation. On the other hand, there are also some disadvantages. In comparison to challenger banks, incumbents charge more for their services. They may have more cumbersome processes for account opening, loan applications, and other financial transactions. These processes can be time-consuming. Customers may find it challenging to access digital tools or manage their accounts online with traditional banks' outdated technology. Conventional banks might not provide the same level of personalized support as challenger banks or 24/7 customer service.

Several analysts agree that the impact of FinTech in the 'challenger bank' segment will be less disruptive than initially foreseen for a number of reasons. First, the more proactive among incumbents are moving to adopt digital transformation and innovation to counter the FinTech 'threat'. Second, challenger banks have found substantial limits to scaling. For several reasons, customers seem to prefer integrated financial services solutions from a trusted provider. Large banks are well placed to adopt technological innovations, and to provide the same services in the new way themselves. Indeed, most banks have made significant investments with the aim of gaining agility and improving their digital offerings. On the other hand, many services provided by other FinTechs segments are still supported by banks. While banks lose part of their margins, they still keep the final interface with their clients, and because of the efficiency of these new systems, they even expand their range of activities. Hence, in this case, there may be strong complementarities between banks and other FinTechs segments.

Open banking

An important dimension for the evolution of FinTech and of the financial market in general is related to access to, and use of, customers' financial data. Such data allow to predict preferences, needs and trends and to offer the right financial product at the right moment and with the right price. Big data and machine learning are two key ingredients that are dramatically changing the landscape of financial services. Consider how Google monetises searches and how social media monetises relationships, and how this could be applied in the financial sector. It has been envisaged, for instance, that through financial customers' data, challenger banks could offer their customers hyper-personalised financial products and could do this by partnering with Banking-as-a-Service and embedded finance integrators¹⁸. Here, we enter the segment of Open Banking that so far does not figure prominently among the top FinTechs uniform. Yet, many think that Open Banking could radically change the competitive landscape in the financial sector increasing competition and consumers' benefit. Europe with PSD2 and the UK's Open Banking Standard have pioneered Open Banking.

Open Banking emerged from the EU PSD2 regulation, whose original intent was to introduce increased competition and innovation into the financial services sector. PSD2 forces banks to offer dedicated APIs for securely sharing their customers' financial data for account aggregation and payment initiation. Although PSD2 does not require a specific open standard, it sets a legal framework within which both the UK's and the EU's Open Banking standards (e.g., STET, Berlin Group) must operate¹⁹. But many initiatives are popping up around the world, driven either by market or regulatory developments²⁰.

Open Banking refers to the practice of securely sharing financial data, subject to customer consent. The exchange of data between the bank and authorized third parties (such as financial institutions, FinTech companies) is enabled via APIs. Open banking may allow the networking of accounts and data across institutions for use by

consumers, financial institutions, and third-party service providers. Third-party providers APIs can use the customer's and provide analytical and support services that could help lenders get a more accurate picture of a consumer's financial situation and risk level to offer more profitable loan terms. It could also help consumers get a more accurate picture of their own finances before taking on debt. An open banking app for customers who want to buy a home could automatically calculate what customers can afford based on all the information in their accounts, perhaps providing a more reliable picture than mortgage lending guidelines currently provide. Another app might help visually impaired customers better understand their finances through voice commands. Open banking can also help small businesses save time through online accounting and help fraud detection companies better monitor customer accounts and identify problems sooner. Open banking could force large, established banks to be more competitive with smaller and newer banks, ideally resulting in lower costs, better technology, and better customer service. Established banks will have to do things in new ways that they are not currently set up to handle and spend money to adopt new technology. However, banks can take advantage of this new technology to strengthen customer relationships and customer retention by better helping customers to manage their finances instead of simply facilitating transactions²¹.

On the other hand, Open Banking bears risks, as outlined in a brief of the US Congressional Research Services²². First, it may become a source of risks to financial privacy and the security of consumers' finances, with implications in terms of liabilities for financial institutions. An extreme scenario is that of a malicious third-party app that clean out a customer's account. Broader concerns relate to data breaches due to poor security, hacking, or insider threats. Second, Open Banking could drastically change the competitive landscape, not only in the positive way described above, but also in the opposite way. This would be a scenario whereby Open Banking leads to consolidation in financial services, due to the natural economies of scale from big data and network effects. Resulting

market concentration and associate pricing power could more than offset any cost advantages to consumers.

What about BigTechs?

There is much speculation about the potential entry of BigTechs in the financial market. As we mentioned earlier, Apple is among BigTechs the one who has entered more actively in the payments segment with Apple Wallet that is now also providing a Buy Now Pay Later solution. Facebook tried to launch its own cryptocurrency 'Libra', facing intense backlash from government regulators and the general public, which ultimately killed the project. According to an experts we interviewed in-depth Central Banks are becoming very alert to the role of Big Tech in currencies and aim to defend existing currencies from the likes of Libra. As of today, BigTechs have only entered the payments segment and they have done so more in emerging and developing economies (particularly China²³) than in advanced economies

In Europe and in the US BigTechs have developed innovative technologies to enable users to make online, in-store and mobile digital payments by simply creating an account associated to a credit or debit card issued by a bank or other payment institutions. By offering these services, BigTech companies continue gathering and elaborating data, while consumers benefit from fast and cheap payment solutions. However, some analysts argue that BigTech companies might soon decide to further expand their financial services offer and enter new segments²⁴. The Financial Stability Institute also argues that BigTechs have the potential to change rapidly due to their unique features and they could quickly become systemically important. These companies have shown already that due to their extensive customer networks, coupled with low online acquisition costs, they can scale up quickly in market segments that are outside their core business. Two factors could limit BigTechs's financial ambitions. One is that financial firms are valued cloud customers²⁵, which could be lost if BigTechs will become to be perceived as competitors. The second is regulation, and the Joint Committee of European Supervisory Authorities concludes its report

by saying that “while the development of Big Data poses some potential risks to financial services consumers, the benefits of this innovation currently outweigh these. Many of the risks identified by the ESAs are mitigated by existing legislation”²⁶.

REGULATORY LANDSCAPE

While FinTechs introduce innovation and competition, there are also potential risks associated with specific FinTech products. Therefore, regulation of these new actors faces a double challenge: to keep pace with innovation and facilitate new market entries, while at the same time understanding and managing the regulatory risks that are involved. In particular, the potential risks associated with the FinTech sector are related to consumer protection, market competition and the stability of the EU financial system as a whole, by affecting investors’ confidence and generating substantial risks. First, consumers may not fully understand the nature and risks of the FinTech-related products and services they are being offered. Financial products or services promoted in new or different ways may expose consumers to misleading commercial practices or

fraudulent activities. Consumers are concerned also about data privacy and security, as shown by a recent survey carried out by Capgemini²⁷. Second, competition may be hampered if new business models and technologies operating in blind spots that are not covered by the current regulatory framework emerge. Third, as we anticipated in the introduction, there is the question of access to data and information that may represent a barrier for new entrants (start-ups and scale-ups). Finally, regulators are paying increasing attention to the potential risks to financial stability. This has led to a fundamental discussion among regulators on finding the right balance in policy trade-offs on financial innovation.

