

Slings and arrows

Financial technology will make banks more vulnerable and less profitable. But it is unlikely to kill them off, argues Stanley Pignal

FROM THE WAY Silicon Valley talks about banking, you might well conclude that the industry was ripe for oblivion. The T-shirt-wearing whizz-kids and their backers reckon that newcomers will do to JPMorgan Chase, HSBC and the rest what e-mail has done to post offices and Amazon to bookshops. So far bankers have simply failed to notice that their sprawling firms will become tomorrow's low-margin utilities. Finance, all bits and bytes, is at heart a tech problem, the Valley believes, and will be solved by tech companies, not the lumbering banking gerontocrats.

This is not just intemperate youth speaking. Strikingly, many more entrepreneurs and investors now believe that it is possible to take on the banks. In San Francisco, London, New York and elsewhere, venture capital is pouring into financial technology, or "fintech", making it arguably the hottest spot in a bubbly funding environment for startups. Last year firms in this sector attracted \$12 billion of investment, up from \$4 billion the year before, according to CB Insights, a research firm. A handful of fintech insurgents have already graduated from startups to listed companies, achieving billion-dollar valuations. Plenty of others seem to be heading the same way.

The momentum is such that all of banking's many metiers seem up for grabs. Fancy a loan? Forget your local bank branch and head to Lending Club, a peer-to-peer platform which matches people who need money with those who have some to spare. Want to send cash overseas? Eschew your bank's rip-off foreign-exchange charges in favour of a startup that specialises in international money transfers. And why have a Porsche-driving wealth manager handling your retirement pot when an algorithm can replicate his advice for a small fraction of the cost? From payments to insurance to business lending, one newcomer or another has its eye on almost everything that financial-services firms offer. AngelList, a website that tracks startups, lists around 4,000 of them in fintech.

This wave of innovation is all the more noteworthy because finan- ►►

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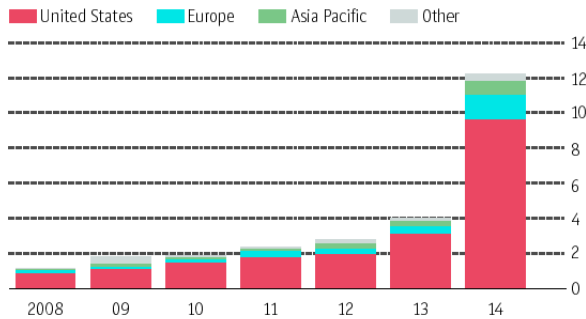
An audio interview with
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The shape of things to come

Global investment in fintech, \$bn



Source: CB Insights

cial services used to sit above the Silicon Valley fray: an industry so regulated and so politically connected that tiddlers trying to take it on stood little chance. The startup ethos of “move fast and break things”, whereby repeated failures are accepted as staging posts to success, seemed incompatible with banking’s conservative culture in which a single crash could send the global financial system into convulsions. Regulators, once considered too lax about allowing innovation in finance (synthetic collateralised-debt obligations and other pre-2008 inventions will not soon be forgotten), were expected to deal cautiously with this new burst of financial creativity. Yet so far they have let fintech flourish, and thereby done more good than harm.

All told, financial-services firms in fields that fintech could potentially disrupt generate global revenues estimated at \$4.7 trillion a year and profits of \$470 billion, according to analysts at Goldman Sachs, a bank. Incumbents once believed that finance was immune from such disruption, but now they are less sure. “Bankers used to think regulation would make financial services less appealing for new entrants. Now the penny is dropping that non-bank rivals can just attack more profitable areas and skim the cream,” says Huw van Steenis at Morgan Stanley.

A slide that has been making the rounds in Silicon Valley shows the new competitive landscape for Wells Fargo, a bank based in nearby San Francisco. These days its rivals are not Bank of America or some Chinese newcomer that offers the same wide array of services. Instead, dozens of startups are each trying to lay claim to a small sliver of the business: saving for college, say, or payroll services for companies.

Few want to take on the central, regulated core of taking deposits. Each may offer a superior or cheaper service in its specialist field. Most of these startups will fail, and even successful ones will be little more than pinpricks for a banking mastodon with trillions in assets. Yet in combination they may amount to something more substantial.

“Silicon Valley is coming,” warned Jamie Dimon, JPMorgan Chase’s boss, in a recent letter to shareholders. “There are hundreds of startups with a lot of brains and money working on various alternatives to traditional banking.” Banks’ cost bases—IT systems, smart headquarters, staff, branches and so on—require income from a wide range of services. If even some of those services get “unbundled”, in the parlance of fintechers, the economic models that have sustained banks for decades will be under threat. So the incumbents pay lip-service to the newcomers, and some even have in-house teams scouting for innovators to stop them from eating their lunch.

Several factors have made the banks more vulnerable. New technologies such as smartphones and cheap data processing

have lowered barriers to entry. However, “technology is necessary but not sufficient” to change attitudes towards finance, says Mike Cagney of SoFi, a peer-to-peer lender based in San Francisco. The financial crisis has left consumers more open to trying alternatives to the banks they had to bail out. Fintech newcomers are tapping into a deep reservoir of consumer mistrust towards incumbents. And as with tech generally, the sector is attracting a lot of bright graduates who would rather not be working on Wall Street or in the City of London.

The coming-of-financial-age of the “millennial” generation, which is both large and perennially glued to its iPhones, certainly plays a part. This cohort of 18- to 34-year-olds has grown up with the internet and turns to it to find anything from a taxi to world news, turning many established industries upside down. They seem willing to trust web-based newcomers with their financial affairs, too. Few millennials visit bank branches. A third of them do not think they will need a bank account at all before the end of this decade. One survey found that 71% of them would rather go to the dentist than call on their bank. And in so far as they care about financial innovation at all, they expect it to come from tech groups, not today’s incumbents.

At the same time the financial crisis has led to a bout of introspection at banks. Some of them have been overwhelmed by successive waves of new regulation requiring immediate management attention. Whatever IT budget they may have is likely to be spent largely on ensuring that ATMs go on spewing cash. Innovation of the sort that will pay off years after the current boss has decamped to his next job is not high on their list of priorities. Newcomers with no legacy systems and no pension deficits to worry about can do things more cheaply.

Don’t rest on your laurels

As a rule of thumb, banks make money in three ways, in roughly equal parts. All of these are now under attack. The first is the difference between the rates they charge borrowers and the interest they offer savers, known as the net interest margin. This requires skill in identifying creditworthy customers, which fintech outfits reckon they can do better than banks. “Think about the scenario of a loan officer talking to a prospective client. To software people, that looks like voodoo,” said Marc Andreessen, a tech billionaire whose venture-capital fund has made large bets on fintech, at a conference last year. “The idea that you can sit across the table from somebody and get a read on their character is just nonsense.” The approach of fintech peer-to-peer lenders is based on using data more adroitly than banks do. But their methods have yet to pass the test of a serious downturn in the financial sector or the wider economy.

The second way of earning money is by charging for making payments, for example through credit-card fees. Established giants such as Google or Amazon would once have been wary of tarnishing their brands by having anything to do with payments systems, but now all kinds of contestants are getting interested. Apple Pay, launched in America last year, allows people to pay in shops with a mere tap of a phone or watch, gatecrashing a payments ecosystem that used to be the prerogative of the banks. PayPal and others are offering buyers the option of settling in instalments, thus extending credit to customers who might once have looked to their banks for funds.

The third source of profits for banks is a cornucopia of fees, from charging for overdrafts to brokering investments. These look unlikely to survive intact. Human investment professionals are now being challenged by “robo-advisers” doing much the same job for a tiny fraction of the price. Outrageously unfavourable exchange rates imposed by banks when sending money abroad, once unavoidable, can now be circumvented via dozens

► of online money-changers.

No matter which service fintech newcomers “unbundle” from incumbents, the banks’ business model will suffer. For the moment, fintech’s leading companies are still doing mere billions in trade where banks handle trillions. To fintech’s detractors, that shows the newcomers have not got very far, despite all the hullabaloo. To its fans, it demonstrates that many years of exponential growth lie ahead.

