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THE FINTECH ECOSYSTEM REPORT: Measuring the effects of technology on the entire financial services industry

Evan Bakker | December 17, 2015



BUSINESS INSIDER

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KEY POINTS

- **Fintech — financial technology — is an umbrella term describing disruptive technologies in financial services.** Fintech has transformed the way money is managed. It affects almost every financial activity, from banking to payments to wealth management. Startups are re-imagining financial services processes, while incumbent financial services firms are following suit with new products of their own.
- **Fintech could disrupt established hierarchies in the finance world.** As consumer demands and expectations of their financial institutions shift, driven in large part by rising smartphone adoption, the ability to deliver superior digital — and especially mobile — products at scale becomes paramount. The incumbent financial players will not be the only ones meeting these new demands most effectively, so there could be a reordering of the financial services hierarchy, accompanied by a massive transfer of revenue between the old guard and new companies.

- **Banks and startups face very different challenges.** Banks are now investing more heavily in innovation, however, they haven't yet optimized their innovation strategies across their organizations. Meanwhile, startups are trying to navigate regulations, which is a top challenge for them.
- **Global fintech investments — a measure of interest in the sector — have skyrocketed in the past year.** Investors put \$2.8 billion into fintech firms globally in 2012. This number climbed to \$4.3 billion in 2013 and then nearly tripled to \$12.2 billion in 2014 — more than 2010 through 2013 combined. The US, Europe, and China are attracting the vast majority of these investments. The global surge of investments signals that investors see fintech as a high-growth industry.
- **The blockchain is a wild card that could completely overhaul financial services.** Both major banks and startups around the world are exploring the technology behind the blockchain, which stores and records Bitcoin transactions. This technology could lower the cost of many financial activities to near-zero. This would have a dramatic effect on big banks, which currently face high operating costs. It's also disruptive in that it could disintermediate many financial processes.

[Click here to download all the charts and data in Excel»](#)

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Introduction

Technology is upending established workflows and processes in the financial services industry. Tasks once handled with paper money, bulky computers, and human interaction now are being completed entirely via digital interfaces. Given how pervasive financial services are across the globe, the disruption opportunity for fintech startups is massive. Startups, some of which have garnered blockbuster investments, are re-imagining almost every type of financial activity. Meanwhile, the old guard is trying to solve the puzzle the fintech revolution presents — how can incumbents benefit from the rise of digital, and how can they avoid obsolescence?

Three key factors are driving the fintech revolution:

- **Banks face tighter regulations.** The Great Recession intensified scrutiny of big banks, which led to stricter regulations. This hampered their ability to devote time and energy to innovation projects in the years immediately following the recession.
- **Legacy infrastructure presents a formidable barrier for financial institutions to overcome.** Financial services companies have built out robust global networks to support the movement of money. This infrastructure is crucial for keeping the financial industry's wheels spinning, however, implementing new platforms or processes is challenging when the existing ones are so firmly embedded.
- **Consumers expect smartphone-centric experiences.** Smartphone adoption is now widespread and the devices themselves have reached a level of connectivity, sophistication, and usability that is driving the mobilization of financial services. As consumers become more attached to their phones, they are beginning to demand mobile-centric financial experiences, opening the door for fintech startups to compete with legacy players on convenience.

The fintech revolution presents challenges and opportunities to both incumbents and startups.