The Figure above presents how the traditional trade-off between market competition and financial stability has become three-dimensional, including the data dimension. In particular, the data dimension introduces two additional trade-offs. First, the new trade-off between privacy and competition arises as the need to protect consumers’ data clashes with the competitive advantage that FinTechs gain from accessing more consumer data

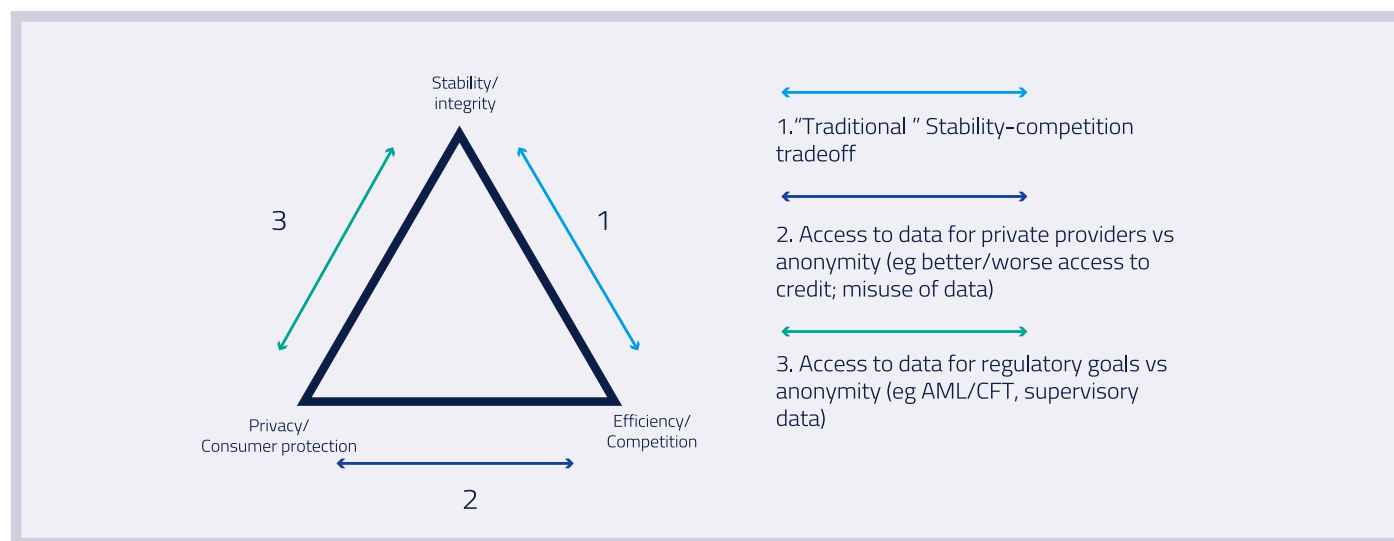


Figure 8 Policy trade-offs from digital transformation in finance, Source: Feyen et al. (2021)²⁸

to offer better services. Similarly, the trade-off between privacy and supervision emerges as the protection of consumer privacy conflicts with the necessity for supervisory authorities to access data in order to enhance their monitoring capabilities.

It has been observed that the EU and Member States regulatory approach to FinTech has gone through three stages²⁹. During the first, the focus was mostly on benefits to consumers and innovation with limited regulatory intervention. However, scandals such as the earlier mentioned Wirecard's default ended the first phase, characterized by a certain degree of complacency with fast-growing FinTechs. In the second stage, concerns about the risks to consumers and investors emerged, and currently, during the third stage, regulators and supervisors are taking specific actions in response to these risks. In the first stage, some of the FinTech activities have been perceived by traditional incumbents as possible regulatory arbitrage creating an unlevel playing field between regulated credit institutions and FinTechs. For instance, it has been argued that some FinTech firms might act outside the scope of current financial regulation and, therefore, do not have to comply with restrictions concerning prudential or capital requirements³⁰. At least up to now, this has been perceived as a competitive advantage for many FinTechs.

This process is similar to other sectors that have been disrupted by the digital revolution. In many cases where digital players have disrupted established industries, they have leveraged on regulatory arbitrage. Start-ups like Uber and Airbnb achieved significant growth by following the strategy of "ask forgiveness rather than permission."³¹ Similarly, in the early stages, FinTechs also benefited from exploiting the absence or permissiveness of regulations. However, regulatory bodies are increasingly adopting the principle of "same activity, same risk, same rules" to establish fair competition between traditional financial institutions and new market entrants. As regulatory arbitrage diminishes, the sole competitive advantage lies in technological advancements and efficient organizational practices. The landscape becomes

one of pure competition driven by technological innovation. Nevertheless, regulators need to pay attention to a crucial aspect. BigTechs, well-established FinTechs, and technologically advanced traditional banks possess an informational advantage, creating barriers to entry for new FinTech entrants, particularly start-ups and scale-ups that initially face challenges due to their smaller scale. Unless regulations are modified to enable access to data and establish an open finance data space, these new entrants may struggle to compete effectively. Policy makers seem to be aware of this risk as access to information and data is currently a focus of new regulation. This can be seen in the following text taken from the earlier mentioned Commission 2020 Digital Financial Strategy: "Data has become more important than ever for financial services."³² In this domain the Commission has announced a review of the Payment Services Directive (PSD) in the direction of creating the condition for an open finance data space. The Commission will also propose legislation on a broader open finance framework that will build on the upcoming initiative focusing on data access, including the upcoming Data Act, and the Digital Services Act.

In the EU there are several different legislations that cover the banking industry and FinTech. New initiatives have been launched to update existing legislation, covering a wide range of areas, including technology risk, cyber security, and operational resilience more generally; data privacy; consumer protection; firms' governance and risk governance; and amendments to anti-money laundering requirements. Historically, the banking industry is subject to extensive regulation due to its crucial economic role. Most notably, prudential regulation and supervision seek to enhance the resilience of the banking sector to economic shocks by ensuring sufficient levels of capital, provisions, and liabilities with loss-absorption capacity³³. In addition, banks are subject to other pieces of regulation, which do not fall directly from their role as deposit-takers. This includes regulation concerning anti-money laundering (AML), as well as for the protection of consumers. These latter bodies of regulation are generally specific to each type of financial product and service, and thus have been embedded in the activity

specific licencing frameworks discussed previously in this paper. FinTech companies providing financial services (e.g., lending, financial advice, insurance, payments), must comply with the same laws as any other firms offering those services. Therefore, different laws apply depending on the activity (e.g., payment services, crowdfunding), such as the e-commerce Directive, the Consumer Rights Directive, the Directive on electronic money, and the Directive on Payment Services (PSD2). More generally licensed banks de facto create money. Banks must have a liquidity ratio on their deposit of 10%. That is if a bank has 500 euro in a saving account, it must retain 50 euro, and then can introduce 450 euro in the market in the form of loans. This is creating currency. So, central banks will not give away licenses easily, which further reinforce the advantage of the incumbent.