This report will concentrate on new ventures with a consumer or commercial angle, leaving aside the well-established business of providing IT services to banks. It will focus mainly on what is happening in rich countries, though it will also touch on emerging markets, where technology is providing financial services to billions for the first time. Even so, the spectrum covered will be wide. Some parts, such as peer-to-peer lending, are not all that innovative (the technology has been used by eBay, an auction site, for nearly two decades), but are growing rapidly. There is more genuine innovation in the world of payments, which is likely to have the biggest impact on consumers.

At the extreme end of the spectrum are advances in technology that have yet to find a mainstream application, but soon might. Bitcoin, a digital currency made possible by clever cryptography, has lost its lustre as its price has tumbled from over \$1,100 in late 2013 to \$225 now. Many have dismissed it as a medium of exchange fit only for anonymity-seeking drug dealers and tax evaders. But enthusiasts imagine something like this will recast the entire financial system. They are bowled over by the technology that underpins the currency, a decentralised, immutable ledger called a “blockchain” that allows people to transact business without the intermediation of a trusted third party.

Banks, which often play just such a third-party role, are watching all these developments closely. They used to dismiss fintech as an amateurish attempt to take on a venerable industry, with no hope of disrupting it, but have stopped scoffing. Enough billion-dollar firms have been created to tempt entrepreneurs. No doubt plenty of venture capital will be squandered on dud fintech companies. But if even a handful of them thrive and take on the banks, it could make a difference. And nowhere is that happening as fast as in the activity at the very core of banks’ business: lending. ■

Peer-to-peer lending

From the people, for the people

But will financial democracy work in a downturn?

SAVERS DO NOT get much in the way of interest from their banks these days. But a different logic seems to apply to borrowers, who still often pay double-digit rates for credit—if they can get it at all. That has attracted a number of outfits offering to connect those who need cash with those who have a surplus of it. The rapid growth of such “peer-to-peer” lenders has been one of fintech’s most visible successes. The biggest such firm, Lending Club, based in San Francisco, listed its shares in December to a clamour reminiscent of the 1999 tech boom.

Fans compare peer-to-peer lenders to other pioneers of the “sharing economy”. Like Uber with cars and Airbnb with accommodation, the newcomers are making available a commodity they do not provide themselves: in this case, money. Instead of a bank intermediating between savers and borrowers, the two parties deal with each other directly. The platforms do the credit-scoring and make a profit from arrangement fees, not from the spread between lending and deposit rates.

The sector has grown rapidly: the five biggest platforms for consumer lending—Lending Club, Prosper and SoFi, all based in San Francisco, and Zopa and RateSetter in London—have so far issued nearly 1m loans between them and are generating more at the rate of well over \$10 billion a year. The Anglo-Saxon countries are the spiritual home of credit, and so of peer-to-peer lending, but smaller platforms exist in mainland Europe and China.

Those loans are still dwarfed by the \$3 trillion of consumer debt outstanding in America alone. But the sector is doubling its lending roughly every nine months, and almost everyone expects it to go on growing rapidly. Having started as a provider of unsecured consumer credit, competing mainly against banks’ credit cards, it has expanded into lending to small businesses, student loans and now mortgages.

Though most of the lenders were established before the financial crisis, none thrived until its aftermath. This was partly because the banks’ rapid retrenchment after 2008 created unmet demand for loans. In America, even those who could still borrow from conventional sources soon found that peer-to-peer providers offered better deals. Credit-card rates tend to remain stable through the economic cycle, so they have looked especially uncompetitive as central banks pushed interest rates to record lows. Lots of borrowers paying 18% on their credit-card balance found they could take out a peer-to-peer loan charging 14% instead. On the other side of the equation, low interest rates meant savers were open to new investment opportunities, including lending their money to perfect strangers on the internet.

Knowledge is power

More broadly, says Hans Morris, a venture capitalist who sits on Lending Club’s board, the declining cost of information-gathering is pushing consumer credit the way corporate credit has gone over the past three decades. In 1980 only a few hundred blue-chip firms could borrow from investors other than banks, by issuing bonds. By the end of that decade, all creditworthy firms could do so, and by 2000 “junk”-rated firms were at it, too. But whereas the incumbents, through their investment-banking arms, played a key part in the lucrative business of helping firms ►►



▶ issue bonds, they have no role in peer-to-peer lending.

Those pining for the democratisation of finance have been disappointed by one notable development: most of the money for peer-to-peer no longer comes from the general public but from institutional investors such as hedge funds. The industry makes no secret of this; in America many firms have dropped the peer-to-peer label and instead describe themselves as “market-place lenders”. The shift has increased the supply of money to borrowers, but also made it harder for the newcomers to present themselves as markedly different from the banks.

Yet from a regulatory point of view, they are indeed very different. There is much to like about peer-to-peer, no matter whether the money is being put up by a hedge fund or by the general public. A bank is fragile by nature: when it faces a slew of defaults on its loans, it rapidly runs into trouble. That is because it cannot pass on losses to its main creditors, often the bank customers who deposited their money on the firm understanding that they would get it back. Even when capital cushions designed to absorb lending losses are bolstered after crises, as happened after 2008, the risk of a taxpayer-funded bail-out or some other state support is ever present.

By contrast, those who lend money through peer-to-peer platforms explicitly accept that they may suffer losses. Unlike bank deposits, their investments are not guaranteed by the state. And whereas banks are subject to runs when too many fickle depositors demand their cash, lenders on peer-to-peer platforms know they will get their money back only when borrowers repay their loans.

A core task

Not all peer-to-peer lenders work the same way. Some platforms allow potential lenders to pick their borrowers, others oblige them to lend to all those approved for credit. British platforms typically feature protection funds, designed to compensate lenders exposed to loans that have defaulted. This twist makes them far more akin to banks. For all their differences, the peer-to-peer platforms perform one of the core tasks of the banking system: they pick the applicants who get credit, and at what interest rate. Many claim to be doing a better job than traditional lenders.

A common refrain is that banks are on the defensive, trying to keep risk-averse regulators happy. The peer-to-peer crowd do not have to contend with that, giving them scope to try new things. All of them start their assessment of potential borrowers by looking at a raft of readily available consumer data from credit bureaus such as FICO and Experian, which track who has welched on past bills or car payments (banks use these too). They



overlay that with whatever information they can get their hands on, from employment history to verifying pay cheques directly with employers. Borrowers may be asked to provide their online banking details so their financial history can be downloaded from their bank’s website. That means the incumbents no longer have much of an information advantage over anyone else.

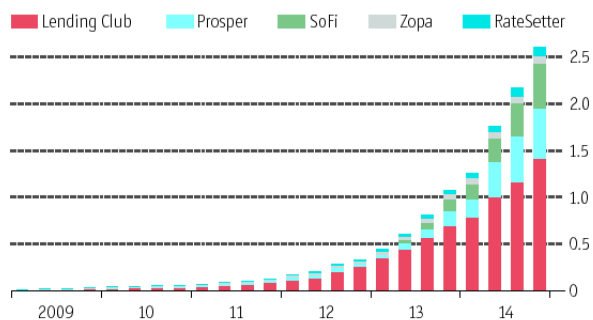
Any data can be mined for insights, says Martin Kissinger of Lendable, a British newcomer: how often someone has used a credit card to withdraw cash, say, or whether he makes minimum monthly repayments. Zopa tracks the applicants it has turned down for loans to see if they turned out to be good credit risks when they found another willing lender. “We don’t necessarily have better data, but we are far better at analysing what we have,” says Giles Andrews, its boss. Social-media activity was once touted as the new frontier for credit-scoring, but is no longer considered so useful except, crucially, to help prove an applicant’s identity. In America, rules intended to ensure that credit is allocated fairly—by protecting minorities whose neighbourhoods used to be “red-lined” by bankers—make it harder to use novel techniques.

Kreditech, a German startup which makes short-term loans in countries from Peru to Poland, says it uses 20,000 data points to extend high-interest credit at a rate of \$120m a year. Beyond using Facebook data, it says it can “triangulate the truth” about a customer’s creditworthiness by using behavioural data such as the way its online application form is filled in. How often a customer uses capital letters, say, or the speed at which he moves his mouse during the process are useful clues. “We are a tech company that happens to be doing lending,” says Lennart Boerner, its head of strategy. If Silicon Valley dismisses the idea that bankers can gauge their customers’ creditworthiness by meeting them face to face, bankers may consider fintech’s method as sorcery.

