

The future is FinTech

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p.05

Executive summary

- FinTech is currently a USD 150-plus billion industry that is estimated to grow by 20% in the next five years alone.¹
- It refers to technologies that either enhance existing financial services, or enable new financial products and services to be offered.
- We believe FinTech will eventually evolve into a new financial service sector. The winners and losers are mostly characterised by their ability to transform legacy business and offer relevant services at competitive prices.
- Our investment process employs a trends-based approach, focusing on categories that have the potential to deliver. The starting point is key trends that are expected to drive growth and returns in the coming years.
- We only choose trends with longevity potential because these offer better opportunities for potential monetisation. We exclude so-called hypes, or short-term trends.
- Five core areas will drive the industry in future, in our opinion:
 - The world will move towards a fully cashless society
 - Digital finance aids financial inclusion
 - Digitalisation lowers barriers to entry, improves efficiency and enables new financial services
 - The rise of technology ecosystems
 - Cyber security as a basic necessity for all digital financial services
- These trends are filtered into an investible universe of roughly 250 public companies. The number fluctuates due to mergers and acquisitions, and initial public offerings.
- Holdings are diversified across three categories: established FinTech, enabling technology and upcoming FinTech. Each brings unique characteristics to promote diversification and optimal portfolio management.
- Our team has decades of experience in the industry, and offers a unique combination of expertise in both financial services and technology.

¹ Source: LOIM estimate based on average of industry sources. Estimated growth of 20% in compound annual growth rate (CAGR) to 2025.

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• What is FinTech?	p.02
• A new kind of financial services	p.05
• Our investment universe	p.12
• A trends approach based on longevity	p.13
• Integrating sustainability	p.14
• Financial inclusion: an example	p.15
• Building a portfolio	p.16
• Conclusion	p.17

We translate long-term trends into a carefully selected, proprietary investible universe. We also emphasise purity as an important criteria for selection.

The future is FinTech

Introduction

Financial Technology (FinTech), emerged as an entirely new industry in the aftermath of the 2008 global financial crisis. Financial services were transformed through regulation, socio-political pressures and the expectations of a new generation. This coincided with the rapid development of new technology, creating the setting for FinTech to flourish.

FinTech has already revolutionised financial services and looks set to shape the future trajectory of the industry. This is currently a USD 150-plus billion industry that is estimated to grow by 20% in the next five years¹ alone. FinTech has migrated from payments to a multitude of financial services, encompassing end-clients as well as business-to-business services and products.

What is FinTech?

While there is no universally agreed definition for FinTech, several components are common to most descriptions. We use these to define our investment universe.

Our FinTech universe is comprised of technologies that either enhance existing financial services, or enable new financial products and services to be offered. This includes, for example: the integration of artificial intelligence in front-end applications to enhance the customer experience; or software to improve flexibility and efficiency of back-office operations of traditional financial institutions. Payments, core system replacement and cyber security software for financial services are also in the FinTech ecosystem.

FinTech encompasses technologies that enable products and services that were previously not possible to offer, due to cost or lack of functionality. Examples in this category include robo-advice,² hyper-personalisation from leveraging big data, and real-asset tokenisation using blockchain infrastructure.

Interestingly, FinTech both disrupts existing financial services and sustains innovation within them, according to the disruptive innovation framework.³ Within certain areas, FinTech is clearly disrupting traditional financial service providers, while in other areas, FinTech solutions equip traditional financial service providers with the tools to retaliate and defend their market position.

Charting the path of FinTech

The success of FinTech can be traced back to the aftermath of the global financial crisis in 2008.

The regulatory response to the crisis fundamentally changed financial services by increasing compliance costs and raising capital requirements. Simultaneously, massive monetary policy accommodation from central banks led to low interest rates becoming engrained, further upending the traditional businesses of banking and insurance.

Costs rose mainly as a result of greater compliance requirements, as evidenced by the fact that the number of compliance staff has expanded every year since 2009.⁴ And because the crisis transformed perceptions of financial services and their contribution to global systemic risk, we believe this trend of rising compliance costs is likely to continue. Processes will need to become more transparent and better checked, and systemic risk needs to be managed.

In 2008, regulators increased capital requirements across the board and broadened their application to more institutions. Greater capital requirements tied up the balance sheets of financial institutions, and resulted in a lower return on equity (ROE). Extremely loose monetary policy pulled down net interest margins, and reduced return on assets (ROA), too. Overall, this crunch on revenues decreased potential opportunities for incumbents to invest.

Designations of systemically important financial institutions (SIFI) and systemically important banks (SIB) cast a wider net for capital requirements. Many banks and insurance companies now fall under this designation, with asset managers potentially next.

Meanwhile, vast monetary accommodation spurred a profound impact on the financial sector as central banks slashed interest rates and expanded their balance sheets through quantitative easing in an attempt to stimulate economic growth. The low and negative interest rate environment reduced net interest margins for banks, diminished new business for life insurance companies, and increased fee pressures for asset managers.

Most financial institutions drastically cut costs to adjust to this new reality, instead of significantly increasing spending on innovation in order to keep pace with technological developments and customer requirements.

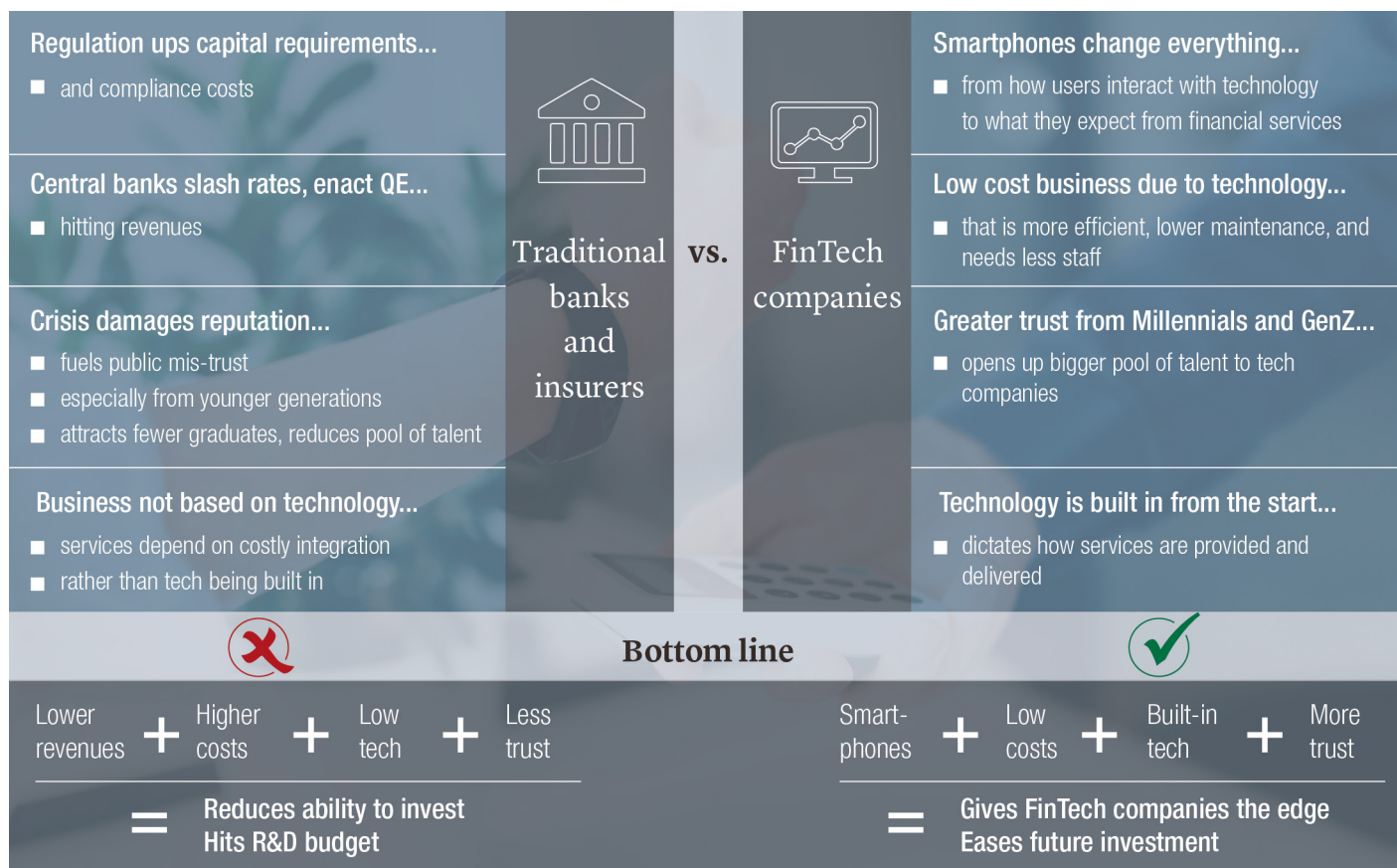
¹ Source: LOIM estimate based on average of industry sources. Estimated growth of 20% in compound annual growth rate (CAGR) to 2025.