In the EU 2020 Financial Strategy the Commission announced the full application of the principle “same activity, same risk, same rules”.³⁴ First, the Commission aims to reduce single market fragmentation, as in some areas Member States can choose to apply individualised or less strict rules at national level (e.g., peer-to-peer lending and virtual currencies). This can result in a fragmented environment, preventing businesses from expanding across borders, or an uneven playing field and arbitrage opportunities, incentivising companies to obtain permits in less restrictive jurisdictions. The second key priority of the Commission’s Strategy pertains to the challenges posed by the financial regulatory framework, which appears to be both overly broad and insufficiently specific, making it difficult to align with the activities of emerging financial players. As a result, there exist asymmetries where different types of financial service providers may be subject to varying standards, leading to an uneven playing field that hampers fair competition. For instance, the PSD2 requires banks to open up their payments-related data in a standardized, real-time manner and without monetary compensation, but there is no equivalent requirement for data of FinTechs and BigTechs³⁵. In response to these and other regulatory shortcomings, the Digital Finance Strategy for

the EU³⁶ announced a number of key actions. For reducing single market fragmentation, it is expected by 2024 the implementation of a legal framework based on interoperable digital identity solutions, so that consumers can access financial services quickly and easily. The framework would also embed a harmonised anti-money laundering (AML) and counter-terrorism financing (CTF) rules, and trusted services electronic transactions (e-IDAS Regulation). It will enable customers data to be reused subject to informed customer consent, which is based on full transparency about the consequences and implications of such reuse. In addition, to facilitate cross-border financial services, the Commission set the target by 2024 of apply the principle of passporting and a one-stop shop licensing in all areas which hold strong potential for digital finance. Firms should be able to rely on close cooperation between national supervisory innovation facilitators within the European Forum of Innovation Facilitators (EFIF), and a new EU digital finance platform.

To make the regulatory framework conducive of digital innovation the objective is to develop EU markets in crypto-assets and tokenised financial instruments. In this respect, the European Parliament adopted in April 2023 the Markets in Cryptoassets (MiCA) Regulation governing issuance and provision of services related to crypto assets and stable coins, which are not regulated by existing financial services legislation. MiCA is the first and only legislation of its kind in the world and leads the way for other jurisdictions. The text approved aims to ensure that crypto transfers, as is the case with any other financial operation, can always be traced and suspicious transactions blocked. However, there is an ongoing debate about whether the new EU regulation would have prevented the adverse effect of the FTX default on consumers³⁷. Usually when a bitcoin FinTech collapse, there are calls for new ad hoc regulation. But the FTX case shows that what is needed is better supervision. The collapse of FTX was entirely due to lack of compliance with standard old school regulation. FTX collapsed because its competitors started to get rid of its bitcoin once they received insider information that FTX was using the

bitcoin of their owners as collateral to other financial operations, which is breaking a standard already existing regulation. The implication being that possibly we do not need new ad hoc FinTech regulation, but simply better supervision and control.

According to the European regulators, MiCA addresses the core problem by introducing guidelines for investors and market participants through a common EU regime. Nevertheless, there are concerns about potential regulatory loopholes, for instance, in the cases of reverse solicitation, given that service providers outside the EU play a dominant role in this market³⁸. A more radical proposal is that authorities should resist the urge to create a parallel legal and regulatory framework for the crypto industry, as this would legitimate crypto, encouraging more institutional investors to enter this market, with related risk for financial stability. According to this radical proposal, to make the financial system safer “it is far better to do nothing, and just let crypto burn”³⁹. Apart from this position, the final lesson learnt from the crypto scandals in 2022 is that regulation arrives after many consumers are affected. Highly dynamic markets fuelled by irrational enthusiasm are a challenge for policymakers that must be addressed before the new asset arrives.

To create a European financial data space to promote access to data and data sharing within the financial sector, a review of the PSD2 directive will be carried out. While the PSD2 introduced the concept of “open banking”, which refers to third-party access to payment account data (e.g., data relating to current account transactions) and the initiation of payments via third parties, the new open finance framework would allow third-party access to financial data outside the area of payments. The new framework will be proposed in the course of 2023, and it will build on the upcoming initiatives focusing on data access, including the upcoming Data Act, and the Digital Services Act.

Finally, to address the new challenges and risks associated with the Fintech sector, the EU prudential and conduct regulation

and supervision will be adapted to be future proof for the new financial ecosystem, including technology providers offering financial services. The Commission announced an assessment of how to ensure that the prudential supervisory perimeter is broad enough to capture risks arising from platforms’ and technology firms’ financial services provision and from techno-financial conglomerates and groups. In this area, several authors and stakeholders have been advocating for a more extensive use of “regulatory sandbox”⁴⁰ to address new emerging challenges in the financial sector. It has been argued that a sandbox is the optimal solution at this stage, since it may fuel the development of innovative services, address most shortcomings of the current regulatory framework, and simultaneously ensure consumer protection⁴¹. Moreover, it facilitates a mutual “learning process” that on the one hand allows regulators to better assess the risks that relate to respective FinTech firms, and on the other enables FinTechs to benefit from the regulator’s expertise in applying the legal framework. To sum up, FinTechs firms can expect in the near future important changes both in terms of regulation and supervision requirements, which we sketch below.

The regulatory response to FinTech is moving on from high level principles or a reliance on existing legislation to a more detailed application of new rules and guidance to the specifics of FinTech-related activities. So, FinTech firms can expect more detailed requirements especially where they touch on retail consumers and investors. New FinTech activities (i.e., lending to SMEs) raise the issue of how to draw the regulatory perimeter and it is likely that the regulatory net will widen. For sure, the regulatory requirements on loan-based and investment-based crowdfunding will become stricter, requiring FinTechs to put in place adequate procedures for credit risk assessment, governance, systems and controls, and complaints handling. Regulators are likely to work on a mix focussing on: (a) transparency and disclosure to raise consumer awareness of the nature and risks of products and services; (b) prohibiting or limiting the sale of some products and services to retail customers, and (c) re-writing detailed conduct of

business requirements to adapt them to FinTech developments. Also it can be expected that regulators will require that boards and senior management have sufficient awareness and understanding of the FinTech applications being used by the firm, to manage the risks effectively. Also, FinTechs can expect being requested to exert more supervision and strengthen their management in general and the monitoring of risk in particular. This means for FinTechs the requirement to strengthen their management and governance structures, which may represent a heavy burden and barriers, not so much of established unicorns, but especially for new FinTech start-ups and scale-ups.

In conclusion, the response to the first wave of disruption in finance was guided by the objectives of ensuring an adequate control of risks and the promotion of innovation-enhancing competition. As a result, a wide range of policy measures have been proposed or introduced in the EU, as described above. However, the magnitude and nature of risks are likely to change with the second wave of competition driven by the BigTechs. Some authors suggest that further action by supervisors and policymakers might be necessary, as new considerations and consequent policy actions need to be added to the current regulatory response⁴². It is, however, clear that regulation face a clear trade-off between innovation/competition and security/financial stability. Strict new regulation will reduce risks and increase financial stability but will impose burden on consolidated FinTechs and especially on new start-ups and scale-ups. In particular, if stricter regulation will aim to target BigTechs potential new entrants, this will negatively overspill on both large FinTechs and new entrants, which have less organisational capacities to meet regulations than both traditional banks and BigTechs. On the other hand, there is one dimension of regulation that would enhance innovation/competition without increasing risk, and this is the creation of an open financial data spaces, where all players can have access (compliant with existing regulation and particularly GDPR) to customers data.