Some credit-scoring is more intuitive. SoFi has carved out a niche pitching credit to what the industry calls HENRYS: high income, not rich yet. It built a franchise refinancing student loans for asset-poor but high-potential graduates of top universities, whom it sees as good credit risks. Those loans run to around \$75,000, against the \$10,000-\$15,000 more typical on other platforms. “Our credit assessment looks to the present and the future, not just the past,” says Mike Cagney, its boss. That has a harsh flipside: those who default on their loan risk having their name broadcast to the lenders, “so the whole community knows ▶▶

A lender be

New loans issued, \$bn



Source: Goldman Sachs; company reports



Peer-to-peer lending would not have flourished without the benign credit conditions of recent years

▶ you're a deadbeat." It is the first established platform to branch out into mortgages, offering loans worth up to 90% of the value of a house—much more than a bank.

Many people will feel it is too soon to encourage innovation in underwriting, let alone higher loan-to-value ratios, given what happened in 2008. Sceptics argue, rightly, that divorcing the party which authorises credit from the party which will suffer from a default has proved disastrous in the past. Was the financial crisis not triggered by borrowers being given too much credit by mortgage-brokers who cared little if those loans were repaid? How are peer-to-peer platforms different, given that they immediately offload the loans they have approved?

The comparison is unfair, says Renaud Laplanche, Lending Club's founder. Before 2008 subprime mortgages had long, diffuse chains of intermediation. By the time a mortgage was brokered, sold, sliced, diced, repackaged and resold into the market, few cared or even remembered who had issued it. With peer-to-peer, the chain is much shorter. "If loans we issue do not perform, we have nobody else to point the finger to," says Mr Laplanche. A platform that issues dud loans will struggle to attract bidders, be they hedge funds or the general public.

The bigger question is what happens when economic conditions turn. Peer-to-peer lending, though enabled by technology, would not have flourished without the benign credit conditions of recent years. For all the talk of superior underwriting, the industry's claims of beating banks at their own game will be tested only when interest rates rise or the economy tanks. The industry is aware of this. "My daughter could come up with an underwriting model based on what band you like and it would work fine right now," says SoFi's Mr Cagney. But for how long?

At best, peer-to-peer lenders may find their advantage over banks becomes eroded. As interest rates rise, credit cards will probably become more competitive (though they may be pricier for less creditworthy borrowers). Peer-to-peer marketplaces will probably have to raise their own rates to attract investors lured by improved returns elsewhere. So the opportunity to arbitrate credit mispriced by banks may narrow, particularly in America.

At worst, a credit shock or a recession will leave existing borrowers unable to repay their loans. One worrying feature as the industry matures is that many borrowers are return customers: they are using peer-to-peer loans to refinance peer-to-peer loans taken out earlier. That is particularly true for riskier bor-

rowers. If the industry were to contract even slightly, those unable to refinance would be pushed to default. If banks were to tighten lending criteria at the same time, the customers' problems would multiply.

That might cause a downward spiral as withdrawals creep up: even a modest rise in dud loans might spook lenders, particularly flighty hedge funds. In the absence of fresh money to repay old loans, more defaults would be inevitable, followed by more exits by investors. That is one reason why most peer-to-peer lenders are eager to keep some of their loans funded by retail money. Mom-and-pop investors are thought to be "stickier" in a downturn, so their money will remain available for future loans.

All platforms vaunt their superior underwriting skills and boast of having "prime" borrowers, but they are also under pressure to show rapid growth in their loans. The temptation—which all claim to be resisting—is to relax their rules and pitch loans to those at the shadier end of the credit spectrum. This may be encouraged by apparently low default rates, but these are flattered by the rapid growth in lending: a 10% default rate will become 5% if a loan book has doubled in the meantime.

On the other hand, if peer-to-peer can weather the next downturn it should get a fillip. Big-money institutions such as insurance companies and pension funds have so far only dipped their toe into the sector. Many of them need better returns, and have long-term liabilities they are keen to match with long-term assets such as mortgages. If unsecured consumer loans perform as well in a downturn as their boosters hope, some investment titans will be tempted to buy paper from peer-to-peer platforms directly, dwarfing the hedge funds that are already there. A few might buy pools of mortgages from peer-to-peer lenders instead of tapping Wall Street for complex securities whose performance tracks the performance of those same pools of mortgages.

A more surprising investor in this field is the banking sector itself. Small local lenders in America have turned to peer-to-peer marketplaces to gain exposure to consumer credit; Citigroup said in April that it would lend \$150m through Lending Club. This might bemuse observers: why would a bank buy a loan rather than issue it itself? Mr Laplanche points out that although banks' cost of capital is lower, its cost of operation is higher. A bank spends roughly 7% of the value of a loan on administration, against Lending Club's figure of just 2.7%. Still, some might question the business model of a bank that admits it cannot successfully underwrite loans itself.

A piece of the action

Peer-to-peer is the most established of all fintech's branches. Lending Club is listed on the New York Stock Exchange, and has John Mack, a former Morgan Stanley boss, and Larry Summers, a former Treasury secretary, on its board. Goldman Sachs estimates that when peer-to-peer comes of age, it could reduce profits at America's banks by \$11 billion, or 7%. That would be troublesome but not unmanageable. Bankers point out that, leaving aside credit cards, unsecured loans to consumers are a fiddly business that is not particularly close to their hearts. The risk, though, is that a graduate who turns to a marketplace for her first loan then also shops there for services banks do care about, such as mortgages or investment advice.

Peer-to-peer lenders have their own problems, even when the economy is steaming ahead. Acquiring customers, which is often done through mailshots, is expensive and erodes margins. Overheads are rising steadily. But regulators have kept reasonably clear so far because the risks around this form of lending are borne by those who put in the money, not by the general public. As long as that remains the case, the challenge they present to banks should be heartily welcomed. ■

Crowdfunding

Cool, man

Where small businesses can borrow if the banks turn them down

BANKERS ARE CONSERVATIVE types. It is hard to imagine any of them jumping at the opportunity presented by Ryan Grepper, an Oregon-based “part visionary, part mad scientist, and a passionate supporter of the DRY revolution”, to lend him \$50,000 to develop an oversized picnic cooler. Not just any cooler, mind you, but The Coolest, which beyond keeping drinks chilled also blends them, blares music and recharges gadgets. But what bankers would surely have disdained, the public seized with gusto: last August Mr Grepper raised \$13.3m from Kickstarter, a crowdfunding platform, over 250 times what he had asked for. None of the money he has received will ever need to be repaid, either. Instead, the first 63,380 coolers he makes will go to the backers who put up around \$180 each, with luck in time for the summer picnic season. A few will be hand-delivered by Mr Grepper, who offered personally to man the party bar for anyone who pledged \$2,000 to his venture.

Financing small businesses is rarely this colourful. A few consumer-friendly ventures like The Coolest aside, corporate minnows have been struggling to raise money in recent years. The buoyant bond markets that have allowed large companies to borrow at rock-bottom rates do not cater to their smaller cousins. Banks have cut back on lending to small businesses as regulation has made it less lucrative. And since the due diligence needed to extend a \$20,000 business loan takes nearly as much time as that for a \$2m one, they have tended to concentrate on the bigger fish. A range of fintech ventures have popped up to try to fill the gap.

Some are akin to the peer-to-peer platforms that have done so well in consumer lending. Funding Circle, a British startup

that is also active in America, advertises itself as “the bond market for small companies”. It has disbursed nearly £600m of loans in Britain, some of them financed by government agencies. But applying fintech’s data-guzzling model for consumer lending to small firms is tricky. There is far less readily available information to help gauge a business’s creditworthiness than there is for a person’s, says Samir Desai, the startup’s boss. What can be discovered, from tax records and regulatory filings, is often of poor quality or well out of date. Funding Circle’s method includes a step that would be considered retrograde by fintech purists: a flesh-and-blood credit agent from the company speaks to every new borrower before a loan is disbursed. Its pitch to borrowers is as much about convenience—the application process is less onerous than that of a bank, and borrowers get the money faster—as about getting better rates.