² Robo-advice refers to automated investment services to aid portfolio management. <https://www.thebalance.com/what-is-a-robo-advisor-and-how-do-they-work-4097134>.

³ The Clayton Christensen framework coined the theory of disruptive innovation in business. <https://hbr.org/2015/12/what-is-disruptive-innovation>.

⁴ Source: Thomson Reuters, Forum Magazine: Cost of Compliance Report 2019 - 10 years of Regulatory Change.

FIG. 1 AFTER 2008: HOW FINTECH CAME ABOUT



Source: LOIM. For illustrative purposes only.

These shifts led to the emergence of FinTech companies and their unique characteristics. The cost base of the average FinTech company is typically only a quarter that of traditional financial companies. Some of the cost advantages are structural: newer technology means more efficient operations, hence lower maintenance costs and fewer staff, for instance. Other costs arising from compliance, customer services and future technology requirements are set to increase, however, as FinTech matures.

Incumbent financial services institutions will find it hard to compete with FinTech on costs, in our opinion. Cost cutting is a temporary and partial solution that fails to address wider changes in socio-demographics and the economic environment.

The smartphone revolution

Smartphones also played a large role in the proliferation of FinTech as they drastically changed how users interact with technology. Instead of requiring a desktop, consumers became permanently connected and online. This opened up vast possibilities to integrate financial services, and new technologies were (and continue to be) introduced.

Most financial institutions incorporated online financial services relatively quickly. Mobile applications, however, present far greater scope to be developed and incorporated, leaving a field of opportunity, in our view. For instance, a multitude of data can be gathered from mobile interactions, such as geo-location, pressure from fingers on the screen, app usage etc. Most FinTech companies integrally link the use of such data to their services. In contrast, most traditional financial institutions have only recently begun to integrate data use.

FinTech companies have a clear head start in this area and most traditional financial institutions face limited resources to narrow the gap. Incumbents have lower R&D budgets in most cases, and face difficulty attracting the talent necessary to internally develop tools to compete.

Before 2008, financial institutions could pick and choose from a deep pool of graduates in a wide variety of disciplines such as economics, mathematics, engineering and physics. Since the crisis, however, graduates with technical backgrounds typically favour working for big technology companies or FinTech companies. This also gives FinTech potential competitive advantage.

Consumers demand more

Consumer preferences were also changing. Public faith in financial institutions had been shaken at the same time technological advancements were drastically reshaping other industries.

Consumers had become accustomed to shopping at online retailers like Amazon⁵ and Alibaba,⁵ leading to them to expect technology companies to apply similar standards to financial services. But traditional financial institutions failed to cater to this demand, opening the way for FinTech to thrive.

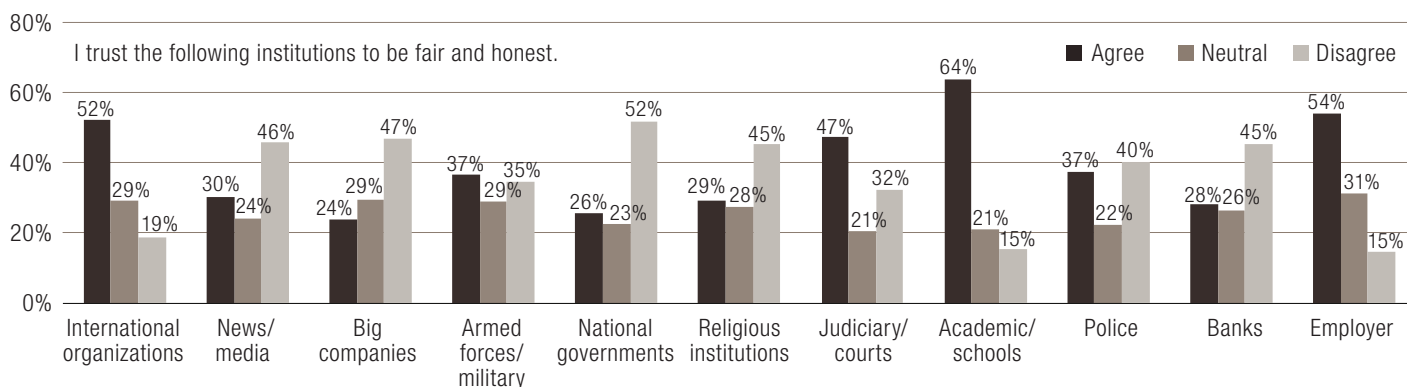
Today, legacy financial institutions enjoy the advantages of customer trust as well as customers being slow to switch

providers. However, a demographic divide is clearly taking shape. Younger generations such as millennials and GenZ place far greater trust in technology companies.⁶ They also tend to be more willing than older generations to trust FinTech startups.

The global shapers survey for the World Economic Forum (Figure 2) in 2017 found that 45.3% of respondents under the age of 30 did not trust banks to be fair and honest.

We believe that investing in technology is key to winning customers, and duly caution that the reputational damage to incumbents from the financial crisis could be irreparable. Here too, FinTech companies appear better positioned to capture the growth opportunities available from changing demographics and investment in technology.

FIG. 2 GLOBAL SHAPERS SURVEY, 2017



Source: World Economic Forum, 2017.

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⁶ Source: Business Insider, <https://www.businessinsider.com/the-tech-companies-in-payments-report-2017-12?r=US&IR=T>.

A new kind of financial services

We believe FinTech will eventually evolve into a new financial service sector comprised of very different players. The winners and losers are being determined as we speak, and are mostly characterised by their ability to transform legacy business and offer relevant services at competitive prices.

Price is an important component. Most new companies have the advantage over incumbents because their cost base is much lower due to more advanced and flexible core systems.

Service and trust are other components. Here, incumbents could have the advantage if they manage to keep pace with customer expectations. We expect incumbents to shift capital expenditure (CAPEX) spending towards innovation (versus maintenance), suggesting even better odds for incumbents. Additional advantage could be conferred from sourcing the required skills externally, instead of relying on internal capabilities, in our opinion.

A long-term trends approach, no hypes

We use a trends approach in our investment process, focusing on categories that have the potential to deliver. Our starting point is to define the key trends we expect to drive growth and returns in the coming years. We analyse the longevity potential of these trends, and differentiate trends from hypes.

A hype is a momentary phenomenon that, if invested in at the right time, could bring a short-term, but unsustainable return. Timing and exploiting hypes is difficult and highly unpredictable. Investing on the basis of enduring trends, in contrast, leads to opportunities for long-term excess returns by exploiting behavioral biases in the market.⁷

Key trends can continually evolve, and we believe the endurance of the trend in the long-term is an important selection criteria.