FROM TRENDS AND REGULATION TO THE SCENARIOS

BETWEEN MARKET DYNAMICS AND EVOLVING REGULATION

The main uncertainties that will further shape the future evolution of both FinTech and the financial market as a whole are related first to the endogenous market dynamic evolution, which depends on three components. First, the evolution of the market dynamics, will depend on the extent to which customers accept and adopt innovative FinTech solutions, or rather they remain hesitant and stick to the offering of incumbents. As we have shown in section 2.1, for instance, 'challenger bank' still find it difficult to expand their customer base. Second, much will depend on the strategies of both incumbents and FinTechs. If incumbents proactively adopt and pursue technological innovation, they can resist the FinTech challenge and even regain positions, even in the payments sub-sector. In this case FinTechs innovations supplement existing banking practices rather than causing major disruption. But FinTechs could also deepen their innovative offering and keep challenging incumbents, which brings us to the third component of the market dynamics, namely technology. Third, new technological innovation introduced by FinTechs in some domains, such as for instance Open Banking, may fundamentally reshape the financial sector. Such endogenous market dynamics will be shaped by an exogenous factor such as regulation

As we anticipated in the introduction and further shown in paragraph 2.1, disruption of incumbents so far has been limited and some areas of collaboration between old and new players are emerging, even in the payments segment. Despite FinTechs current advantage in terms of technological innovation, the economics of banking rest on fundamentals that cannot be impacted by

technology, where traditional banks have structural advantages over challenger banks to provide bundled services producing economies of scale and of scope. The largest traditional banks are reacting strongly, by changing their traditional operations with more digitalisation and technological innovation and they also use the B2B horizontal services from several FinTech segments ('Infrastructure', 'WealthTech', 'RegTech', 'Accounting'). Access to financial data and capacity to leverage them will be key to compete in the future, and the further development of Open Banking will pay a key role, unless new regulatory intervention will redefine restrictively who can do what with shared financial data.

As in many other areas related to the digital transformation, the shapers (regulators) face the usual trade-off between fostering and not hampering technological innovation and at the same time minimising the potential risk deriving from it. As we have shown, in the domain of FinTech the trade-off involves three dimensions: competition, financial stability, and data. Increasing competition would demand a lighter regulation that, however, may overlook risks for financial stability and for consumers. Moreover, light regulation, especially with respect to data and the ideal creation of an open financial data space, might either increase competition and consumers benefits or produce the opposite effect, if Open Banking leads to consolidation because of economy of scale and network effects. The issue of financial data raise privacy and consumers' protection concerns that are beyond what is currently ruled by the GDPR. FinTech developments are continually highlighting new areas in which additional or refined regulation may be required, for example in the use of artificial intelligence and distributed ledger technology, and in the general trend towards the

gathering of an ever-broader range of financial and non-financial data from, and sharing across, a wider set of parties.

THE PROPOSED SCENARIOS

In view of the discussion so far, the four proposed evolution scenarios are defined with respect to the two key sources of uncertainty described above: regulation and market dynamics. How regulation will evolve and be implemented will certainly interact with, and shape, the market dynamic and the resulting market structure. We assume that a constant of new regulation will be the principle “same activity, same risk, same rules”. On the other hand, this principle can be implemented either with a light touch or it can be more heavy-handed. The latter will likely include traditional stability and risk-averse requirements such as (a) transparency and disclosure to raise consumer awareness of the nature and risks of products and services; (b) prohibiting or limiting the sale of some products and services to retail customers, and (c) re-writing detailed conduct of business requirements to adapt them to FinTech developments. This would mean for FinTechs and new entrants the requirement to strengthen their management and governance structures, which may represent a heavy burden and barriers especially for new FinTech start-ups and scale-ups. Such a traditional regulation would not contemplate the issue of data and open financial data spaces. The latter will be, instead, at the centre of lighter approach to regulation attempting to avoid that Open Banking leads to consolidation. A light touch regulation, while applying the principle of “same activity, same risk, same rules”, will strive not to create excessive administrative burden especially for new entrants. The market dynamic, resulting from the three components described above (customers’ adoption, market players strategies, and technological innovation) and affected obviously by regulation, may further deepen the current emerging of an ecosystem with a diversity of specialised players, or conversely lead to consolidation and less diversity of players. Consolidation conveys the idea of a more traditional integration of financial services offering with high bundling of services, while diversification would imply some degree of financial services

unbundling and a new more diversified and fragmented offering of financial services. Crossing these two dimensions we obtain the four scenarios depicted in the graph below.

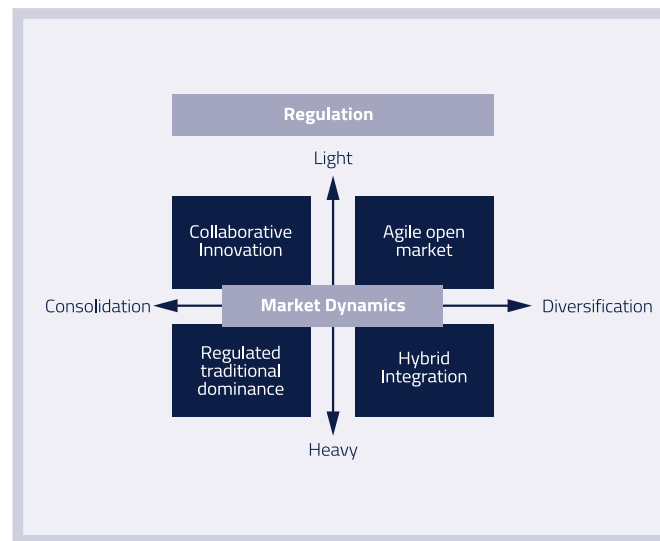


Figure 9 The scenarios, Source: Own elaboration

SCENARIOS' STORYLINES

As in previous reports of the 'shapers and makers' series, we first describe the two most extreme and contrasting scenarios on the diagonal going from the top right quadrant to the bottom left one.

Agile Open Market (AOM). This scenario portrays a market environment with lighter regulatory oversight, allowing FinTech firms to expand their position and offering, without necessarily fully disrupt incumbents. Incumbents, facing increased competition from innovative FinTech solutions, will adapt and innovate which results in a more agile and customer-centric market landscape. This trend is reinforced by widespread adoption by customers of technological innovation, forcing incumbents to improve their

offerings both in terms of decreasing costs for customers and in terms of better customer experience. This scenario is made possible also by a light touch regulation and the creation of an open finance data space that avoid consolidation. This favours the emergence of an ecosystem of both collaboration and competition between incumbents, challenger banks and a large array of other specialised players. Incumbents lose some market share but are not fully disrupted, as collaboration with specialised FinTechs enable them to keep pace with innovation and improve services for their client base. Although cryptocurrencies FinTech develops further, this reinforces the position of the 'Paytech' segment but does not wipe out entirely Visa and Mastercard, while some incumbent banks also enter this segments. The widening and specialisation of the market structure, together with the light touch regulation and the creation of an open finance data space, create new opportunities for start-ups and scale-ups new entrant that propose new business models and better customers experience. Large consolidated FinTechs also reinforce their position in several segments, and to some extent challenger banks expand their customer base and start becoming profitable. New entrants from the BigTech sector increase competition and the need to keep innovating. The diversity and specialisation of the market structure will in the short-term increase innovation and competition, providing benefits to consumers, but may eventually bring to the fore new risks and sources of financial instability. Increased offering of digital wallets with Buy Now Pay Later feature produce social inclusion effects for the less banked segment of the population but can also increase the risk that some customers lose control and become indebted.