Peer-to-peer lenders to businesses, unlike their equivalents who lend to private individuals, do not have an obvious entry point such as credit-card debt that can be refinanced more cheaply. That makes it harder to acquire new customers. Many borrowers turn to peer-to-peer only after their bank has rejected them. In America, OnDeck, a platform that listed last year, has had to bat away suggestions that it is over-reliant on loan brokers, which charge hefty fees to bring in businesses looking for quick cash. And processing the applications can be fiddly, too, particularly when loans are secured against the borrower’s personal assets. On the other hand, usury laws that cap interest rates for consumer loans do not apply to business credit, so rates can be higher. OnDeck’s average interest rate is reportedly over 50%.

Branching out

Lending Club, the industry’s biggest firm in personal peer-to-peer credit, is edging into business loans. In February it started offering American businesses up to \$300,000 to finance purchases made on Alibaba, a Chinese online marketplace. The money is not secured against the merchandise, but the fact that a business has verifiably just purchased widgets from a Chinese factory strongly suggests it will soon be earning some money from widget sales.

Kabbage, a rival based in Atlanta, specialises in lending to ▶▶

Many borrowers turn to peer-to-peer only after their bank has rejected them



▶ businesses that do most of their selling on e-commerce sites. It thinks it can work out who is a good credit risk by looking at a vendor's eBay sales history (and the accompanying reviews) in a way a bank cannot, or cannot be bothered to.

New models are emerging. Last year Square, a company that enables small businesses and individuals to process credit-card payments, started offering cash advances to some of its customers. As it has ready access to several years' worth of a merchant's payments data, it can take an educated guess at the likely future cashflow. Better still, because it will process the payments from which its advance will be refunded, it can withhold the cash at source. For a \$10,000 loan, say, Square will take a 13% cut of card sales until \$11,300 is reimbursed. Elegantly, though all customers end up paying the same \$1,300 of interest, the interest rate will depend on how long it takes each borrower to repay the loan. The faster he sells and the faster the loan is repaid, the higher the effective rate. Borrowers eager to maximise their sales do not seem to mind. The average repayment period is about ten months. PayPal, a payments giant which is currently being spun out of eBay, is now offering a similar service to its merchants.

An invoice worth its weight in gold

Small businesses would love to be able to monetise what is often one of their biggest assets: the money customers owe them. Most of them have to wait for 30-90 days after they have dispatched the merchandise before getting paid. A slew of smaller (and sometimes not very savoury) finance houses have traditionally offered to buy the outstanding invoices at a discount, paying perhaps 60 cents on the dollar. Leaving aside the risk of fraud, the paperwork was daunting.

By moving invoices onto electronic platforms, fintechers hope they can make the process frictionless. A plethora of such platforms are competing to make e-invoicing the norm. If a local business sells a shipment of ball-bearings to Ford, say, and the carmaker agrees electronically it will make good on the invoice within six weeks, that makes the invoice nearly as valuable as a Ford bond. It might be worth 98 cents on the dollar, not 60. The verified invoice can then be auctioned on a platform, or packaged up into the sort of security investment bankers clamour for. By turning the invoice into a fungible security, the local business in effect piggybacks on Ford's credit rating, which is likely to be much better than its own. In practice, the process remains fiddly for now. Nor is this a business that banks will give up easily. They typically offer far better rates on business loans they can secure against invoices, if only because regulators treat such lending more leniently than unsecured credit.

None of these financing options are viable for businesses just getting off the ground. In Britain, those with a good story to tell (and preferably a photogenic founder) can turn to one of dozens of equity crowdfunding platforms to drum up some cash. Crowdfunded equity money usually involves handing a stake in the business to the new backers. Nesta, a charity, says the British public invested £84m in such ventures in 2014, up over 400% in a year—even though the Financial Conduct Authority has warned that investors taking small stakes in budding businesses are “very likely” to get wiped out (tax breaks may ease the blow).

In America, the time-tested method of a plucky entrepreneur maxing out his credit card is still a rite of passage. That may be about to change. Rules that currently restrict investing in startups to investors with a net worth of \$1m or an annual income in excess of \$200,000 will be scrapped later this month. From then on anyone will be able to try their luck at crowdfunding. That is good news for those who want to invest in Mr Grepper's next off-beat venture and get a piece of the action, not just a deeply chic picnic cooler. ■



Money management

Ask the algorithm

Human wealth advisers are going out of fashion

AS PROBLEMS GO, the suspicion that you are being overcharged by a private wealth manager is one of the better ones to have in life. But even millionaires who are regularly invited out to lunch by their banker tire of the 1-3% annual fee they have to cough up for his investment advice. Many mere sub-millionaires may well be paying similar rates for an asset-management professional to administer their pension pot, often without being aware of it. Could a computer not do an equally good job dishing out standardised guidance on how much they should invest respectively in shares, bonds and other assets?

A raft of “automated wealth managers” is now available, on the premise that algorithms can offer sound financial advice for a small fraction of the price of a real-life adviser (see table, next page). With names that suggest a mix of blue-blooded discretion and startup ebullience—Wealthfront, Betterment, Personal Capital, FutureAdvisor—they are growing at a rapid clip. Most are grudgingly starting to accept the tag of “robo-adviser”.

The platforms work by asking customers a few questions about who they are and what they are saving for. Applying textbook techniques for building up a balanced portfolio—more stable bonds for someone about to retire, more volatile equities for a younger investor, and so on—the algorithm suggests a mix of assets to invest in. Nearly all plump for around a dozen index funds which cheaply track major bond or stock indices such as the S&P500. They keep clear of mutual funds, let alone individual company shares. Testing the various algorithms, your risk-averse, youngish correspondent was steered towards an apparently sensible blend of low-fee funds to help his meagre retirement pot grow.

This sort of insight used to be guarded jealously by financial advisers, but now you can get it from the robo-advisers without so much as providing an e-mail address. The hope is that all but the most penny-pinching savers will then go on to purchase the mix of funds through the service, at an annual cost starting at around 0.25% of the assets invested. (Investors also pay the fees of the funds they buy, which adds another 0.15-0.30%.) Automated services offering more human involvement typically charge ▶▶

Here comes the robo-crowd

Automated wealth managers*

	Year founded	Minimum investment, \$	Advisory fee [†] , %	Assets under management (\$m)	Investors served
Wealthfront	2007	5,000	0.25	2,000	17,400
Betterment	2008	0	0.15	1,400	65,000
Personal Capital	2009	100,000	0.89	1,000	2,500
FutureAdvisor Premium	2010	10,000	0.50	240	1,700
Nutmeg	2011	1,500	0.75	na	na

Sources: Goldman Sachs; company reports

*February 2015 or latest [†]Based on investment of \$100k

► closer to 1% a year. Most have much lower minimum investment limits than their traditional rivals.

A major selling point for robo-advisers is that they promise they will not make any money from their customers other than through the annual fee. That is refreshing in an industry rife with potential conflicts of interest. Banks, for instance, often recommend that their clients invest in funds run by their asset-management subsidiaries. Most of the newcomers offer automatic rebalancing of portfolios, so an investor's exposure to stocks or bonds stays much the same even as prices fluctuate. Many tout their "tax-loss-harvesting" capabilities.

Small fortunes

The transparent fee structure appeals to sceptical younger investors, says Adam Nash, Wealthfront's boss. Around 60% of its clients are under 35, many of them with starter fortunes from Silicon Valley, where the company is based. The average account size is a touch under \$100,000, an amount that would be uneconomic for a Merrill Lynch or Morgan Stanley broker to handle.

Mr Nash, a veteran of Apple and LinkedIn rather than Wall Street, compares the current growth in robo-traders to the rise of Vanguard, which in the mid-1970s pioneered low-cost index funds as competition to pricey mutual funds. Charles Schwab sprung up at the same time to undercut large banks' high-margin brokerages. What those newcomers were to the baby-boomer generation when it first started thinking about saving for retirement, Wealthfront is to the tech-savvy millennials at the same stage in their lives, he says.

Regulation has, if anything, helped the robo-advisers get off the ground. They emphasise that client assets are held by third-party depository banks, still perceived as safe by the public. If one of them were to go out of business, investors would not lose any money. All are overseen by the same watchdogs as the incumbent banks they are taking on.