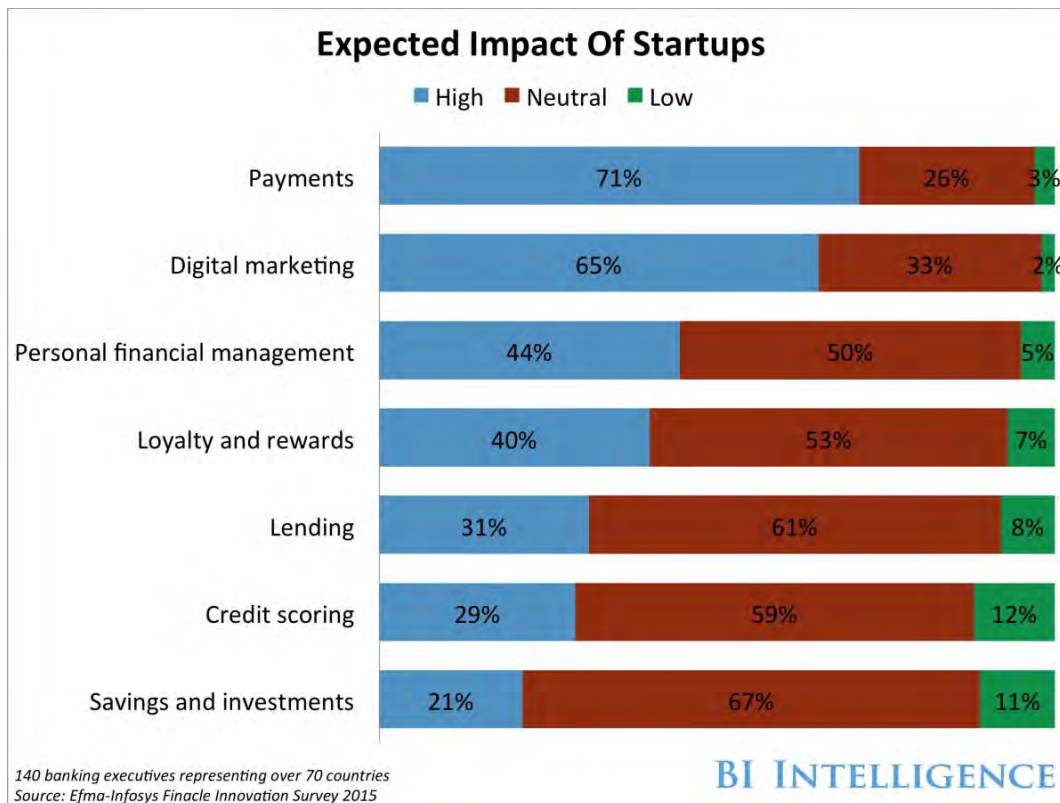
The digital re-imagination of financial services ultimately brews uncertainty for all stakeholders in the ecosystem, although each set of stakeholders — established players and new entrants — faces distinct challenges and stands to benefit in unique ways.

- **Established players:** These include traditional banks like JPMorgan, card networks like Visa, investment managers like Fidelity, and insurance companies like Allstate. Incumbents usually count strong adherence to regulations, brand visibility, size, scale, trust, and security as advantages. Their key challenge will be adapting to new technologies effectively, all while maintaining compliance and implementing the changes at scale. Their opportunities will be to use their size to acquire or partner with the new entrants, their brand visibility to generate high levels of product adoption, or their regulatory standing to outlast fintech startups that eventually will face increased scrutiny themselves.
- **New entrants:** New entrants like Prosper, Stripe, and Wealthfront enjoy agility, more limited regulatory oversight, and usability as advantages. Their organizations are newer and more compact, giving them the ability to build and rebuild their data stacks frequently in order to optimize their services. This ultimately makes their products user-friendly. Their challenge will be scaling out their business while maintaining a nimble and adaptable organization. As these startups grow, they will face increased regulations, higher costs, and the need for more extensive infrastructures that will be more difficult to change and manage. Their opportunities will be to beat the incumbents on usability, specialize in a market niche incumbents haven't yet mastered, partner with incumbents, or exit through an IPO or buyout.