Regulated Traditional Dominance (RTD). In this scenario, incumbents maintain their dominance in the financial services industry, with limited integration of FinTech solutions due to stringent regulatory control. The regulatory environment favours established players, reducing innovation. Customer adoption of new technologies remains limited, which allow incumbents to maintain their traditional structure and practices, without losing

their customer base. The heavy-handed new regulation basically cause a return to the status quo ante, that is the full dominance of traditional incumbents. Open Banking is leveraged by incumbents and lead to consolidation. Large consolidated FinTech, facing additional administrative burden struggle to keep their position and do not manage to increase their customer base. The lack of an open financial data space and the heavy administrative burden completely exclude from the market start-ups and scale-ups new entrants. The re-established prominence of incumbents disincentivises BigTechs from entering the financial market. Under this scenario, security risks and sources of instability will be greatly reduced. On the other hand, competition decreases and the potential for innovation and for consumer benefits will depend on whether incumbents will keep investing in innovation. It is possible that once they regain control and eliminate the FinTech threat, traditional banks may go back to be less innovative and customers oriented. In the payment segment, as regulation thwarts cryptocurrencies, traditional incumbents such as Visa and Mastercard re-establish dominance. It is likely that consumers' benefits and social inclusion effects will drastically decrease under this scenario.

We now move to the two intermediate scenarios placed on the diagonal going from top left quadrant to the right bottom quadrant.

Collaborative Innovation (CI). This scenario represents a cooperative approach where traditional banks and FinTech firms collaborate within a light touch regulatory framework. Traditional banks embrace FinTech solutions to enhance their existing services and improve customer experience, while FinTechs can maintain their position since they must comply with lighter regulatory requirements. Incumbents embrace technological innovation and retain control over a traditionally bundled financial offering, but a handful of large and consolidated FinTechs also thrive. The light touch regulation and the creation of the open data financial spaces enable large FinTechs to hold their position, but not to fully displace banks due to the latter structural advantage that is leveraged

through technological innovation and change in corporate culture. The proactive competitive strategy of incumbents discourage entrance by BigTechs, while the light regulation is not sufficient for new starts-ups/scale-ups entrants to reach scale given the strengthening of the competitive position of both banks and large FinTechs. This scenario ensures at least some level of competition and innovation and the changes in the behaviour of incumbents might also provide the same consumer benefits typically delivered by FinTechs. The less fragmented and more consolidated market structure, despite light touch regulation, could contain risks and the sources of financial instability. Consumer benefits and social inclusion effects persist but to a much lesser degree than in the Agile Open Market scenarios.

Hybrid Integration (HI). In this scenario incumbents successfully integrate FinTech solutions, leveraging customer adoption to enhance their services and maintain market dominance. FinTech innovations supplement/support existing incumbent practices rather than causing major disruption. Heavy-ended regulation constrains the growth potential of existing FinTechs and basically create entry barriers for start-ups / scale-ups new entrant. Only large, well-structured organisation with experience in dealing with regulation can thrive in this scenario. So, the incumbents have these capacities. There will be a space left for specialised FinTechs delivering B2B services to incumbents that are not affected by regulation. Given the heavy-handed new regulation large FinTechs, facing additional administrative burden struggle to keep their positions. The lack of well-regulated open financial data space causes consolidation especial for incumbents and the heavy administrative burden completely exclude from the market start-ups and scale-ups new entrants. Given the reassuring regulatory environment, incumbents may reduce their effort at innovation, although using the services of ancillary FinTechs may still improve the quality of delivery to their client base. The heavy regulated environment disincentivise BigTechs from entering the market. The less fragmented structure of the market together with the heavy-handed regulation reduce risks and the sources of financial

instability. Incumbents will still retain some level of innovativeness and deliver benefits to their client base, although social inclusion effects can be expected to decrease.

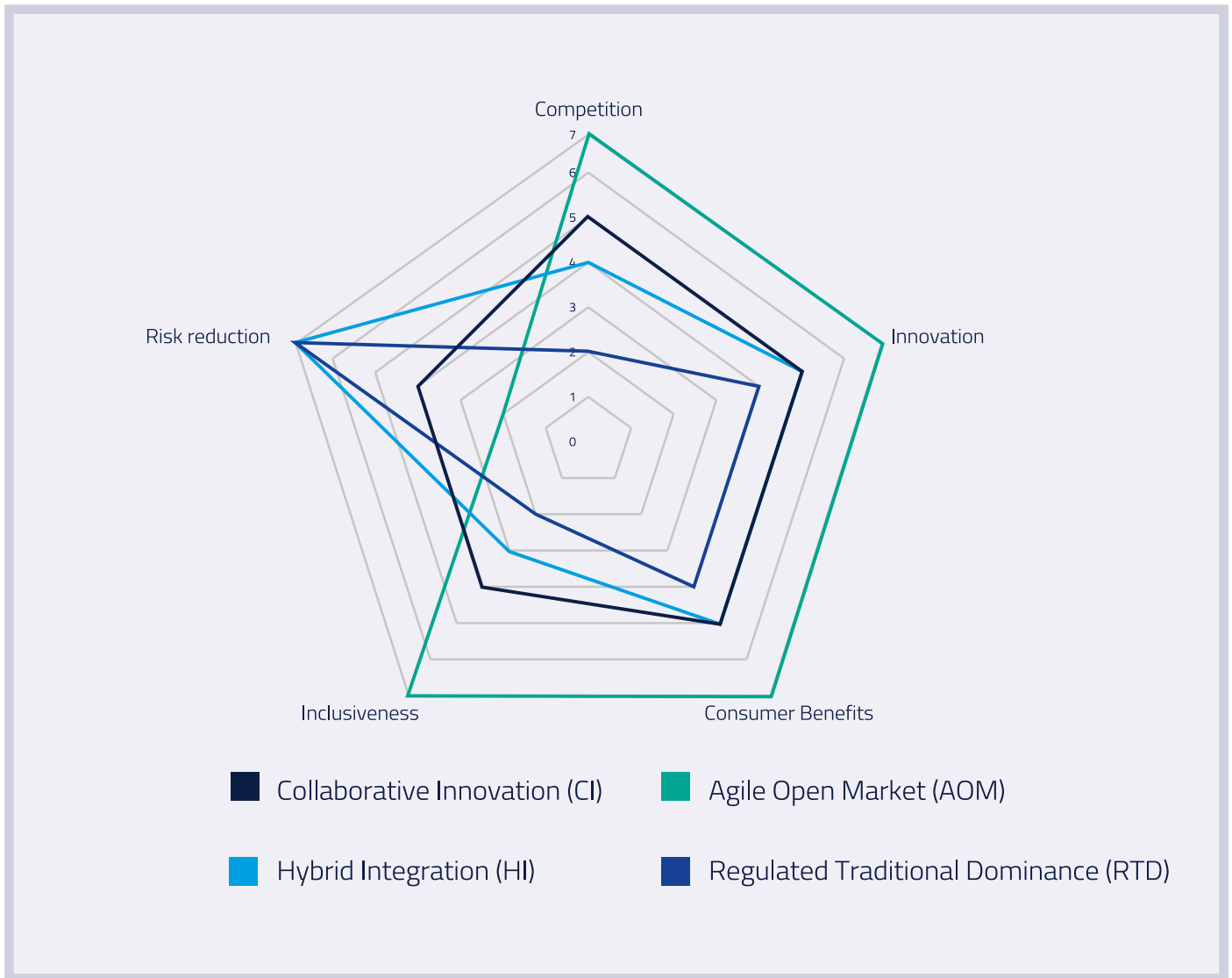


Figure 10 Radar diagram assessment, Source: Own elaboration

SCENARIOS ASSESSMENT AND CONCLUSIONS

The figure below presents the assessment of the four scenarios with respect to four key dimensions: competition, innovation, consumer benefits, and financial stability.