The robo-advisers are doubling their assets under management every few months, but their combined assets still run to less than \$20 billion, against \$17 trillion for traditional managers. Several banks manage over \$1 trillion each. The robo-newcomers are nowhere near big enough for sustained profitability, says Sean Park of Anthemis, an investment firm that has backed Betterment. "To be successful [a firm] needs to manage tens of billions; to be really successful they

need to manage hundreds of billions." In the meantime, they are living off the largesse of venture capitalists, who poured nearly \$300m into various robo-advisers last year.

If they are to be successful in the longer term, they will have to persuade today's 20-somethings to remain loyal to automated services when they become wealthier 40-somethings. Traditional investment advisers think

they can win over older customers by offering them services such as inheritance planning. But just in case, the incumbents are working with the robo-insurgents.

Schroders, a large European asset manager, has backed Nutmeg, Britain's largest newcomer. Vanguard, the group that puts together the low-fee funds that most robo-advisers recommend, is launching its own low-cost advisory service. JPMorgan Chase and Goldman Sachs have backed Motif, a startup that builds baskets of stocks based on investment themes. Charles Schwab, now a wealth-management giant with \$2.5 trillion under management, in March rolled out its own automated wealth service, targeting people with as little as \$5,000 in savings. It charges no fees upfront but guides clients towards some of its own investment products—a breach of the unwritten robo-advisory code.

Schwab's arrival was discreetly celebrated as a validation of the automated advisory model. A truce of sorts seems to be in the offing. Betterment now offers a "white-label" version of its platform, so that human wealth advisers can pass off the computers' diligence as their own. Fidelity, a giant financial-services firm, is among those trialling the service. Human-based advisory services point out they have lots of clever computer wizards working for them. Robo-advisers, for their part, boast about the pioneering investment thinkers they employ, programming the computers to recommend the right products. ■

Sweet and low

Remittances abroad are attracting competition

Newcomers have launched an assault on another market where banks used to hold sway: foreign exchange. By one estimate, consumers and small businesses make cross-border payments worth \$5 trillion-10 trillion a year, and often complain about the banks' snail-like service and preposterous fees. In the \$550-billion-a-year market for remittances by migrants, competitors such as Western Union (now itself under threat) have already given the banks a run for their money. But most people make international payments only rarely, and had to accept what the banks offered.

Recently dozens of hungry startups with lower costs have piled in. TransferWise, based in London, claims that its charges are up to 90% lower than the banks'. Customers

pay £5 for converting £1,000 into euros, say, at the mid-market rate, whereas banks will typically have one rate for buyers and another for sellers, making a profit on the spread.

Like peer-to-peer lending and the Uber-style sharing economy more broadly, it works by matching buyers and sellers, tapping wholesale markets to plug gaps as needed. Technologically this is hardly ground-breaking, concedes its founder, Taavet Hinrikus: "Technology is an enabler of what we do, but a lot of the innovation is business-model innovation." Few who have used online moneychangers, including your correspondent, have ever gone back to their banks for foreign exchange. But what is good for the public may not make for great businesses: margins are likely to be thin.

Payments

A penny here, a penny there

If you have money—and even if you don't—you can now pay for your purchases in myriad ways

FINANCE, THE ADAGE goes, is the art of passing money from hand to hand until it finally disappears. This will ring true to anyone who has tried to send cash overseas and found their remittance whittled away by commissions and lousy exchange rates. Shopkeepers typically pay around 3% on sales made by credit card. Banks are involved in over \$400 trillion of transfers every year and extract over \$1 trillion in revenues from them, according to the Boston Consulting Group. As consumers in both rich and poor countries eschew cash in favour of paying with plastic or, increasingly, online and on their mobiles, that figure could reach over \$2 trillion by 2023. But the banks no longer have the field to themselves.

Few consumers give much thought to what happens after they present their credit card at their local coffee shop, unaware of a tangled web of ever-shifting alliances and rivalries below the surface. Banks dominate an ecosystem which includes technology providers and payments networks—mainly Visa and MasterCard, which were themselves owned by a consortium of banks until a few years ago. The payments chain can contain up to seven links, every one of which will claim a tiny cut of each transaction. Most of the money ultimately goes to banks. Beyond collecting commissions on purchases, they profit because card users often pay with money they do not have, running up credit-card debts or overdrafts on which the banks charge steep interest.

Any change to this system would seem to threaten an extremely lucrative business at the core of the modern banking system. In practice the effect is more mixed. If the newcomers are increasing the size of the overall payments pie, they are actually doing the incumbents a favour. On the other hand they may be cutting the banks' margins by forcing them to share the fees. And some may collect consumer data that banks want to hold on to.

One contestant might do all three of the above: Apple Pay, launched in October in America and expected to be rolled out globally this year. Paying with the tap of an iPhone or Apple Watch feels new to consumers, but it amounts to recreating a plastic card on a mobile phone. The tech giant is not trying to bypass the vital Visa and MasterCard "rails", in the industry's parlance—the heart of the system that banks know and profit from.

Less happily for the banks, Apple is taking a 0.15% cut of all payments made through its system. Banks fret that this "Apple tax" will rise once consumers have got used to paying with their iPhones, but hope that the increased use of their cards—probably at the expense of cash—will ultimately leave them no worse off. And in America they were lured by promises that Apple would neither capture nor use the data it acquired from purchases. However, that pledge might not apply in other markets.

A walletful of data

Google and Samsung are already setting up rivals to Apple Pay. Bankers suspect that their main motive is to get hold of the data, which would give them even more detailed insight into their customers' lives. Any model that introduces an extra layer between consumers and their bank accounts—for example, by getting them to put money into an online "wallet" and spend it



from there—makes the banks uncomfortable. If the wallets are filled in ways that bypass credit cards, the banks lose out both on fees and on access to consumer data.

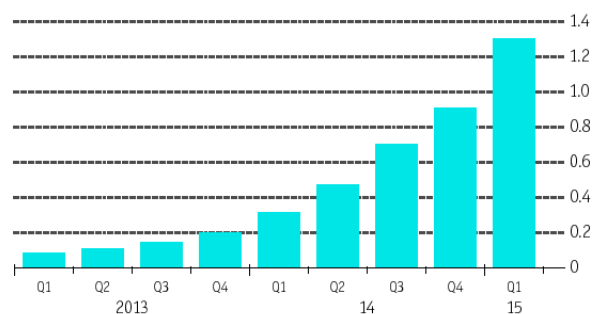
Facebook is another tech giant barging into fintech by letting its users in America message each other money. Peer-to-peer money transfer in that country has boomed in recent years. Venmo, ultimately part of PayPal, a purveyor of the sort of online wallets banks dread, is widely used by American youngsters for sending each other small amounts of cash. By turning money transfer into yet another mode of teenage interaction (users speak of "venmoing" a few dollars to each other), it has grown from transferring \$59m a quarter in 2012 to about \$1.3 billion now (see chart). Moving money through a bank can take several days and attract a \$25 fee. Venmo's app is free and instantaneous. The company's tag, "it's like your phone and your wallet had a beautiful baby", does not even mention banks.

In other areas, innovation has if anything played into the banks' hands. Credit- and debit-card usage—and therefore banks' profits—have benefited from new technology that has made it possible for just about anyone to accept plastic. Square, founded in 2009 by a former Twitter boss, led the way in America with a nifty gadget plugged into any smartphone that enables food trucks, market sellers and other transient merchants to accept cards in the same way as any shop. Copycats are rolling out similar technology in Europe.

The next frontier is online payments, particularly the mobile sort. What used to be a nuisance—pecking in a 16-digit credit- ▶▶

On the move

Venmo mobile-payment volume, \$bn



Source: Goldman Sachs

▶ card number on a smartphone—is becoming ever more streamlined. Braintree (which acquired Venmo before itself being gobbled up by PayPal in 2013) and Stripe are among those doing for online merchants what Square did for food trucks: making it vastly easier for people to hand over money. Their pitch is that the less hassle consumers have to endure, the more likely they are to buy stuff online, justifying a small cut of the credit-card fee.

For merchants, payment systems that are easy to install on a website and help boost their all-important “conversion rate” from browser to buyer are worth shelling out for, says Scott Lofteness of Glenbrook, a payments consultancy. Apart from shopping on mobiles, users are already paying for plenty of real-world services online, too. Braintree processes money for Uber, the taxi app that is so convenient partly because customers do not have to hand over any cash: at the end of the journey a stored credit card is automatically debited.