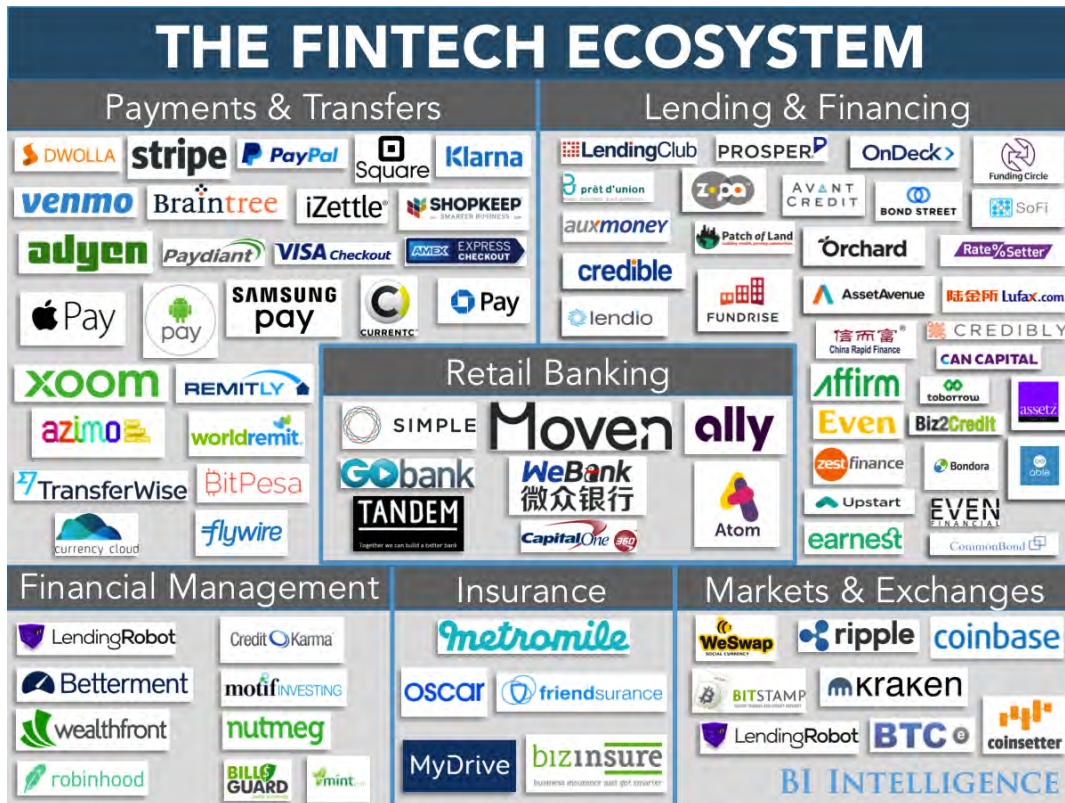
One thing is clear: financial services will be digitized. New technologies are disrupting almost every area of finance, starting with aspects that are transactional, process-oriented, or data-driven. Here are the main areas currently experiencing significant changes:

- **Retail banking.** Establishing and maintaining deposit accounts, such as checking, savings, CDs, and money market accounts, constitute the core function of retail banks. Retail banks then lend these deposits out to consumers in the form of credit cards, mortgage loans, and more.
- **Payments and transfers.** Payments involve the movement and transmission of value via cash, credit card, check, and other transactions in both physical and online environments across a pervasive global network.
- **Lending and financing.** Lending and financing include consumer, business, mortgage, student, and real estate loans. Loans generally are funds given to borrowers who must pay back the principal amount plus interest.
- **Wealth and asset management.** Traditionally, dedicated employees monitor and manage clients' investment portfolios to help them maximize their returns.
- **Markets.** Markets involve the exchange of different commodities, currencies, or securities. Examples include stock exchanges, global currency markets, and debt markets.
- **Insurance.** Insurance helps people gain coverage against unexpected high-cost events in categories such as auto, health, and life.

Perhaps unsurprisingly, bankers expect fintech startups to have the greatest impact on the payments industry. Although lending has secured the second-highest volume of investments, banking executives don't expect it to experience significant disruption in the long term.



Fintech has bred numerous startups and new products in these areas. Hundreds of startups are attracting venture capital, and incumbents are devising new digital products to participate in this new industry. Highlighted below are some of the most important startups and products to follow as this industry develops. It's worth noting that startups dominate the graphic. Although the old guard is contributing to the fintech ecosystem, startups are spearheading the technological transformation of financial services.