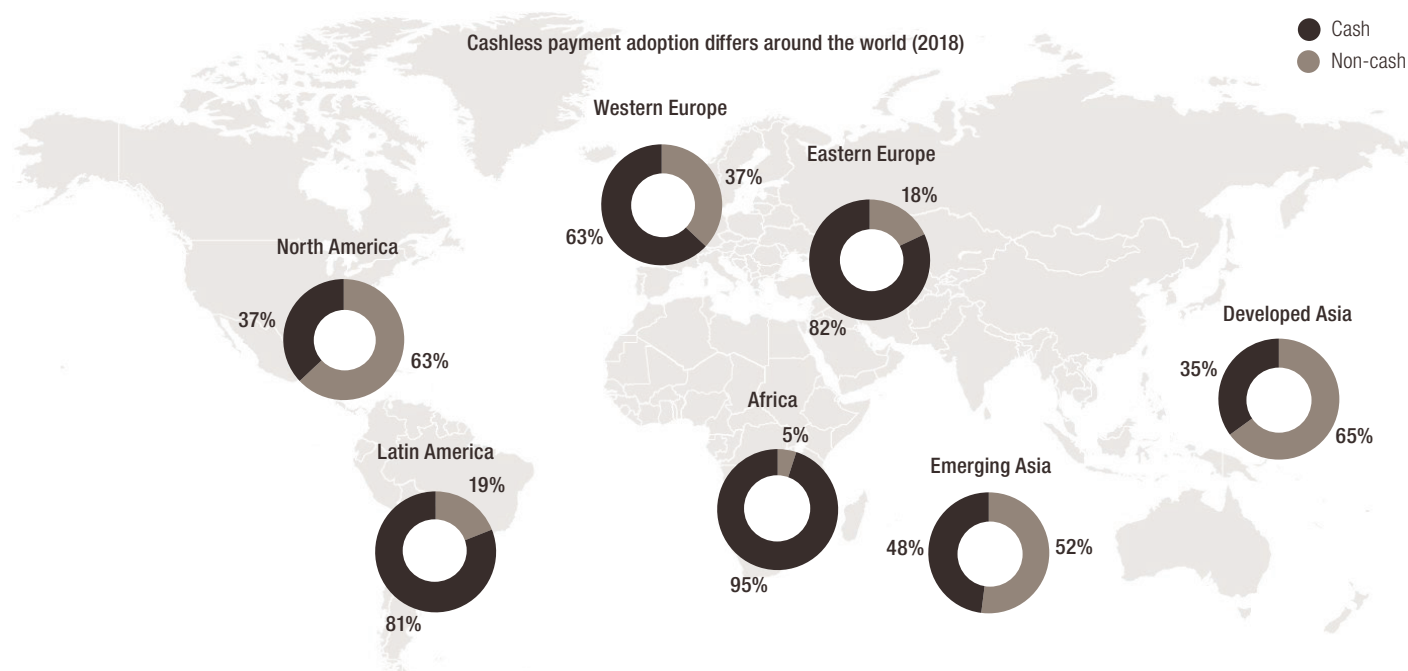
Our FinTech strategy is based on five core beliefs. These provide our top-down starting point to find bottom-up companies that stand to benefit most.

1. The world will move towards a fully cashless society
2. Digital finance aids financial inclusion
3. Digitalisation lowers barriers to entry, improves efficiency and enables new financial services
4. The rise of technology ecosystems
5. Cyber security as a basic necessity for all digital financial services

The world will move towards a fully cashless society

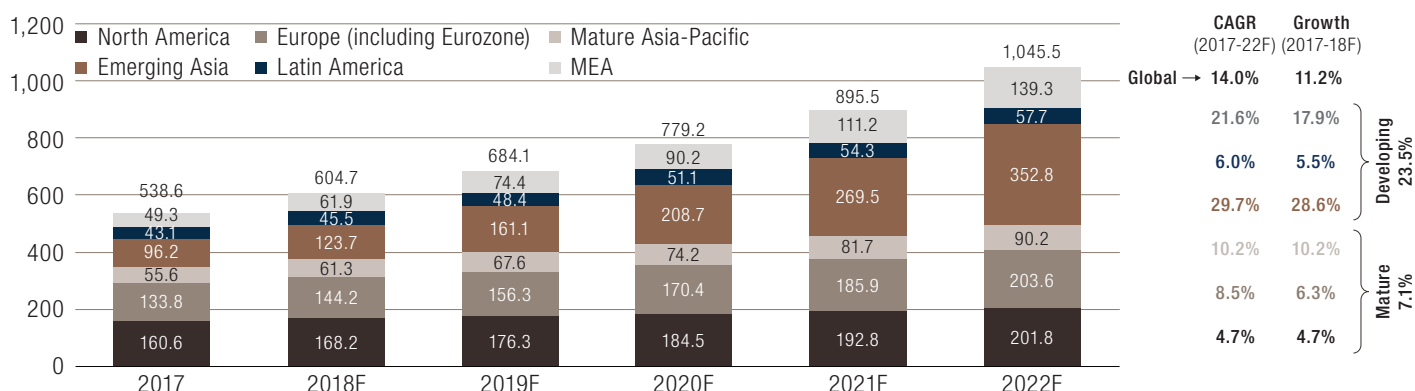
The world is already moving towards a fully cashless society (Figure 3) and the replacement of cash transactions with digital payments will continue for decades.

FIG. 3 GOING CASHLESS AROUND THE WORLD



Source: Mastercard, McKinsey, LOIM.

⁷ We discuss this topic in more detail in the section below entitled "Integrating sustainability" on p.14.

FIG. 4 NUMBER OF WORLDWIDE NON-CASH TRANSACTIONS BY REGION 2017-2022 (E).

Sources: Capgemini Financial Services Analysis 2019, World Payments Report 2019. For illustrative purposes only.

We outline the growth expectations by region in Figure 4. Exponential, expected growth in emerging Asia is notable, in our opinion.

Different countries migrate towards digital payments over diverse timeframes. There is a deep-seated social component to cash payments because of their daily use. This can lead to a very gradual transition period to digital payments, even when the technology infrastructure is present. Germany, for example, only saw the number of digital payments outnumber cash payments in 2019, whereas countries such as China, Sweden and the Netherlands switched to a majority of digital payments several years ago already.

The move away from cash has been an evolutionary process in western countries, whereas the transition has been quite disruptive in developing countries such as Kenya, China and India. The difference hinges on legacy infrastructure.

A wide spectrum of payment methods exists in the west, ranging from cash (withdrawn from ATMs), to Anglo-Americans' beloved cheques, to card and mobile payments. Conversely, cash and card networks tend to be less extensive in most developing countries. Instead, feature and smartphones are widely used, facilitating the immediate use of mobile payments.

Mobile platforms offer much more connection with the customer. The touch point at an ATM or at a POS terminal is limited, whereas mobile phones are permanently with the consumer and able to gather copious data.

Payment networks, processors and merchant acquirers (or all-in-one payment services for merchants) stand to benefit from this transition, in our opinion. Most business models in these areas depend on economies of scale. The larger the volumes, the higher the profitability. This has fueled active M&A in payments as companies position to scale up quickly.

After an initial wave of local payment scheme consolidation, Europe may now move towards a second wave of acquisitions across the continent. We are monitoring this potential, which in the US succeeded in bringing about larger scale. While the use of cash is likely to persist for some time, we expect the majority of payments to transition towards digital forms.

A crypto currency boost

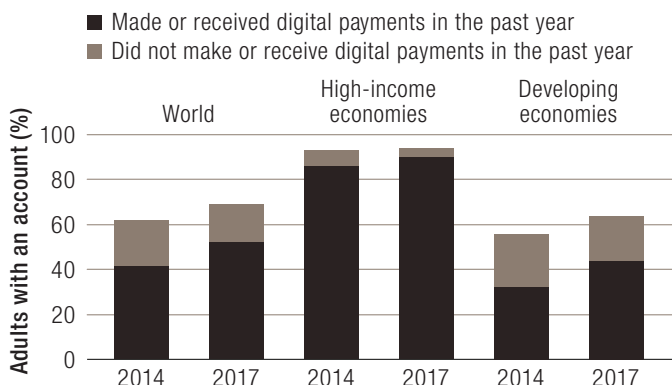
Extra stimulus in Europe could come from central bank digital currencies (CBDC). Christine Lagarde, in her former role as director of the IMF, conducted a study about the usage of digital currency, or crypto currency, backed by central banks. The study concluded that crypto currency confers ample benefits, both from an operational efficiency perspective (lowering money transfer and administrative costs), as well as a policy execution perspective (giving direct control over money flows). Now that Lagarde has become president of the European Central Bank, we believe it is very likely that she will pursue CBDC, which could further stimulate the transition to a cashless society.

Digital finance aids financial inclusion

Financial inclusion is a natural by-product of FinTech, in our opinion, given its tremendous cost advantage. The implications for emerging markets are important. Before FinTech it was not possible to serve most people in rural emerging markets because the costs were too high relative to the limited services these people would consume. FinTech changed the economics, however, and made it possible to service previously unserved people.