We illustrate the rationale of the assessment starting with a comparison of the two more extreme and opposite scenarios, namely Agile Open Market (AOM) and Regulated Traditional Dominance (RTD). The AOM, given the presence of many players competing with each other, is the scenario with the highest potential to deliver more competition, more innovation, increased consumer benefits, and social inclusion effects. On the other hand, given both the fragmentation of the market and the light touch regulation, this scenario scores the lowest in terms of risk reduction. Heightened competition and innovation might eventually bring to the fore new risks for investors and consumers and create new sources of financial instability. On the contrary the RTD scenario, with reduced market fragmentation and competition and with heavy-handed regulation ensures a high score in terms of risk reduction. Yet, in this scenario, competition is by definition low, whereas innovation and consumer benefits will depend on the extent to which incumbents will continue to change even after they have neutralised the FinTech threat. Inclusiveness will be drastically reduced in this scenario. The other two scenarios, Collaborative Innovation (CI) and Hybrid Integration (HI). In the CI scenario the light touch regulation and the fact that large FinTechs manage to hold on their current position, force incumbents to still compete, and so one could expect at least some level of innovation, consumer benefits, and some level of inclusiveness at the cost of a lower risk reduction. In the HI reduction of risk is higher because of the presence of heavy-handed regulation. On

the other hand, it is to be expected a lower level of competition, innovation, consumer benefits, and inclusiveness given that the position of the incumbents will be strong and no longer threatened by FinTech innovation.

It appears clearly that none of the above four scenarios would ensure the perfect balance between competition/innovation, consumer benefits, inclusiveness, and risk reduction. Hence, shapers should be careful in the mix of new regulation to be implemented, and also consider other non-regulatory actions that may help sustain innovation and keep the financial market open for start-ups and scale-ups new entrants. From the discussion above we draw the following conclusions:

1. **“Same activity, same risk, same rules” is a must.** After the first wave of FinTech innovation, some level of regulation is needed to reduce risks for investors and consumers, sources of financial instability, and a level playing field for all existing and potential new players.
2. **Regulation that minimises administrative burden.** While regulation is needed, it should strive to avoid imposing requirements that creates administrative burden that weaken already consolidated FinTechs and that would create insurmountable entry barriers for start-ups and scale-ups new entrant, whereas it would favour the players with the resources to cope (i.e., incumbent banks).
3. **Open Banking avoiding risks and consolidation.** For competition and innovation in the financial industry access to information and data is strategically crucial. For creating a real level playing field the application of the principle “Same activity, same risk, same rules” is necessary but not sufficient.

Regulators should establish a framework for an open finance data space that, however, reduces security risk and prevents that economy of scale and network effects cause consolidation and reduce competition.

4. **Upgrade of regulators and supervisors capacity to follow technological innovation.** Regulators and supervisors lack technological and technical knowledge. This makes the implementation of what seems rocket solid regulation ineffective. This is why implementation of regulation is problematic in the FinTech domain . Regulators and supervisory bodies should upgrade their technological expertise and also resort to digital automated support.

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Brussels, September 2023.

ANNEX: RANKING OF THE 335 TOP FINTECHS UNICORNS WORLDWIDE

Rank	Company	Value (\$B)	Segment	Country
1	Shopify	76	paytech	Canada
2	Ant Technology	75	paytech	China
3	PayPal	72	paytech	USA
4	Adyen	53	paytech	Netherlands
5	Stripe	50	paytech	USA
6	Block (Square)	38	paytech	USA
7	Revolut	33	challenger bank	UK
8	Nubank	32	challenger bank	Brazil
9	Afterpay	29	BNPL*	Australia
10	Binance	25	cryptocurrencies	Malta
11	Chime	25	challenger bank	USA
12	Acrisure	23	Insuretech	USA
13	Citadel Securities	22	stock brokerage	USA
14	WeBank	21	challenger bank	China
15	FNZ	20	Wealthtech	UK
16	Xero	17	infrastructure	New Zealand
17	Marqeta	16	paytech	USA
18	Lakala	15	paytech	China
19	Blockchain.com	14	blockchain	UK
20	Plaid Technologies	13	open banking	USA
21	Coinbase	13	cryptocurrencies	USA
22	GoodLeap	12	Wealthtech	USA
23	PhonePe	12	paytech	India
24	Bill.com	12	paytech	USA
25	Toast	12	paytech	USA
26	Bolt	11	paytech	USA
27	Checkout.com	11	paytech	UK
28	Gusto	10	infrastructure	USA
29	KuCoin	10	cryptocurrencies	Saychelles
30	Ripple	10	paytech	USA
31	KakaoBank	9.9	challenger bank	South Korea
32	Bullish	9.1	Wealthtech	Cayman Islands
33	Circle Internet Financial	9.0	paytech	USA

34	N26	9.0	challenger bank	Germany
35	Rapyd	8.8	paytech	UK
36	Chainalysis	8.6	blockchain	USA
37	SumUp	8.4	paytech	UK
38	Wise (TransferWise)	8.3	paytech	UK
39	Tipalti	8.3	open banking	USA
40	Robinhood	8.1	Wealthtech	USA
41	Ramp	8.1	cryptocurrencies	USA
42	FalconX	8.0	cryptocurrencies	USA
43	Fireblocks	8.0	cryptocurrencies	USA
44	Jiedaibao	7.8	P2P platforms	China
45	Better.com	7.7	Wealthtech	USA
46	Brex	7.6	challenger bank	USA
47	Razorpay	7.5	paytech	India
48	Carta	7.4	Wealthtech	USA
49	TripActions	7.3	infrastructure	USA
50	Gemini	7.1	cryptocurrencies	USA
51	Credit Karma	7.1	diversified	USA
52	NYDIG	7.0	cryptocurrencies	USA
53	Remitly	7.0	paytech	USA
54	Toss (Viva Republica)	7.0	paytech	South Korea
55	SoFi	6.7	challenger bank	USA
56	Klarna	6.7	paytech	Sweden
57	Mollie	6.5	paytech	Netherlands
58	CRED	6.2	paytech	India
59	Upgrade	6.0	challenger bank	USA
60	Trustly	5.9	paytech	Sweden
61	Root Insurance	5.8	Insuretech	USA
62	Nuvei	5.7	paytech	Canada
63	Airwallex	5.5	challenger bank	Australia
64	Deel	5.5	infrastructure	USA
65	Mambu	5.5	challenger bank	Germany
66	Trade Republic	5.3	challenger bank	Germany
67	HealthEquity	5.0	Wealthtech	USA
68	Coalition	5.0	Insuretech	USA