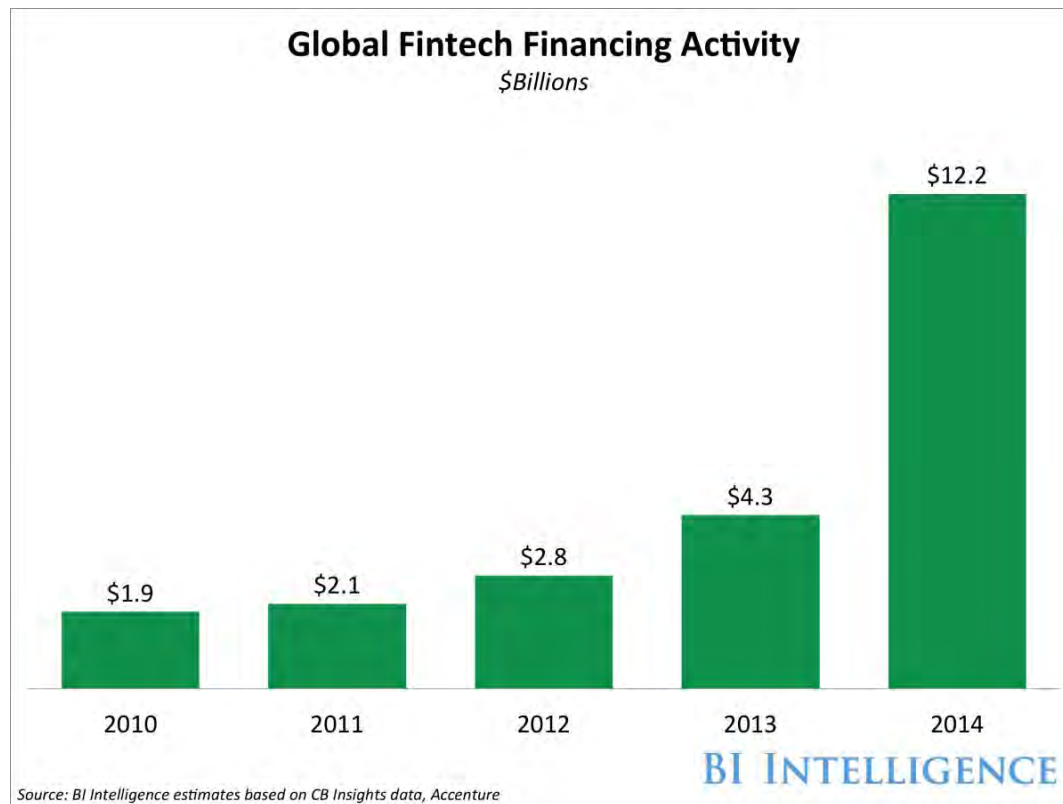


The blockchain is an entirely new area with potential to upend the entire financial services industry. Major companies and startups are exploring and implementing distributed ledger technology, inspired by the blockchain. This technology could streamline a number of financial processes and represents a key opportunity for established financial services firms to lower their operating costs.

This report will examine the fintech ecosystem in detail. It will explore the key factors driving the global fintech revolution, the role of established financial firms and emerging players and the impact of fintech on a range of financial sectors. Fintech has the potential to upend established hierarchies in the finance world, accompanied by a massive transfer of revenue from incumbents and emerging players. Ultimately, we believe the ability to deliver superior digital products at scale will be a key factor in determining winners and losers.