According to the World Bank,⁸ globally 69% of adults (3.8 billion people) had a account at a bank or mobile money provider in 2018. This is up from just 51% in 2011. The same report found increased

⁸ World Bank, April 2018: *Financial Inclusion on the Rise, But Gaps Remain, Global Findex Database Shows*. Accessed at: <https://www.worldbank.org/en/news/press-release/2018/04/19/financial-inclusion-on-the-rise-but-gaps-remain-global-findex-database-shows>.

FIG. 5 DIGITAL PAYMENTS RISING WORLDWIDE

Source: Global Findex database.

mobile phone usage has contributed to a rise in the share of account owners sending or receiving payments digitally from 67% in 2014 to 76% percent globally in 2017. In the developing world it rose from 57% to 70%. However, 1.7 billion adults remain unbanked, despite two thirds of them owning a mobile phone.

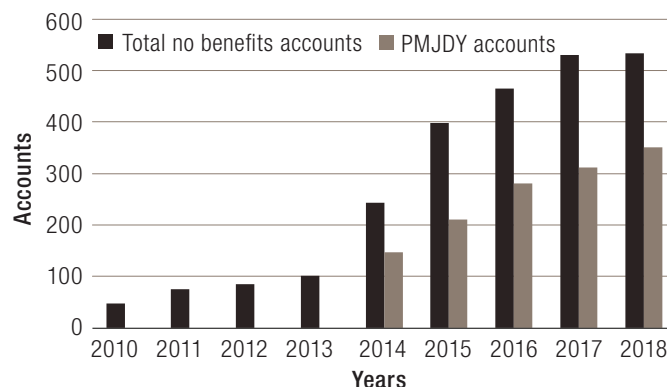
In South Asia, the share of adults with a bank account has risen by 23 percentage points, to 70%. Progress was driven by India, where a government policy to increase financial inclusion through biometric identification pushed the share with an account up to 80%. For instance, more than 350 million Indian households obtained a bank account over just 5 years, thanks to a combination of software (AADHAAR) and hardware (finger print and iris scanner). In the past, it was impossible for banks to open branches in all areas. Now, FinTech enables local shops to provide banking services on behalf of banks.

Furthermore, the Indian government introduced the mandatory conversion of old banknotes into new notes. Only bank account holders registered in the AADHAAR system could exchange the notes. This further fuelled the growth of Indian bank accounts.

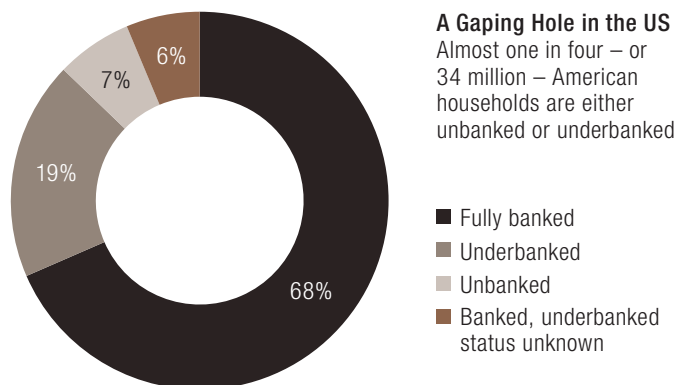
Figure 6 shows how the AADHAAR system increased financial inclusion (by as much as 600%) by drastically increasing the number of bank account holders.

We see FinTech as a key enabler of a more inclusive society. A society with a lower material footprint and higher level of digitally enhanced efficiency. We believe our current economy is WILD (Wasteful, Idle, Lopsided and Dirty) and unsustainable. Economic growth currently comes hand-in-hand with unpriced negative externalities. Our economy is enormously wasteful. On top of all this, increasing inequalities are leaving large swathes of the population behind.

Financial inclusion is also a theme in developed countries due to many customers being under-served. Such customers have a bank account, but receive inadequate service because of insufficient earnings or the value of their assets being too low. For instance,

FIG. 6 ZERO BALANCE SAVINGS ACCOUNTS IN INDIA, 2010-2018

Source: Reserve Bank of India, (PMJDY) Pradhan Mantri Jan Dhan Yojana website. No benefit accounts refer to accounts without insurance, credit, pension, etc. For illustrative purposes only.

FIG. 7 A MISSING PIECE IN THE US

A Gaping Hole in the US
Almost one in four – or 34 million – American households are either unbanked or underbanked

Source: FDIC. 2017 American Banker. For illustrative purposes only.

in the US, roughly a quarter of households are either unbanked or underbanked, as shown in Figure 7. FinTech, in the form of robo-advice, for instance, can also offer solutions in this realm.

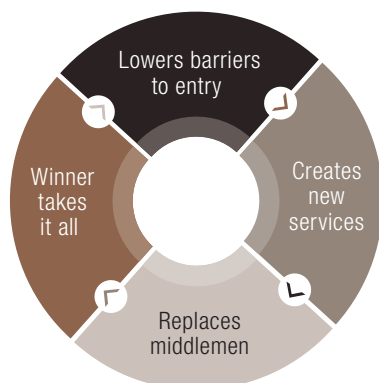
Payments and insurance could present some barriers to inclusion, however, for people not owning a phone. Lack of phone ownership means such people cannot participate in technological advances conferred by FinTech because they have a lighter or no digital footprint. This group of people is relatively large and represents a majority of payments for amounts below USD10 in the US.⁹

People with no digital trace may also find it difficult to become insured. Insurers use automated risk models that are only able to generate a profile if the client has a digital footprint. They are unable to underwrite clients without a digital history.

As a result, some groups of people will not be serviced by digital finance. Their numbers stand in contrast to the significant number of people for whom new technology has substantially increased service. New FinTech initiatives are considering how to include under- or un-served customers: the economics make sense from a business/profit model point of view.

⁹ Source: Square, money2020/Las Vegas. September 2019.

FIG. 8 THE EFFECT OF DIGITALISATION ON THE ECONOMY



Source: LOIM. For illustrative purposes only.

Digitalisation lowers barriers to entry, improves efficiency and enables new financial services

The effect of digitalisation on the economy mirrors the process that previously occurred in manufacturing and consumption. In Figure 8, we identify this as four-stage process involving:

- an initial lowering of the barriers to entry
- efficiency improvements and the creation of new services
- the elimination of middlemen
- and, eventually, a winner emerging

FinTech is currently focused on efficiency and innovation, but is likely to migrate beyond consumer phasing towards B2B services.

Specialised FinTech solutions have already reduced costs and improved efficiency in the front and back office activities of financial institutions. Artificial intelligence used by the front office to offer simple advice and customer service vastly improved previous provision by call centres, for instance.

New technology also enhanced work methods, as well as data consumption and processing. Blockchain, offering more secure infrastructure, could spur the next wave of replacement, driving further efficiency, in our opinion.

Today, it is relatively straightforward to start a bank because financial technology has substantially lowered the barriers to entry and enabled new services. Regulations are a big hurdle, but banking software, for example, is readily available and enables FinTech companies to work with incumbents who hold a license. The same logic applies to other financial services such as insurance.

This process is very path dependent, or depends on the technology that was previously in place. For instance, ATMs and the internet

replaced the need for bank branches. Mobile applications followed, and, in turn, voice access.

We believe the future will be fully automated and feature robotic services. Innovations like blockchain could enable new investment vehicles and services, such as real asset tokenisation that permits fractional ownership in the likes of paintings or buildings. This trend expands the investible universe and enlarges the potential asset base.

Specialised, B2B software requirements are likely to increase, in our view, due to demand from companies striving to remain in business and compete with newcomers. Specialised B2B software providers have emerged, and become *de facto* innovation centres for legacy financial institutions. Instead of spending millions on R&D, these institutions are finding it much easier to simply buy and integrate solutions from software providers.

The rise of technology ecosystems

FinTech began as a specialisation within financial services, which in turn branched out into wider use. The most profitable financial services were unbundled into individual parts, and perfected by new technology and new business models. Payments were the first service to go through this process. Eventually, lending, foreign exchange, deposits, financial administrative processes, P&C insurance underwriting and financial advice followed.