69	Qonto	5.0	infrastructure	France
70	Creditas	4.8	BNPL	Brazil
71	Clearwater Analytics	4.7	Wealthtech	USA
72	Affirm	4.6	BNPL	USA
73	Lendable	4.6	Lending	USA
74	Monzo	4.5	challenger bank	UK
75	Socure	4.5	challenger bank	USA
76	Wefox	4.5	Insuretech	Germany
77	Bitpanda	4.1	Wealthtech	Austria
78	AngelList	4.0	Wealthtech	USA
79	iCapital Network	4.0	Wealthtech	USA
80	Kakao Pay	4.0	paytech	South Korea
81	Kraken	4.0	cryptocurrencies	USA
82	Melio Payments	4.0	paytech	USA
83	Next Insurance	4.0	Insuretech	USA
84	WealthSimple	4.0	Wealthtech	Canada
85	Stone	3.8	paytech	Brazil
86	Dutchie	3.8	paytech	USA
87	Papaya Global	3.7	infrastructure	Israel
88	SpotOn	3.6	paytech	USA
89	Flywire	3.5	paytech	USA
90	Chargebee	3.5	infrastructure	USA
91	eToro	3.5	Wealthtech	UK
92	PolicyBazaar	3.5	Insuretech	India
93	Assurance	3.5	Insuretech	USA
94	MoonPay	3.4	cryptocurrencies	USA
95	PagSeguro	3.3	paytech	Brazil
96	Blockdaemon	3.3	blockchain	USA
97	Blockstream	3.2	blockchain	Canada
98	Cedar	3.2	Insuretech	USA
99	Figure	3.2	Wealthtech	USA
100	Lufax	3.1	Wealthtech	China
101	HighRadius	3.1	infrastructure	USA
102	Virtu Financial	3.0	Wealthtech	USA
103	Anchorage Digital	3.0	cryptocurrencies	USA
104	China UnionPay	3.0	paytech	China
105	Cross River Bank	3.0	infrastructure	USA
106	Devoted Health	3.0	Insuretech	USA
107	Flutterwave	3.0	paytech	USA
108	Forster	3.0	paytech	USA
109	Groww	3.0	Wealthtech	India
110	PineLabs	3.0	paytech	India
111	dLocal	2.9	paytech	Uruguay
112	BharatPe	2.9	paytech	India

113	DriveWealth	2.9	Wealthtech	USA
114	OVO	2.9	paytech	Indonesia
115	Rakuton Securities	2.9	Wealthtech	Japan
116	OakNorth	2.8	challenger bank	UK
117	Verafin	2.8	Regtech	Canada
118	nCino	2.7	infrastructure	USA
119	Backbase	2.7	infrastructure	Netherlands
120	Thought Machine	2.7	infrastructure	UK
121	Paidy	2.7	paytech	Japan
122	Duck Creek Software	2.6	Insuretech	USA
123	Tinkoff Bank	2.5	challenger bank	Russia
124	Aura	2.5	Regtech	USA
125	Coda Payments	2.5	paytech	Singapore
126	Uala	2.5	paytech	Argentina
127	Divvy	2.5	infrastructure	USA
128	Itiviti	2.5	infrastructure	Sweden
129	Paxos	2.4	blockchain	USA
130	Upstart	2.3	BNPL*	USA
131	Aspiration	2.3	Green finance	USA
132	Greenlight	2.3	Wealthtech	USA
133	Lifelock	2.3	Regtech**	USA
134	AvidXchange	2.2	paytech	USA
135	Addepar	2.2	Wealthtech	USA
136	Bitso	2.2	cryptocurrencies	Mexico
137	CloudWalk	2.2	paytech	Brazil
138	CoinDCX	2.2	cryptocurrencies	India
139	Current	2.2	challenger bank	USA
140	Newfront	2.2	Insuretech	USA
141	iZettle	2.2	paytech	Sweden
142	Tink	2.2	challenger bank	Sweden
143	GoCardless	2.1	paytech	UK
144	Jeeves	2.1	infrastructure	USA
145	Mercado Bitcoin	2.1	cryptocurrencies	Brazil
146	PayFit	2.1	paytech	France
147	ReCharge	2.1	paytech	USA
148	21.co	2.0	cryptocurrencies	Switzerland
149	Acorns	2.0	Wealthtech	USA
150	Amber Group	2.0	cryptocurrencies	China
151	Atome	2.0	paytech	Singapore
152	Avant	2.0	diversified	USA
153	Babel Finance	2.0	Wealthtech	China
154	Bunq	2.0	challenger bank	Netherlands
155	Chipper Cash	2.0	paytech	USA
156	Clearco	2.0	Wealthtech	USA

157	ClearStreet	2.0	infrastructure	USA
158	Clip	2.0	paytech	Mexico
159	Copper	2.0	Wealthtech	UK
160	Divvy Homes	2.0	Lending	USA
161	FirstP2P	2.0	P2P	China
162	Lunar	2.0	challenger bank	Denmark
163	Modern Treasury	2.0	paytech	USA
164	MoMo	2.0	challenger bank	Vietnam
165	Mynt (Gcash)	2.0	challenger bank	Phillipines
166	Opay	2.0	paytech	Nigeria
167	Pipe	2.0	Wealthtech	USA
168	Waterdrop	2.0	Insuretech	China
169	Zenefits	2.0	Accounting	USA
170	Zilch	2.0	paytech	UK
171	Coinswitch Kuber	1.9	cryptocurrencies	India
172	Digit Insurance	1.9	Insuretech	India
173	MX	1.9	infrastructure	USA
174	Roofstock	1.9	Wealthtech	USA
175	Starling Bank	1.9	challenger bank	UK
176	Varo Money	1.9	challenger bank	USA
177	Trulioo	1.8	Regtech**	Canada
178	GreenSky	1.8	Lending	USA
179	Kredivo (FinAccel)	1.7	Lending	Indonesia
180	Mercury Technologies	1.7	challenger bank	USA
181	Spotter	1.7	infrastructure	USA
182	Uniswap	1.7	cryptocurrencies	USA
183	Wave	1.7	infrastructure	Senegal
184	Mercury Payments	1.7	paytech	USA
185	Payoneer	1.6	paytech	USA
186	Q2 Holdings	1.6	infrastructure	USA
187	BillDesk	1.6	paytech	India
188	Bolttech	1.6	Insuretech	Singapore
189	Capitolis	1.6	Wealthtech	USA
190	Neon Payments	1.6	paytech	Brazil
191	Pave	1.6	Accounting	USA
192	Solaris Bank	1.6	challenger bank	Germany
193	Wayflyer	1.6	Lending	Ireland
194	BillTrust	1.6	infrastructure	USA
195	Alloy	1.6	Open banking	USA
196	Enova	1.5	challenger bank	USA
197	Zuora	1.5	paytech	USA
198	Akulaku	1.5	paytech	Indonesia
199	Ascend Money	1.5	Open banking	Thailand