Fintech investments

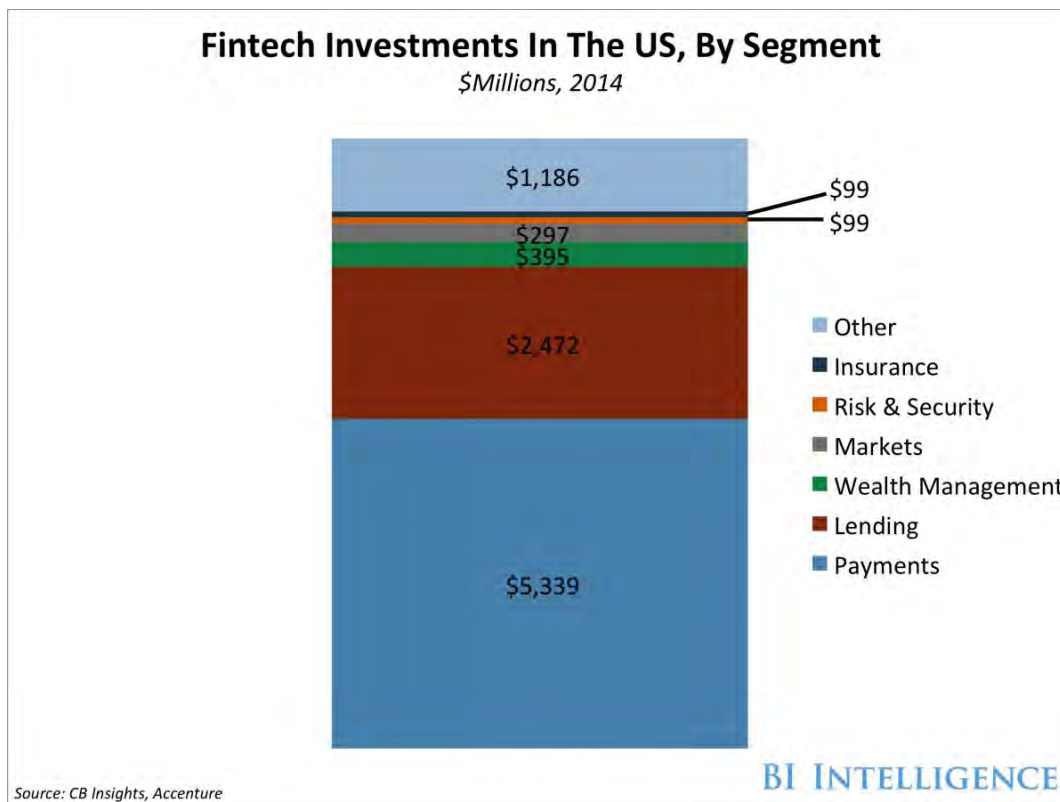
Global fintech investments — a measure of interest in the space — have skyrocketed in the past year. Investors — venture capitalists, angel investors, private equity firms, banks, and others — poured an estimated \$2.8 billion into fintech firms globally in 2012. That number climbed to \$4.3 billion in 2013 and then nearly tripled to \$12.2 billion in 2014 — more than 2010 through 2013 combined, [according to data from Accenture and CB Insights](#). The global surge of investments signals that investors see fintech as a high-growth industry.



Payments and lending are the hottest fintech areas right

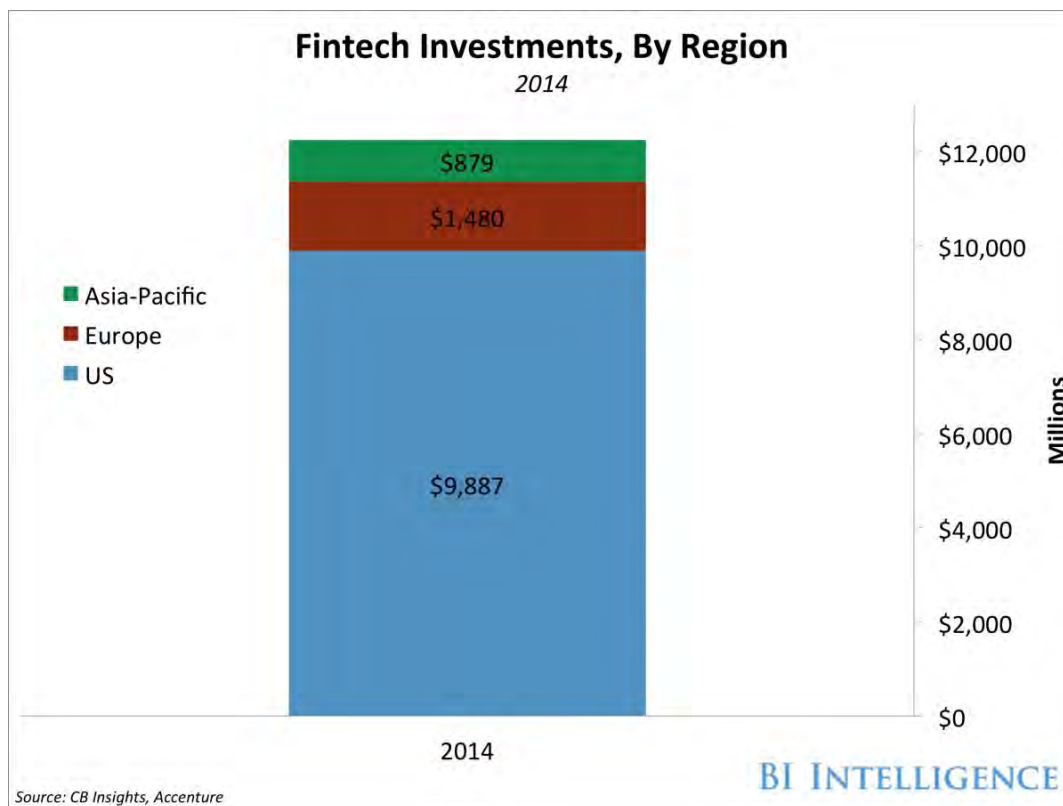
now. Payments and lending captured a combined 79% of fintech investments in the US in 2014, according to the Accenture/CB Insights study. The next-most popular area, wealth management, garnered only 4% of US fintech investments.