Soon enough, consumers should be able to walk out of a

clothes shop, say, and have their accounts automatically debited with their purchases (sensors, smartphones and cheap RFID tags on the labels will do all the work for them). That will not disrupt payments incumbents as such, but there is a risk that people will bypass credit cards in making these payments, thus cutting off the banks’ lucrative commissions.

How payments evolve, and what role fintech will play in that, will depend largely on local circumstances. Every country has its own payments system, based on traditions and consumer preferences. Cheques are now a rare sight in Scandinavia, say, but they are still widespread in France, Canada and America (where, in a nod to innovation, banks encourage customers to cash them by taking pictures of them with their smartphones). In China, digital payments are ubiquitous and banks make much lower commissions.

Regulators can and do upend entire payments systems at will. Britain in 2008 forced banks to allow customers to transfer ▶▶

The bank in your pocket

Mobile finance for the unbanked masses

AS MARKETING COUPS go, getting your logo onto more than 100m national-identity cards takes some beating. MasterCard is about to pull off this branding feat as Nigeria’s electronic ID and payment card, currently being piloted, is introduced nationally. Providing financial services to customers who previously had no access to them is another side to fintech, often starting with payments.

Globally, an estimated 2.5 billion people—over half the adult population—lack bank accounts. This financial exclusion leaves the poor relying on informal ways of saving (eg, cash under the mattress) or borrowing (eg, exorbitantly priced payday lenders). Development experts used to try to get banks to open branches in out-of-the-way places. Now they gush about bank-free finance, based on mobile payments or ID-based schemes of the sort Nigeria is bringing in.

In Africa, only one in four people has a bank account but eight in ten have access to a mobile. An early fintech success was M-Pesa, a Kenyan phone-based payments scheme launched in 2007 by Safaricom, a telecoms group. By knitting together a network of agents selling airtime into something akin to a banking grid, the scheme opened up cheap and instant payments to the masses. It is now used by three-quarters of Kenya’s 22m adults. It has already spawned a savings-and-loans cousin, M-Shwari, which has signed up 9m customers and attracted deposits of 135 billion Kenyan shillings (\$1.6 billion) in its first two years. It issues plenty of loans, too, which are far cheaper to administer and easier to scale than the micro-lending schemes once favoured by the development crowd.

In India, the Jan Dhan Yojana scheme launched last year by Narendra Modi, the prime minister, aims to provide each Indian household with a bank account by 2018. Most of them are with state-run incumbent lenders, but the government is issuing light-touch licences for “payments banks” designed to appeal to mobile-phone companies. For now, the new breed of financial institutions will not lend money and will take only small deposits. In South Africa, government-issued smartcards linked to accounts into which pensions can be paid have been taken up rapidly.

Such schemes used to be plagued by fraud, particularly in places with low literacy rates. Biometric identification makes it much easier and cheaper to verify people’s identity, which is why MasterCard wanted to be involved in the Nigerian launch. A sturdy link between wallets and users’ identity helps with integration into global remittances systems, which need to be able to track money to satisfy Western regulators.

As with M-Pesa, payment schemes often graduate to providing credit, leaving banks out of the loop. Poor countries are also becoming testing grounds for loans to consumers with patchy or non-existing credit histories. In most rich countries, credit bureaus provide lenders with plentiful information. In emerging markets, tech-driven firms such as Cignifi, an American group with operations in Mexico, Ghana and Brazil, try to generate credit scores based on things like records of mobile phone calls. Increasingly, poor-country consumers are being assessed for loans in the same way as their rich-world counterparts.



► money instantly. The banks complained about the costs, but the change removed an opportunity for Venmo-like insurgents. American regulators are also planning to speed up bank payments, having already put pressure on the banks to reduce their credit- and debit-card fees. Come October, retailers in America will in effect stop processing fraud-prone cards with a magnetic strip (which are swiped at the till) and switch to safer ones with chips (which require a PIN number). That will require 16m terminals to be upgraded, says Osama Bedier of Poynt, a maker of snazzy payment terminals that is hoping to gatecrash the market.

All this adds up to a mix of opportunities and threats for banks. On one hand, startups like Square and Stripe are helping them find new merchants to use their cards, so generating more fees. On the other, those interlopers are getting a cut of the action—though not always enough to be sustainably profitable, critics suggest—and consumers may in time bypass the debit- and credit-card system that is so lucrative for banks. Millennials are already eschewing credit cards altogether.

Some payments groups are now starting to intrude on banks' traditional preserve of lending. Square is offering cash advances to merchants who use its payments systems; others are extending credit to buyers. PayPal Credit, once known as Bill Me Later, allows buyers to defer payments on purchases; Amazon now offers a similar instalment scheme to customers buying larger items. Klarna, a Swedish startup, and Affirm, an American one, offer merchants immediate payment even as customers are given several months' grace. Yet the gradual shift from cash to mobile and plastic payments still leaves the banks sitting reasonably comfortably, even if they resent impositions such as the 0.15% fee they have to stump up to get the Apple Pay business. The fintech insurgents work with banks as much as against them.

But what if someone were to come up with an entirely new way of transferring money that no one has thought of before? Many think that such a system is now within reach. ■

Blockchain

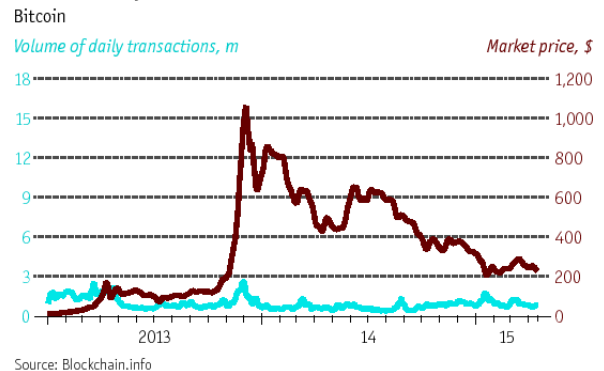
The next big thing

Or is it?

ASKED TO NAME an event that has reshaped finance in recent years, bankers will point to the collapse of Lehman Brothers on September 15th 2008, the nadir of the financial crisis. Fintech types are more likely to mention something that happened six weeks later. On October 31st 2008 Satoshi Nakamoto, a pseudonymous cryptography buff whose real identity remains a mystery, unveiled a project he dubbed bitcoin, "a new electronic cash system that's fully peer-to-peer, with no trusted third party". It described what appeared to be a robust framework for a currency that could run without the backing of any government. Enthusiasts proclaimed that finance was about to enter the era of crypto-currencies. Since the need for a trusted third party has traditionally been a large part of the banks' *raison d'être*, this could mean that in future they will no longer be required—potentially a much more radical change than the other inroads fintech has made on their business.

Six-and-a-half years on, the bankers may feel they can relax a little. Interest in bitcoin has waned. After spiking at \$1,100 in November 2013, its value has dropped to \$225 (see chart). A few on-

Flash in the pan?



line retailers and trendy coffee bars accept it, but its yo-yoing value is one reason why its use in the legitimate economy is barely measurable (though it remains a favourite with drug-dealers). The general public has not forsaken cash or credit cards.

Interest in the underlying mechanics of the currency, however, has continued to grow. The technological breakthroughs that made bitcoin possible, using cryptography to organise a complex network, fascinate leading figures in Silicon Valley. Many of them believe parts of Mr Nakamoto's idea can be recycled for other uses. The "blockchain" technology that underpins bitcoin, a sort of peer-to-peer system of running a currency, is presented as a piece of innovation on a par with the introduction of limited liability for corporations, or private property rights, or the internet itself.

In essence, the blockchain is a giant ledger that keeps track of who owns how much bitcoin. The coins themselves are not physical objects, nor even digital files, but entries in the blockchain ledger: owning bitcoin is merely having a claim on a piece of information sitting on the blockchain.

The same could be said of how a bank keeps track of how much money is kept in each of its accounts. But there the similarities end. Unlike a bank's ledger, which is centralised and private, the blockchain is public and distributed widely. Anyone can download a copy of it. Identities are protected by clever cryptography; beyond that the system is entirely transparent.