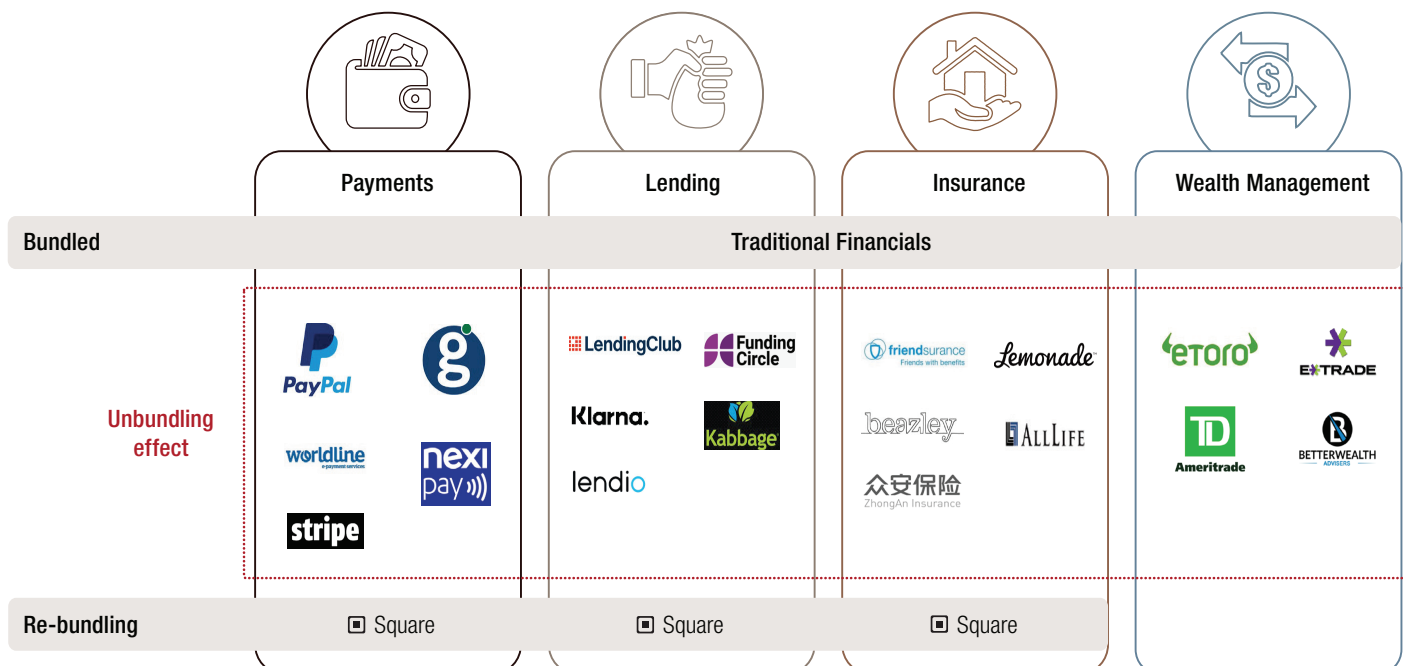
Unbundling and rebundling of services is an interesting phenomenon that we also observe in other industries. Usually, digital technology enables unbundling of a particular service (for instance, payments), where that service is split off from broader financial services. Once separate, the service is often cheaper and offers a better user experience than the original service, mainly due to technological superiority and bespoke focus. At a certain point, a group of winners gains so much market share that it is impossible for incumbents to compete. They then spin off those activities. Visa,⁵ for instance, was spun off by its previous owner, a banking consortium.

In time, however, a need to diversify arises, and offers cross-selling opportunities. Large and successful payment providers are beginning to offer lending based on payments information, for example. Hence, we see a re-bundling of services again. Figure 9 illustrates this unbundling and rebundling process.

So-called technology platform companies such as Alibaba⁵ and Tencent⁵ in China began as single product/service providers, but quickly expanded to become overall bundlers of services. Customers no longer leave these platforms because all of their needs are met by a single app, from buying goods to taking out a loan to ordering food to paying utility bills while chatting to friends.

⁵ Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or securities. It should not be assumed that the recommendations made in the future will be profitable or will equal the performance of the securities discussed in this document. The case studies provided in this document are for illustrative purposes only and do not purport to be recommendation of an investment.

FIG. 9 THE UNBUNDLING AND REBUNDLING EFFECT



Source: CBINSIGHTS, 2019. For illustrative purposes only. Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or securities. It should not be assumed that the recommendations made in the future will be profitable or will equal the performance of the securities discussed in this document.

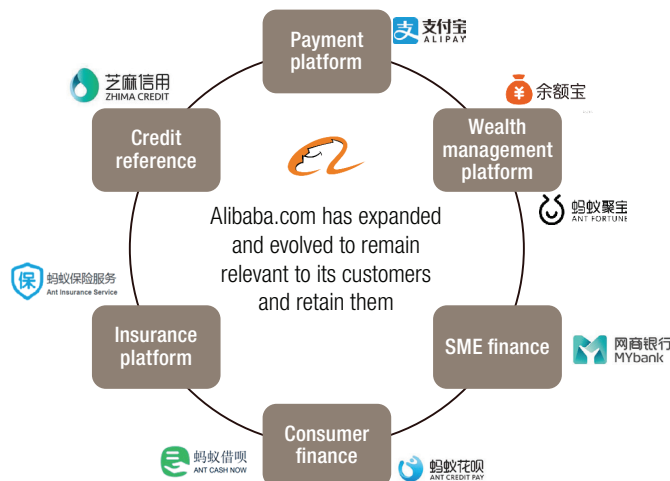
There are both upsides and downsides to these platforms. On the upside, they allow more efficient services, and enable newcomers to grow their client base quickly. On the downside, such growth inevitably attracts competition to the most profitable services, sometimes from newcomers.

Companies not previously offering financial services are now entering this area, forming a large technology ecosystem that "locks in" clients. The main motive of Apple,⁵ for instance, is to keep customers exclusively using the Apple ecosystem. Products such as iPhones, Macbooks, iPads and Apple watches are all designed to create user synergies. Additional services are subsequently added to increase the cost of switching, and further solidify customer dependence.

After initially selling hardware, Apple then rolled out services such as cloud storage and app stores. To promote daily engagement with clients, Apple added financial services enabling mobile device payments via Apple pay, or access to credit via the Apple credit card. Other financial services – such as insurance based on Apple's user data, and asset management – are likely to be rolled out next, in our opinion.

The rollout of such platforms depended on customers trusting tech companies – once again, younger generations placing greater faith in tech than in traditional banks benefitted companies such as Apple and Alibaba.

FIG. 10 THE ALIBABA EXAMPLE



Source: The digital insurer, 2019. For illustrative purposes only. Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or securities. It should not be assumed that the recommendations made in the future will be profitable or will equal the performance of the securities discussed in this document.

In parallel to Apple, Alibaba also expanded the reach of its network. The company began as a digital marketplace, before adding online shopping and online payment methods, as well as offering a wide range of other digital financial services.

Figure 10 shows how Alibaba expanded and evolved in order to both remain relevant to its customers and lock in their custom.

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Such a model has profound implications for traditional financial service providers. Apple uses financial services to increase customer lock-in, and earns money through hardware upgrades rather than providing financial services. This means the price-base of such financial services is lower than that of pure-play providers. It is extremely difficult to compete with a company that is not driven by the bottom-line for financial services activities.

In the past, big technology companies failed to partake in banking because of the heavy regulatory requirements. They offered instead payment services (without advice), deposits or other services. The introduction of BaaS (Banking as a Service), or open banking, could change this. Instead of requiring a license, BaaS enables technology companies to simply partner with licensed institutions and make use of their existing infrastructure.

Losing a direct relationship with customers poses the biggest threat to incumbents, in our opinion. It is highly likely that only a handful of large financial institutions will maintain direct contact with end-clients. Most will simply become “dumb execution pipes,” or an anonymous channel offering building blocks to large technology companies. Customers will only interact with their chosen large technology provider, without being aware of the hidden company providing the service in the background.