- Why payment investment is surging:** Digital commerce, on both the desktop and mobile devices, accounts for an increasing share of total US retail sales, creating a growing need for digital payments technology. Stripe and Braintree are two prominent examples of firms that have quickly scaled out their payments business by building software that makes it fairly seamless for e-commerce merchants to accept online payments.
- Why lending is highly active:** Startups, recognizing that lending is very process-oriented, have leveraged the internet and new data tools to make lending procedures more efficient for borrowers and investors alike. A new class of companies called peer-to-peer (P2P) lenders is using algorithms to match borrowers and investors automatically through online platforms, leaving traditional banks out of the process. Their approach also has enabled them to target underserved audiences like small businesses and sub-prime borrowers.



Fintech investment, by region

An overwhelming majority of fintech investments have originated in the US, which attracted nearly \$10 billion in 2014, representing about 81% of total investments. However, European investments are growing the most rapidly. Europe attracted almost \$1.5 billion in 2014, with the UK and Ireland making up 42% — \$623 million — of those investments. The remaining investments are divided among Asia-Pacific and all other regions.



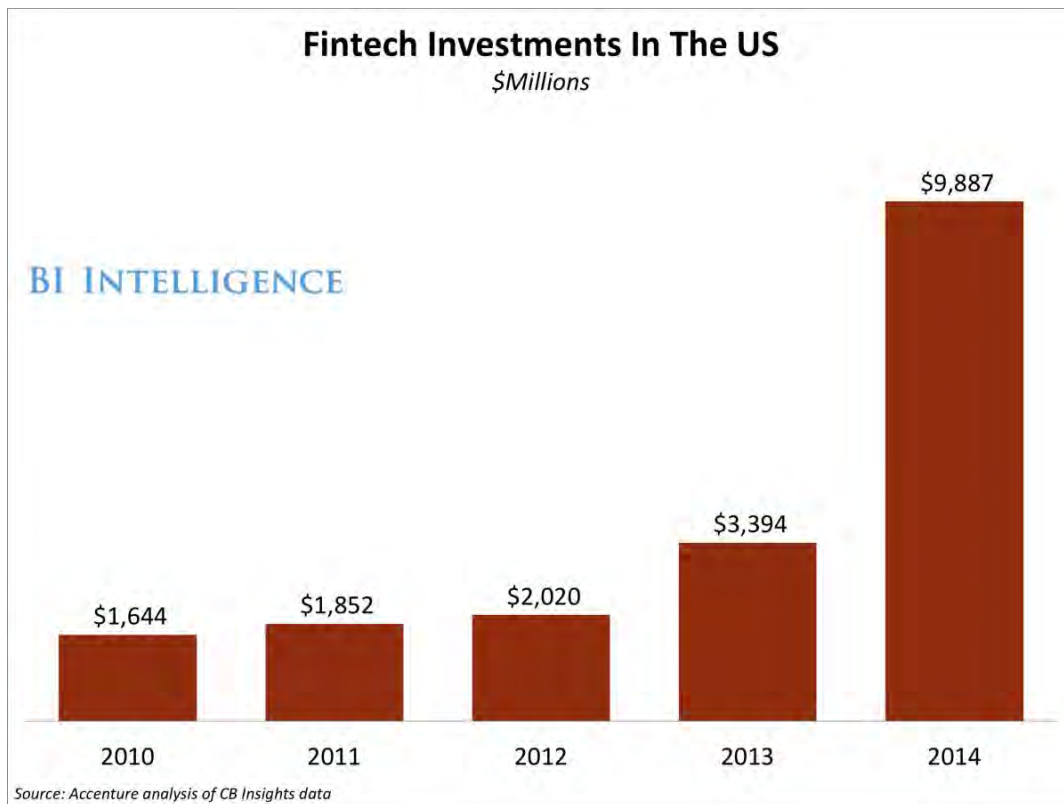
US

In 2014, the US generated almost \$10 billion in fintech investments.

This was up from \$3.4 billion in 2013, marking a 191% year-over-year (YoY) increase.

The US has witnessed a number of blockbuster deals, primarily in payments and lending.

- Japan-based SoftBank helped drive a \$1 billion Series E funding round for alternative lender SoFi in September 2015.
- In July, Visa invested an undisclosed amount of money in Stripe, valuing the payment gateway at \$5 billion.
- In late 2014, Lending Club and OnDeck, two early alternative lenders, went public, with the former company quickly reaching a [\\$9 billion](#) valuation. This market momentum has continued with the recent IPO of Square, a mobile point-of-sale (mPOS) company.

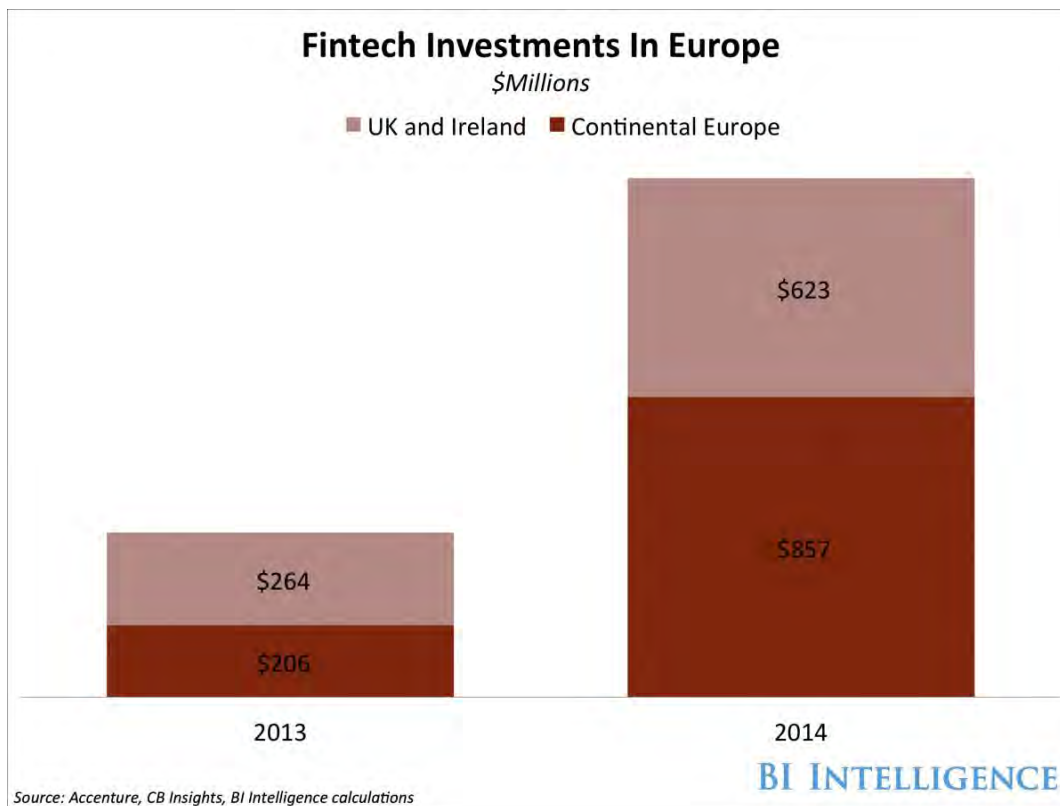


UK and Europe

Europe was the fastest-growing region in 2014. Fintech investments reached \$1.48 billion in Europe last year, representing 215% YoY growth. The UK and Ireland accounted for a majority of investments in 2013, but dropped to 42% in 2014, a sign that fintech is heating up in Continental Europe, where investments skyrocketed 316% between 2013 and 2014.