As well as keeping track of who owns bitcoin today, the blockchain is a record of who has owned every bitcoin since its inception. Units of currency are transferred from one party to another as part of a new "block" of transactions added to the existing chain—hence the name. New blocks are tacked on to the blockchain every ten minutes or so, extending it by a few hundred lines (it is already over 8,000 times the length of the Bible).

The proposed transactions contained in new blocks do not have to be approved by some central arbiter, as in conventional banking. Rather, a large number of computers dedicate themselves to keeping the system running. Rewards are high enough for vast data centres across the world to want to participate. Known as "miners", they authenticate transactions by reaching a consensus on what the latest version of the blockchain should look like. In exchange, they are given newly minted bitcoin.

Chaining blocks together sequentially prevents anyone spending the same bitcoin twice, a bane of previous digital currencies. And the system is beyond tampering by any one party. Unlike a bank ledger, which can be altered by its owner (or a government), the blockchain cannot be changed without simultaneously overwriting all of the thousands of copies used by the miners at any one time. The definitive version of the blockchain ►►

► is whatever a majority of the participating computers accepts. None of them is connected to any centralised organisation. There is no bitcoin central bank to sway them. To overwhelm the system, someone would need to control 51% of the computing capacity of the 10,000 or so “miners”—not impossible but unlikely.

This system of consensus by distributed co-operation sounds complicated, but it allows something of value to be transferred from one person to another without a middleman to verify the transaction. Fans think this is a way of changing the centralised, institution-dominated shape of modern finance. It is genuinely new. The question is whether it is useful.

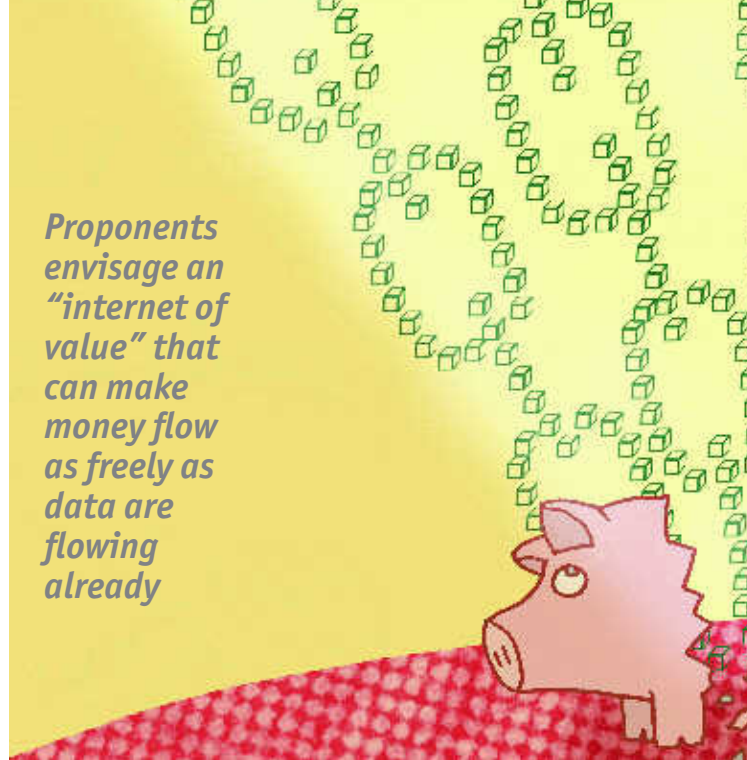
Proponents envisage an “internet of value” that can make money flow as freely as data are flowing already. Ridding the world of credit-card fees and foreign-exchange charges would be merely the first step of a much broader revolution. In the same way that e-mail did much more than replace letters sent in stamped envelopes, the internet of value would be a platform for myriad as-yet-unthought-of innovations. Just as nobody forecast social networks, blogging or Netflix in the 1990s, the absence for now of any tangible applications other than bitcoin for the blockchain merely points to humankind’s deficient imagination.

All that is needed, blockchain boosters argue, is a “killer app” to find a use for the breakthrough, in the same way that web browsers made the internet useful. Some still think that a currency is the most promising application, but plenty of engineers are throwing other ideas against the wall to see what sticks. CoinSpark, based in Tel Aviv, is among those who want to be able to add messages to the bitcoin blockchain. That would be a way of cheaply notarising information: once something is in the blockchain, it cannot be removed (crypto-geeks post their wedding vows there). Lighthouse, developed by Mike Hearn, a former Google engineer, runs a decentralised crowdfunding platform on bitcoin. Neither of these are killer apps, but they may lead to something bigger.

Now for the tweaks

Techies are (just about) united in their enthusiasm for decentralised ledgers, but divided on whether bitcoin’s blockchain can work in its current form or whether an improved version is needed. Rival blockchains are nothing new: alternative currencies inspired by bitcoin, dubbed “alt-coins”, have proliferated ever since it was launched. Some are quasi-Ponzi schemes where the currency’s founder (and so default owner of much of the blockchain) profits when he sells bits of it to newcomers. Others have re-engineered Mr Nakamoto’s blockchain to make it more suitable for non-currency uses.

Critics point out that bitcoin in its present form can process just seven transactions per second, whereas a large credit-card



Proponents envisage an “internet of value” that can make money flow as freely as data are flowing already

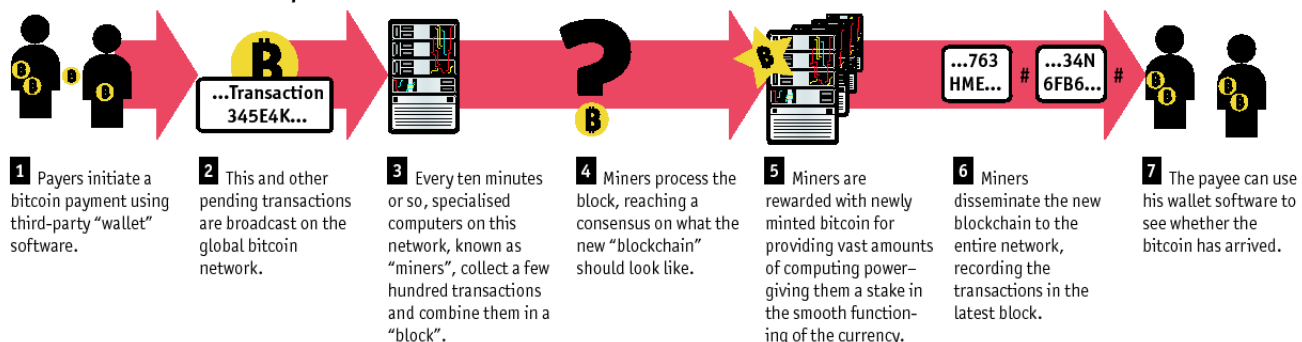
company like Visa can comfortably take on tens of thousands. Users may have to wait up to half an hour for a transaction to be processed, and mining guzzles a lot of power.

But enthusiasts say the blockchain is so robust precisely because of the large number of miners involved, and point out that it has survived untold numbers of cyber-attacks. Alas, using hacker-proof bitcoin requires going through intermediaries such as exchanges to convert real-world currency into crypto-cash, and “wallets” to store it. These have proved anything but secure, which arguably defeats the purpose of bitcoin’s trust-free world.

New blockchains far removed from currencies are being spawned. Ethereum, widely seen as the most ambitious crypto-ledger project, wants its blockchain to go beyond transferring value: it should also be able to execute simple tasks such as verifying if a party to a contract has fulfilled its side of the bargain. Its boosters think such a machine could support “smart contracts”, where a computer can verify or enforce an agreement. The next step is for robots to go into business for themselves, for example a computer server renting out processing capacity, and using the profits to upgrade itself.

That, for now, is science-fiction. In the short term, distributed-ledger technology is far more likely to be used by incumbents in financial services. The New York Stock Exchange in January bought a stake in Coinbase, a bitcoin wallet, in case stock exchanges decided to go for decentralisation. Banks think that ►►

How a bitcoin transaction is processed



Banks v fintech

An uneasy symbiosis

Fintech has made inroads, but the incumbents still dominate day-to-day banking. For how long?