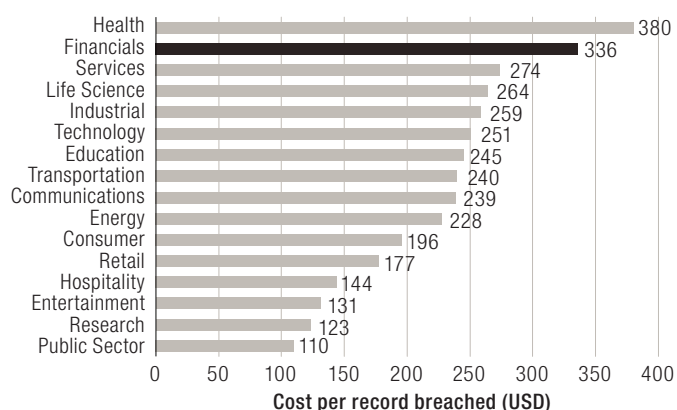
This could lead to mismatched expectations in the initial phases. Clients accustomed to the Apple service currently, for instance, must interact with Goldman Sachs's⁵ credit card service when they have issues with the Apple card. But in time, we believe large technology platforms will fully own the client relationship in a business model based on integrating multiple services into their technology ecosystem, executed by anonymous, licensed financial service providers.

The unbundling and rebundling cycle is potentially endless, with no ultimate conclusion. Unbundled services from which FinTech arose are then rebundled to become the “financial services” of the future, replacing legacy providers. But because technology continues developing, new players will in turn arise that specialise in a specific service. The cycle then repeats.

Cyber security as a basic necessity for all digital financial services

Cyber security is existential for digital financial services that depend on inter-connectivity. If security is compromised and data is lost or stolen, trust is undermined. Ultimately, the consumer could stop using the service. Cyber security is therefore pivotal, making cyber security companies specialised in financial services interesting investment candidates because they stand to gain from FinTech growth.

FIG. 11 FINANCIAL SERVICES AMONGST THE MOST EXPENSIVE DATA BREACHES



Source: Solunk, IBM, 2019.

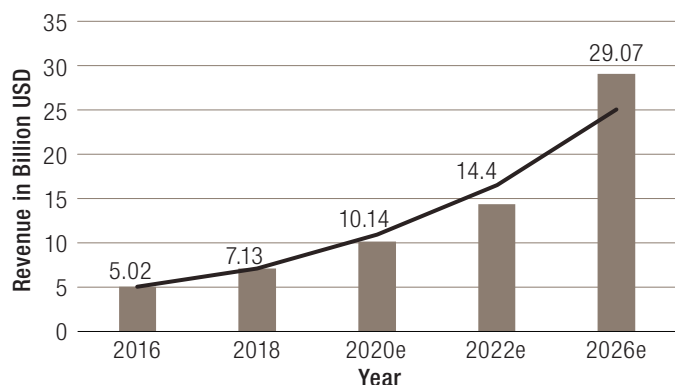
The share price of companies is increasingly correlated to cyber security. A large cyberattack tends to negatively impact share prices, for instance. Investing in cyber security can provide a hedge against this correlation, and balance out the risk that cyber attacks could pose to other holdings in a portfolio.

Past data breaches ranked by cost show that financial services breaches are among the most expensive, further making the case for cybersecurity as a basic necessity.

In our bottom-up selection process, we believe purity is an important factor for a company to be included in our investible universe. For cyber security, purity implies including only cyber security companies with a specialisation in financial services. For instance in payments, a couple of pure-play security companies specialise in point-of-sale devices and the transmission of data. Access control and audit trails are also important functionalities tailored to financial services. New blockchain initiatives in this area are interesting to follow, albeit not investible at the moment from a listed perspective.

Insurance exclusively covering cyber security is another nascent domain. There are companies that offer cyber security insurance in case of serious breaches that disrupt or compromise business. Analysing such companies requires expertise, however, because the insurance demands precise underwriting to clearly define the scope of claims. A systemic cyberattack, similar to extreme weather conditions, has a multiplier effect, meaning claims following an attack could prove too costly for insurance companies to cover.

⁵ Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or securities. It should not be assumed that the recommendations made in the future will be profitable or will equal the performance of the securities discussed in this document. The case studies provided in this document are for illustrative purposes only and do not purport to be recommendation of an investment.

FIG. 12 EXPECTED GROWTH IN THE CYBER INSURANCE MARKET

Source: Ponemon Institute, 2016. The Financial Times, 2017. LOIM and market estimates in billion USD. For illustrative purposes only.

Importantly, the EU Cyber Security Act penalises companies with inadequate response procedures and insufficient security

measures. This regulation requires companies to have adequate cyber security in place and raises the cost for companies that fail to comply.

Business models in this area are currently being developed, and we expect a growing number of interesting investment opportunities to emerge. Figure 12 outlines the expected growth in this area.

This outlines our set of core beliefs. The world is becoming increasingly cashless, and digital finance can aid financial inclusion. Indeed, digitalisation lowers the barriers to entry for FinTech companies, it improves efficiency and enables new financial services. Technology ecosystems are springing up as a unique set of unbundling and rebundling of services take hold. Cyber security has become a basic necessity. These beliefs encapsulate the key issues we believe FinTech companies must address and respond with solutions in order to offer superior growth prospects.

Our investment universe

We take these core beliefs and translate them into a carefully selected, proprietary investible universe. Consisting of roughly 250 names, this universe is continually expanding and contracting. IPOs drive expansion thanks to IPOs, while M&As spur contraction.

We also emphasise purity as an important criteria for selection. A focus on purity means we only include companies earning at least 20% of revenues or profits from FinTech activities. For instance, we have no big tech companies in the universe. For most of big tech, FinTech represents less than 20% of the overall business, meaning investors in big tech do not stand to benefit from significant FinTech exposure.

The overall portfolio level purity towards FinTech is more than 85%. The 15% dilution involves less pure play exposure in cybersecurity, and some consultants and general software providers.

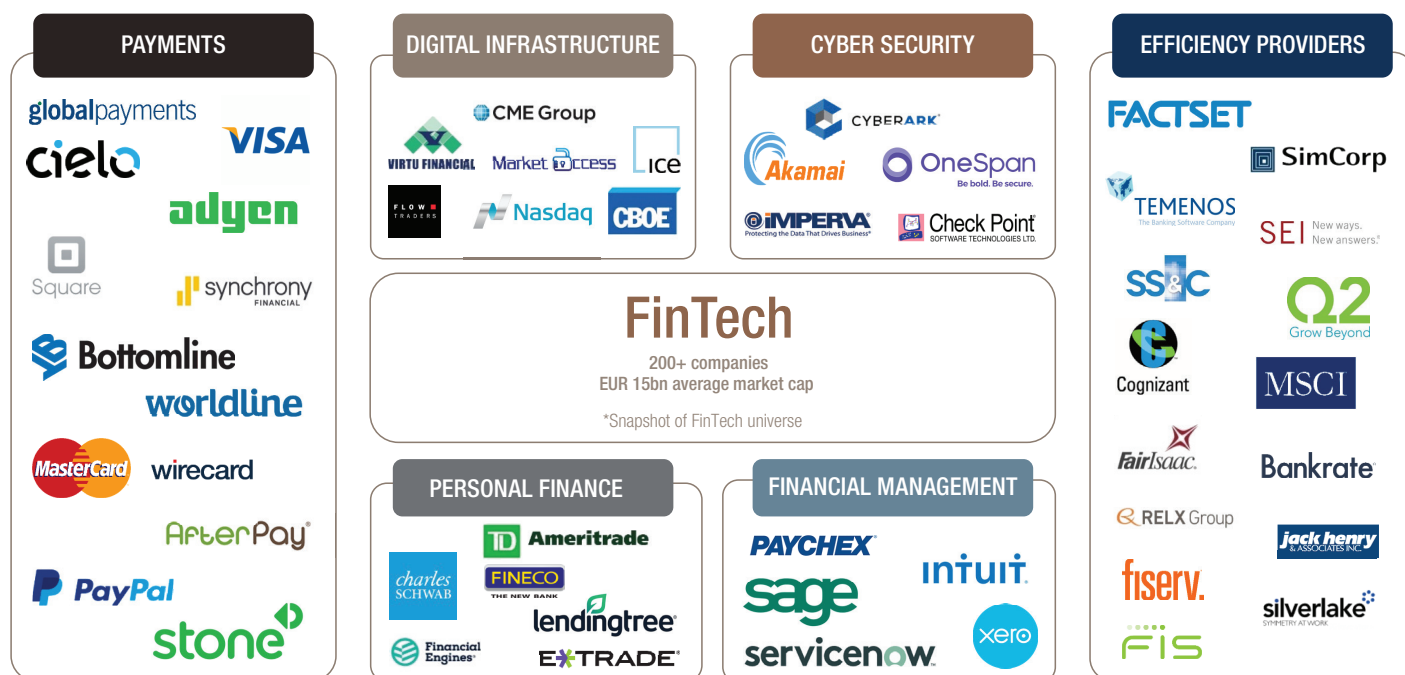
Figure 13 illustrates how LOIM defines the general FinTech universe. We divide companies into blocks comprised of payments, efficiency providers, digital infrastructure, cyber security, personal finance and financial management.