200	Bilt	1.5	paytech	USA
201	Built	1.5	Open banking	USA
202	Coinlist	1.5	cryptocurrencies	USA
203	Dock	1.5	infrastructure	Brazil
204	Kushki	1.5	paytech	Ecuador
205	Ledger	1.5	cryptocurrencies	France
206	M1 Finance	1.5	Wealthtech	USA
207	OneCard	1.5	paytech	India
208	PingPong	1.5	paytech	China
209	WeLab	1.5	challenger bank	China
210	Zepz (WorldRemit)	1.5	paytech	UK
211	Zeta	1.5	challenger bank	India
212	GoHealth	1.5	Insuretech	USA
213	Alkami	1.4	infrastructure	USA
214	At-Bay	1.4	Insuretech	USA
215	CGTZ	1.4	Wealthtech	China
216	Figment	1.4	blockchain	USA
217	FPL Technologies	1.4	paytech	India
218	Judo Bank	1.4	challenger bank	Australia
219	Paddle	1.4	infrastructure	UK
220	Pismo	1.4	infrastructure	UK
221	Scalable Capital	1.4	Wealthtech	Germany
222	Stash	1.4	Wealthtech	USA
223	Wealthfront	1.4	Wealthtech	USA
224	Lemonade	1.3	Insuretech	USA
225	Betterment	1.3	Wealthtech	USA
226	Cointracker	1.3	cryptocurrencies	USA
227	CredAvenue	1.3	paytech	India
228	iTrustCapital	1.3	Wealthtech	USA
229	Konvio	1.3	infrastructure	Mexico
230	Lukka	1.3	Accounting	USA
231	Marshmallow	1.3	Insuretech	UK
232	Signifyd	1.3	infrastructure	USA
233	Talos	1.3	Wealthtech	USA
234	TaxBit	1.3	cryptocurrencies	USA
235	TrueBill	1.3	infrastructure	USA
236	Paya	1.3	paytech	USA
237	Oscar Health	1.2	Insuretech	USA
238	Paymentus	1.2	paytech	USA
239	AgentSync	1.2	Insuretech	USA
240	Clover Health	1.2	Insuretech	USA
241	FloQast	1.2	Accounting	USA
242	Phantom Technologies	1.2	paytech	USA

243	Pilot	1.2	Accounting	USA
244	Public.com	1.2	Wealthtech	USA
245	Scalapay	1.2	paytech	Italy
246	Skrill	1.2	diversified	UK
247	Stori	1.2	paytech	Mexico
248	Unit	1.2	infrastructure	USA
249	Galileo	1.2	infrastructure	USA
250	SimpleNexus	1.2	infrastructure	USA
251	Deposit Solutions	1.1	Wealthtech	Germany
252	Sezzle	1.1	paytech	USA
253	Acko	1.1	Insuretech	India
254	Branch	1.1	Insuretech	USA
255	Caribou	1.1	Insuretech	USA
256	Earnix	1.1	Insuretech	Israel
257	Hypoport SE	1.1	infrastructure	Germany
258	Fundbox	1.1	paytech	USA
259	Happy Money (fka Payoff)	1.1	Lending	USA
260	MobileCoin	1.1	cryptocurrencies	USA
261	Spendesk	1.1	Wealthtech	France
262	Sunbit	1.1	BNPL*	USA
263	Super Apps Holding	1.1	Wealthtech	Malaysia
264	Tradeshift	1.1	infrastructure	USA
265	Zego	1.1	Insuretech	UK
266	Cayan	1.1	paytech	USA
267	Technysis	1.1	paytech	USA
268	LiveOak Bank	1.0	challenger bank	USA
269	Ajaib	1.0	stock brokerage	Indonesia
270	Amount	1.0	challenger bank	USA
271	Betterfly	1.0	Accounting	Chile
272	Bitkub	1.0	cryptocurrencies	Thailand
273	C2FO	1.0	paytech	USA
274	Cais	1.0	Wealthtech	USA
275	Cart.com	1.0	infrastructure	USA
276	ChromeRiver (Emburse)	1.0	Accounting	USA
277	Clark	1.0	Insuretech	Germany
278	Clearcover	1.0	Insuretech	USA
279	Crypto.com	1.0	cryptocurrencies	Singapore
280	DailyPay	1.0	BNPL*	USA
281	EBANX	1.0	paytech	Brazil
282	Esusu	1.0	Wealthtech	USA
283	Feedzai	1.0	infrastructure	USA
284	Flex	1.0	paytech	USA

285	Freshbooks	1.0	Accounting	Canada
286	Glia	1.0	infrastructure	USA
287	Guantlet	1.0	cryptocurrencies	USA
288	Human Interest	1.0	Accounting	USA
289	Interswitch	1.0	paytech	Nigeria
290	InvestCloud	1.0	Wealthtech	USA
291	LendingHome	1.0	Lending	USA
292	Liquid	1.0	cryptocurrencies	Japan
293	Lydia	1.0	challenger bank	France
294	MatrixPort	1.0	cryptocurrencies	Singapore
295	MNT-Halan	1.0	Lending	Egypt
296	Neo Financial	1.0	diversified	Canada
297	Nium	1.0	paytech	Singapore
298	Numbrs	1.0	challenger bank	Switzerland
299	Octane Lending	1.0	Lending	USA
300	Open	1.0	infrastructure	India
301	Opn	1.0	paytech	Thailand
302	Orchard	1.0	Insuretech	USA
303	Oxyzo	1.0	Lending	India
304	Payhawk	1.0	paytech	UK
305	Paystand	1.0	paytech	USA
306	Pie Insurance	1.0	Insuretech	USA
307	PPRO	1.0	paytech	UK
308	Satispay	1.0	paytech	Italy
309	Shift Technology	1.0	regtech**	France
310	Sift	1.0	regtech**	USA
311	Sightline Payments	1.0	paytech	USA
312	Slice	1.0	paytech	India
313	SmartAsset	1.0	Wealthtech	USA
314	Stax (FatMerchant)	1.0	Accounting	USA
315	TaxFix	1.0	Accounting	Germany
316	The Zebra	1.0	Insuretech	USA
317	Transfermate	1.0	paytech	Ireland
318	TrueLayer	1.0	Open banking	UK
319	Vesttoo	1.0	Insuretech	Israel
320	Vise	1.0	Wealthtech	USA
321	VNLife (VNPAY)	1.0	infrastructure	Vietnam
322	Webull	1.0	Wealthtech	China
323	Worldcoin	1.0	cryptocurrencies	USA
324	Xendit	1.0	paytech	Indonesia
325	Xtransfer	1.0	paytech	China
326	Zebic	1.0	Accounting	USA
327	Zopa	1.0	Open banking	UK

328	DANA Wallet	1.0	paytech	Indonesia
329	Currency Cloud	1.0	infrastructure	UK
330	Nutmeg	1.0	Wealthtech	UK
331	Personal Capital	1.0	regtech**	USA
332	Finicity	1.0	Open banking	USA
333	GreenDot	1.0	challenger bank	USA
334	LendingClub	1.0	Lending	USA
335	Bright Health	1.0	Insuretech	USA

Source: Authors' elaboration from <https://FinTechlabs.com/FinTech-unicorns-of-the-21st-century/>

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