THE VIEW FROM the 39th floor of One Canada Square, the pyramid-capped central tower of London's Canary Wharf financial centre, is one most bankers would envy. Looking across into other buildings, you can just about see into the corner offices of higher-ups at HSBC, Barclays and Citigroup. The bosses of lesser banks languish dozens of floors below. But this particular floor does not look like a home to financial Masters of the Universe. The trendy decor is reminiscent of a Facebook or Google office, and so are the staff: casually dressed 20- and 30-somethings cluster around MacBooks perched on the tables of a free café. The meeting rooms are whimsically known as "sandboxes", and a bell rings daily at 3pm to invite everyone to help themselves to a freshly baked cookie.

Level39, as it is modishly known, is a startup "accelerator" whose members are mostly fintech companies. In subsidised digs—shoebox offices start at £1,700 a month, hot desks at £325—dozens of small teams work feverishly to become the next Square, Stripe or Lending Club. There are now so many of them that floors 24 and 42 have also recently been turned over to the scheme, set up two years ago by the Canary Wharf Group, the area's developer, to diversify its appeal to a new breed of tenants.

The banks are doing what the old adage tells them: keeping friends close but enemies closer. Not only are a number of them based within a stone's throw of Level39, some also pay for the opportunity to hobnob with its inhabitants. Others run their own startup-mentoring programmes, exchanging cash and staff time for a small stake in a budding enterprise. BBVA, Santander, HSBC and Citi are among those that have set up fully fledged venture-capital-like arms to deploy hundreds of millions on such enterprises.

Most fintechers do not feel half as warmly towards their incumbent rivals. One dismisses them as "the Kodaks of the 21st century", another as "financial vacuum-tube makers in the age of the transistor". They see banks as tomorrow's telephone copper wires, vestiges of an earlier age, and believe that in essence banks cannot adapt. "How often have you seen an incumbent really reinvent themselves?" a startup founder asks. The best thing anyone can say about banks is that they will always be around. "People like to whinge about them but they will never leave," says Neil Rimer of Index Ventures, a fintech investor.

Bless the current account

And why would they? Day-to-day banking is not such a bad deal. Customers can store their money safely and get at it instantly, usually even from abroad these days if an ATM is to hand (remember travellers' cheques?). They can cash in their pay cheques and settle bills. This costs them little or nothing, and everything is backed by a government guarantee. Banks built the credit society and continue to dominate it. In America about 70% of consumer lending is for mortgages, a sector banks have almost to themselves (thanks in part to government meddling).

Moreover, banks have done fairly well with moving their services onto the internet and then to mobiles. These are two major transitions that have fundamentally changed the way people handle their financial affairs: few industries successfully



▶ some of the plumbing for settling financial contracts could be decentralised, too, perhaps with their own private blockchains. Payment networks are also keeping an eye on blockchains, attracted by their tiny transactions costs. If a network like Visa were to be built today, it would almost certainly be decentralised, says Jim McCarthy, its head of innovation.

One well-funded new blockchain is Ripple Labs, which wants to enable "secure, instant and nearly free global financial transactions". It is working with financial incumbents to draw up a payment protocol based on decentralised ledgers. Its aim is not to supplant the current financial system but to make it more efficient. "We are builders, not disrupters," says its boss, Chris Larsen, a veteran of the fintech scene who founded Prosper, a lending platform. The problem Ripple is trying to solve is not the omnipotence of the banks but the antiquated way that money is transferred among them. At present two banks in different countries have to use one of a handful of large "correspondent banks" to transfer money between them. With Ripple, they should be able to interact directly.

Seasoned crypto-anarchists are not excited by the idea of reforming the global banks' back offices. Some complain that Ripple is taking an idea with the potential for revolutionary innovation and using it for something far more humdrum. Yet if Ripple succeeds in bringing a critical mass of the banks onto its platform, it will have rendered a service similar to the people who turned a raft of disparate academic computer networks into a single internet in the 1990s. That is not to be scoffed at.

All large banks already have teams poring over blockchain. Many of their back-office settlement platforms seem destined for a move to decentralised ledgers. One barrier is the difficulty of finding staff who can get them up to speed on the technology. "The sort of people who understand blockchains don't usually want to put on a suit and go work for a bank," says Gideon Greenspan of CoinSpark. Because they lack central administrators by definition, blockchain-based systems are unforgiving: there is no helpdesk to reset a lost password, say. Bank bosses may be tempted to stick with the slower, pricier systems they know.

Are blockchains here to stay, in one guise or another? "Just because bitcoin didn't succeed as a currency doesn't mean blockchain will succeed as a technology, but the experiment is important to run," says Patrick Collison of Stripe, a payments processor. The possible uses are legion, but the killer app is still missing. ■

▶ manage even one. Given their size, banks are perhaps not as incapable of evolution as their fintech critics make out.

So it may not be surprising that fintech has failed to break through in what most people would recognise as day-to-day banking. No startup has successfully made a play for the centre-piece of people's financial lives, the current account. Banks are making a good-enough job of this in a highly regulated environment unappealing to many outsiders. A handful of entrepreneurs have tried. Prepaid payment cards five years ago were seen as a viable alternative to banks, at least for some people, but after a burst of excitement fizzled out. Beyond apps that aggregate data from users' various pots of money to help them budget, the most creditable attempt to date to replicate a bank account was made by a startup called Simple. It was taken over by BBVA last year for just \$117m—or \$0.117 billion, in venture-capitalist language.

Yet bankers who cheered at the capitulation of a fintech darling making a grab for their core business missed the point. The threat the startups pose is not that they will topple banks as linchpins of the economy. Most fintechers are not interested in the complicated, regulated bits of banking. The threat they pose to incumbents is that they might just seize the profitable add-ons, from loans to payments services and investment advice—anything that generates fees. It now seems increasingly likely that they will manage to “unbundle” at least some of these extra services banks offer their clients. That will leave today's lenders with fewer revenues to maintain their costly rump services.

A bank whose customers go to Prosper for loans, Currency Cloud for holiday money and FutureAdvisor for investments will find it increasingly hard to support its existing cost base. For a retail bank, something like half its individual borrowers are already unprofitable. If more of them peel off to fintech newcomers for this and other services, that figure is bound to rise. Any loss of the banks' firm grip on mortgages—which has so far barely been challenged—would certainly be keenly felt.

The most credible part of fintech's *braggadocio* is the comparison drawn between banks and telephone copper lines. It should haunt bankers. In the same way that AT&T, BT and their peers have fought to avoid being turned into “dumb pipes” deliv-

ering the vibrant internet's content, unbundled banks may find themselves becoming “dumb stores of value”, funnelling money to more glamorous fintech products.

Bankers are well aware of this. They are keeping a close eye on how their products compare with those of the newcomers, and many of them understand their limitations when it comes to innovating. “If you want to come up with a new product in a bank, any one of 50 people internally can shoot it down. If you're a startup, you can go visit 50 venture capitalists and you only need one of them to give it a green light,” says Tonny Thierry Andersen, head of retail at Danske Bank.

Even so, the startup ethos is changing the way bankers think about their profession. One common refrain among incumbents is that they need to become less product-focused and more customer-focused, which is true but easier said than done. They also note that customers value transparency.

Incumbents are likely to copy, license or buy many of the innovations served up by fintech once they have proved popular. Banks did not invent the ATM but they co-opted it efficiently. Wealth managers will do the same with robo-advisers if they keep attracting new money. For any large financial firm, it would not take more than a few weeks' worth of profits to gobble a fintech star.

Fintech faces many challenges. A lot of startups will fade away when venture capital stops flowing quite so abundantly, as one day it undoubtedly will. Even before that, they will have to prove they can be sustainably profitable, even when credit conditions are less benign. Some services may falter, some may continue to thrive, others will no doubt evolve to work in different conditions.

But for many financial services, the gulf that long isolated banks from competition is being bridged. This is wonderful news for consumers: those who have tested fintech newcomers often gush about the experience, in a way they seldom do after a visit to their local bank branch.

That will prod the incumbents to up their game. Never mind if fintech fails to take over the world, or even the current account: its emergence is changing the face of finance. The all-conquering bluster coming out of places like Level39 is clearly exaggerated. Banks still have a future, but they will have to work harder to make it a profitable one. That is all for the good. ■



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The threat the fintechers pose to incumbents is that they might just seize the profitable add-ons