Payments and efficiency providers form the two largest blocks and contain the most mature business models. Innovation in payments has been progressing for several decades and clear winners have started to emerge. Efficiency providers are mostly software companies and consultants that enable financial institutions, as well as startups, to launch new services and increase the operational efficiency of existing services. Most companies in this category have been established for some time as well, although we also see newcomers using the latest technology.

The middle blocks represent differentiating financial technology. This includes:

- Digital infrastructure (mostly in the form of stock exchanges)
- Cyber security (that exclusively tailored to the financial sector)
- Personal finance (or B2C services such as financial/automated advice and financial service comparison)
- Financial management (or more B2B focus delivering software to manage tax, accounting, payrolls and other business-related activities)

FIG. 13 SNAPSHOT OF THE INVESTIBLE UNIVERSE FOR FINTECH



Source: LOIM for illustrative purposes only. Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or securities. It should not be assumed that the recommendations made in the future will be profitable or will equal the performance of the securities discussed in this document. The case studies provided in this document are for illustrative purposes only and do not purport to be recommendation of an investment.

A trends approach based on longevity

Our approach first defines an investible FinTech universe based on long-lasting trends, and then uses sustainability criteria to filter the selection of companies. In our view, sustainable companies benefit from an attractive combination of sustainable financials, sustainable business practices and sustainable business models. Such companies are best positioned to capture the long-term growth trend offered by the digitalisation of financial services, in our opinion.

Our investment process is built around strong principles and tools that enable us to build a high conviction portfolio of 40-60 companies, as shown in Figure 14.

Initially drawing from a wider universe of some 2500 companies, we define a Fintech universe of roughly 250-300 companies that have at least 20% exposure to the financial sector and that benefit from our five core beliefs (eg cashless, inclusion, ecosystems, efficiency and security).

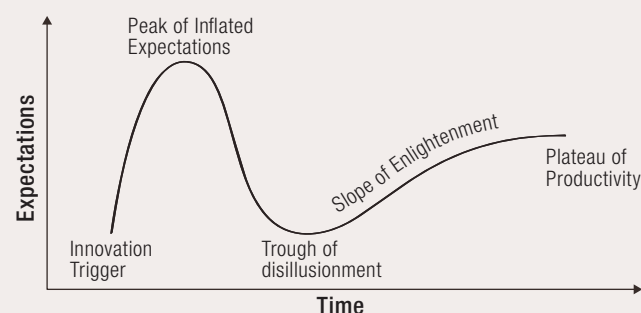
We believe it is important to distinguish between hypes and long-term trends. We only consider long-term trends to be investible because they benefit from a behavioural bias. For instance, we believe financial inclusion is not a hype, but rather a phenomenon that will make a powerful impact for decades to come. This trend, in our view, has longevity.

From this Fintech universe we then implement three key sustainability principles in order to select companies for the portfolio.

Don't believe the hype

Most investors overestimate the short term, but underestimate the long-term, exponential effect of technological innovation. Gartner's Hype cycle is a graphic depiction that shows the common pattern that arises with new technology, as shown in Figure 15. The initial phase of new technology is to go through a hype followed by a period of disillusionment, resulting from inflated expectations. When the technology survives this period, the so-called slope of enlightenment can ultimately lead productivity to plateau.

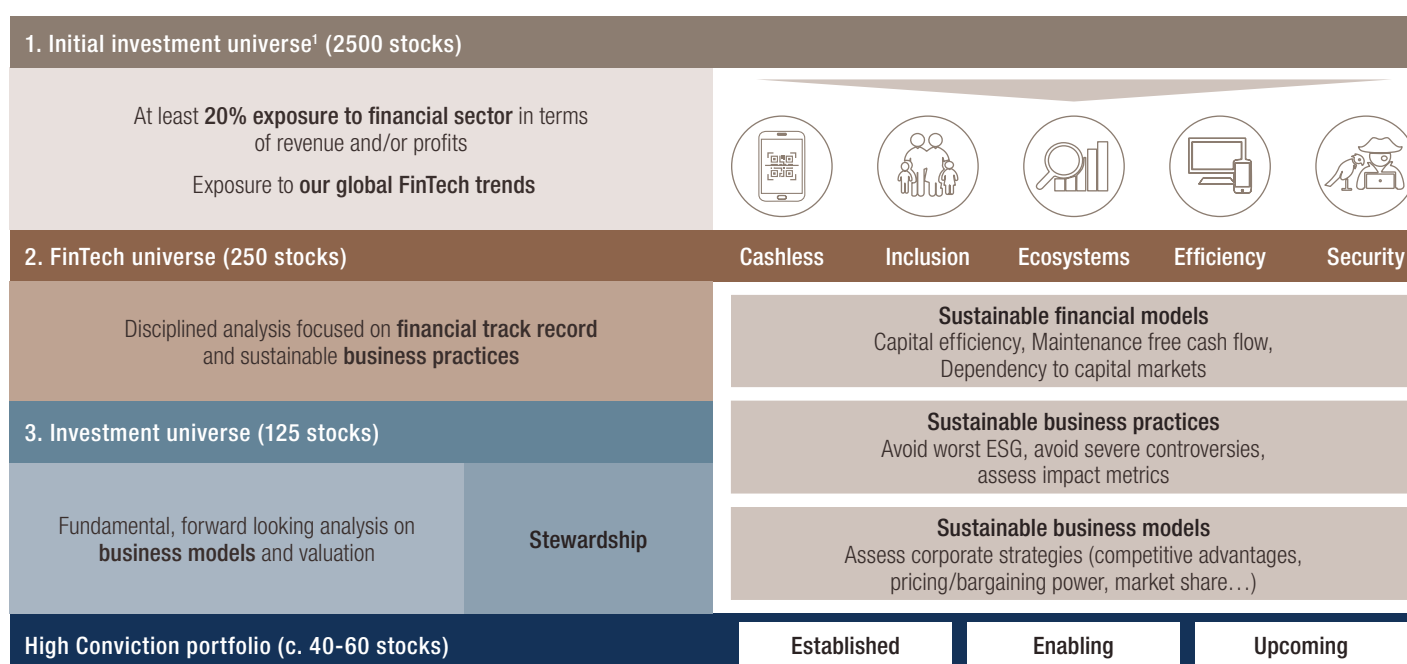
FIG. 15 GARTNER'S HYPE CYCLE



Source: Gartner.

Most investors are active in the early stages in order to benefit from the hype, or they become active after the risk of failure has dropped substantially beyond the so-called trough of disillusionment. The period in between provides a perfect window, in our view, to analyse the technology and companies working with it, and position accordingly.

FIG. 14 BUILDING A HIGH CONVICTION PORTFOLIO



Source: LOIM. ¹ Minimum USD 1 billion market cap, minimum USD 5 million average daily liquidity, listed in developed markets. Allocations are subject to change. It illustrates the investment process undertaken by the manager in respect of a certain type of investment, but may not be representative of the Fund's past or future portfolio of investments. For illustrative purposes only.

Integrating sustainability

Financial models

At Lombard Odier we see sustainability as a core conviction. While the evolution of FinTech is broad thematic, it traverses the sustainability universe given its close associations with digitalisation and inclusion.

The sustainability of a company's profit model is our first consideration, when it comes to bottom-up selection. A company can address a long-term trend; but be unable to profit from it. Cash-burning startups come to mind, offering free services without finding a way to monetise their customer base. We require a sustainable profit model in the long-term to invest in a company.

Within our defined FinTech universe, we scan for listed companies with high capital efficiency, strong free cash flow generation and, preferably, internal financing to avoid the cash-burning startups.

Sustainable business practices

We then add a second element to our bottom-up choices: the ESG profile. There is a positive environmental impact associated with the move towards more efficient digital services versus brick-and-mortar models. Social and governance issues are also thoroughly examined, using the Lombard Odier proprietary CAR (Consciousness, Actions and Results) model, which we apply across all our portfolios.

We also overlay stewardship and engagement into the process to ensure both a top-down, macro approach to business model and thematic analysis, but also bottom-up, company-specific exposure.

Business models

Turning to sustainable business models, we caution a long-term trend does not necessarily make money for investors. The business model to exploit the trend must be sustainable and generate profits (preferably) now and far into the future.

Differentiating between business models

When looking at business models, we believe it is key to differentiate between companies engaged in three kinds of activities: value shops, value chains and networks. The distinction is crucial to assigning the correct valuation, in our opinion.

Fjeldstad and Stabell redefined the so-called Porter value shop model, widening its application to a more differentiated set of activities, mostly relating to digital services. Fjeldstad and Stabell's model differentiates between value shops, value chains and networks.

Value shops take standard input and produce a standardised output, such as a bakery producing bread, or a bank providing a plain vanilla mortgage. Services that enhance the value of a product fall into this category as well. Payment processors, for example, take standardised input (the payment data they receive) and transform it into a standardised output (moving funds from one account to another).

Value chains, on the other hand, take standard input and customise the output. For instance, a lawyer defending a client. In FinTech, this includes merchant acquirers, or all-in-one payment

services for merchants. They offer solutions that increase value to the client by customising payment options.

Finally, networks are intermediaries that connect a wide group of clients. The connection increases the value of the entire group because the standards applied in the network foster interoperability and advantages of greater scale. Within payments, credit card network providers are a clear example.

Such activities can be classified according to the scale of their operations and the potential multiples that could apply. Large networks attract more customers. Thus, each new customer is worth much more to the network than the previous one because larger networks tend to attract more customers. Platforms such as Instagram, for instance, have greater appeal to new users based the number and profile of the platform's existing users.

Networks generally confer an exponential benefit, differentiating them from value shops that present linear benefits. Ultimately, this leads to lower valuations for payment processors, as opposed to merchant acquirers and credit card networks.

Financial inclusion: an example

The financial inclusion trend illustrates our approach to sustainability. We believe financial inclusion is not a hype, but rather a phenomenon making a powerful impact for many decades to come. This trend, in our view, has longevity.

The first component of our bottom-up approach relates to profit models. The financial inclusion trend encompasses robo-advice services, payment services, lending and neo banks.¹⁰ Not all of these are profitable, however. In fact, we only consider payment and lending services as currently investible. Robo-advice as stand-alone business is not profitable due to large customer-acquisition costs. Most neo banks still need to find a way to break even, as they have only focused on building networks so far.

Offering free services is one way to attract clients, but turning those clients into a profitable model requires different skills. We expect a shake up in neo banks with only a handful of companies able to convert their client base into a sustainably profitable business.

Currently, we only identify payment and lending companies as investible, based on our sustainable profit model analysis.

The second component of our bottom-up stock selection takes into account the ESG profile of companies. Among investible payment and lending companies, we use the ESG profile as an input variable in determining the weighting in portfolio.

The final component of our fundamental stock selection is looking at the sustainability of the underlying business models and valuation. Most business models relating to FinTech are either value shop models (where standardised input is transformed into custom solutions), or network models (where the size of the network determines the total impact: the larger the network, the larger the benefits for participants).

While both business models are sustainable, their valuations differ. Logically, networks are considered by investors to be more valuable because of their larger growth potential and scale advantages. And in the early stages, it is acceptable for networks to burn cash (with a clear rationale) in order to reach the critical mass required for the economies of scale to kick in. In contrast, we expect value shops to be profitable from the beginning and be less scalable.

¹⁰ Market-cap indices have 5% greater allocation to HY and 5% lower allocation to A-rated bonds.

Building a portfolio

We identify three groups within FinTech: established FinTech, enabling technology and upcoming FinTech. We carefully calibrate our exposure to each group (Figure 16).

Established FinTech companies have earned their place over the years, and attracted ample new innovation to their product or service, and offer stable growth. Most companies in this category are large in terms of their market capitalisation and grow mid-teens. Financial analysts and technology analysts most often cover these companies.

Upcoming FinTech companies attempt to become tomorrow's established Fintech. This includes young companies and technologies that typically grow rapidly. They may not yet be the most profitable, but their long-term outlook and return potential is large. This potential is, naturally, accompanied by higher volatility.

Enabling technologies offer their services exclusively to B2B clients, and enable other financial institutions to offer products and services to their clients. This group includes cyber security companies, or core-system software providers, for instance. Predictable earnings are a notable and interesting characteristic of this group.

Combined, the three provide stability (established FinTech), predictability (enabling technology) and upside potential/growth (upcoming FinTech). Weighting of each category depends on market conditions and valuations. Overall, established FinTech provides the stable core of the portfolio, accompanied by the predictable qualities of enabling tech. The more volatile part of the portfolio consists of upcoming FinTech.

Positions in companies are determined on the basis of bottom-up analysis, as described in previous sections, and take the form of absolute weights of either 1, 2 or 4 percent. In this setting, 2% positions are the default. The 1% positions are chosen for companies with higher risk (high valuation, single-emerging market risk, higher volatility or low liquidity), while the 4% positions are built up in companies that score well on all key inputs of our bottom up analysis (valuation, risk, liquidity, ESG profile etc.).

Naturally, we expect the upcoming FinTech category to be smaller than the established FinTech and enabling tech categories, but we re-balance the weighting according to market conditions. In times of uncertainty and nervousness, we would tend to increase weights of established and enabling FinTech, while in times of risk-on sentiment, we would tend to increase the weight of upcoming FinTech, when justified by bottom up valuation.

FIG. 16 CALIBRATING EXPOSURE WITHIN FINTECH



Source: LOIM. Allocations are subject to change. It illustrates the investment process undertaken by the manager in respect of a certain type of investment, but may not be representative of the Fund's past or future portfolio of investments. For illustrative purposes only.

M&A: the portfolio response

An interesting phenomenon, which we expect to continue, is mergers and acquisitions. M&A activity has been active in the FinTech universe, due mainly to the scale benefits to most companies that deploy network business models.

Whenever M&A occurs, the portfolio will respond and apply fresh analysis based on the same criteria that applies to all the other companies in the universe. This could lead to a larger combined

weight when there are clear synergies and other structural benefits to the deal. Or it could lead to a lower combined weight if our analysis points to more cautiousness.

This approach is a clear differentiator from passive approaches, which simply add the combined weights until the portfolio is re-calibrated (usually once or twice per year).

Re-balancing our actively managed portfolio makes use of technical tools as well, in order to support tactical allocation decisions. We allow companies with good momentum to grow in our portfolio, but we will actively manage the position against the overall portfolio characteristics.

Our FinTech team

In-depth knowledge of financial services and technology is required to fully understand the dynamics of the FinTech landscape.

On the financial services side, expertise is pivotal to identifying how regulations and other factors drive the sector. On the technology side, specialisation is necessary to grasp new technologies and their potential to disrupt.

LOIM's team provides a rare blend of expertise in the disparate areas relevant to FinTech. We combine experience and know-how in the financial industry with a deep understanding of fundamental investing, and in-depth knowledge of technologies with the potential to disrupt. The team enjoys combined experience in these varied fields of 52 years.

Our team has specialised in trends investing for half a decade, enjoying a strong record in the industry, as well as AA-ratings from Citywire for managing previous funds.

Conclusion

Investing in the digitalisation of financial services provides noteworthy return potential, in our opinion. A large number of high quality companies exist in the FinTech universe and, given the right expertise in both financials and technology, it is possible to construct a diversified portfolio that reaps potential benefits.

Our approach combines top-down analysis on the longer term nature of trends with bottom-up sustainability analysis to construct a balanced portfolio. Not all trends lead to long-term return opportunities and not all long-term return opportunities fit with a trends portfolio. It takes experience and expertise to know the difference.

Dynamics within the FinTech industry change quickly, therefore access to the right resources is important to manage such change. We believe our long-term experience in this field is an advantage.

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