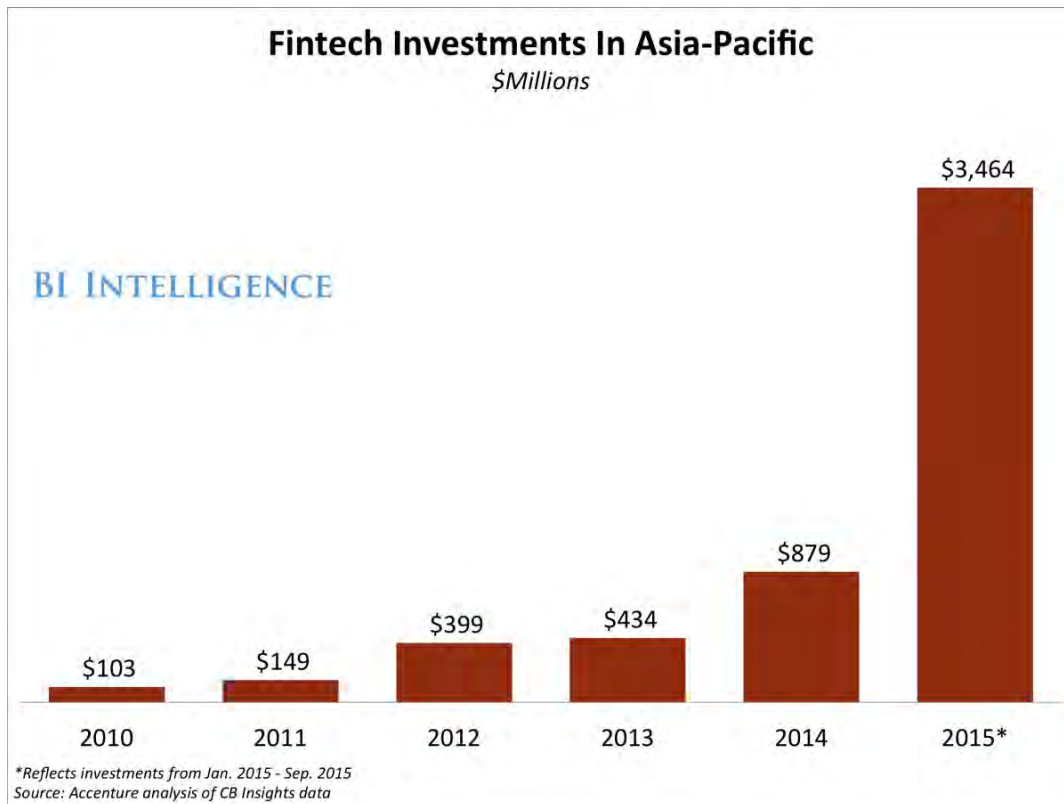
P2P lending, payments, and remittances have been thriving in Europe.

- UK-based Zopa created P2P lending in 2005. Since then, the UK government has fostered a supportive regulatory environment that has helped the UK become the world's largest P2P lending market on a per-capita basis.
- TransferWise, a cross-border transfer company, raised \$58 million at a nearly \$1 billion valuation, and has since established offices in the US.
- Sweden-based mobile payments company Klarna has raised a total of [\\$282 million](#) in six rounds. It processed [\\$9 billion](#) in global transactions last year, and accounts for 30% of online payments in its home country.



Asia-Pacific

The Asia-Pacific region has generated almost \$3.5 billion worth of fintech investments in the first nine months of 2015, [according to Accenture](#). This represents 294% YoY growth from the 2014 total, and will inevitably be higher by the end of the year.

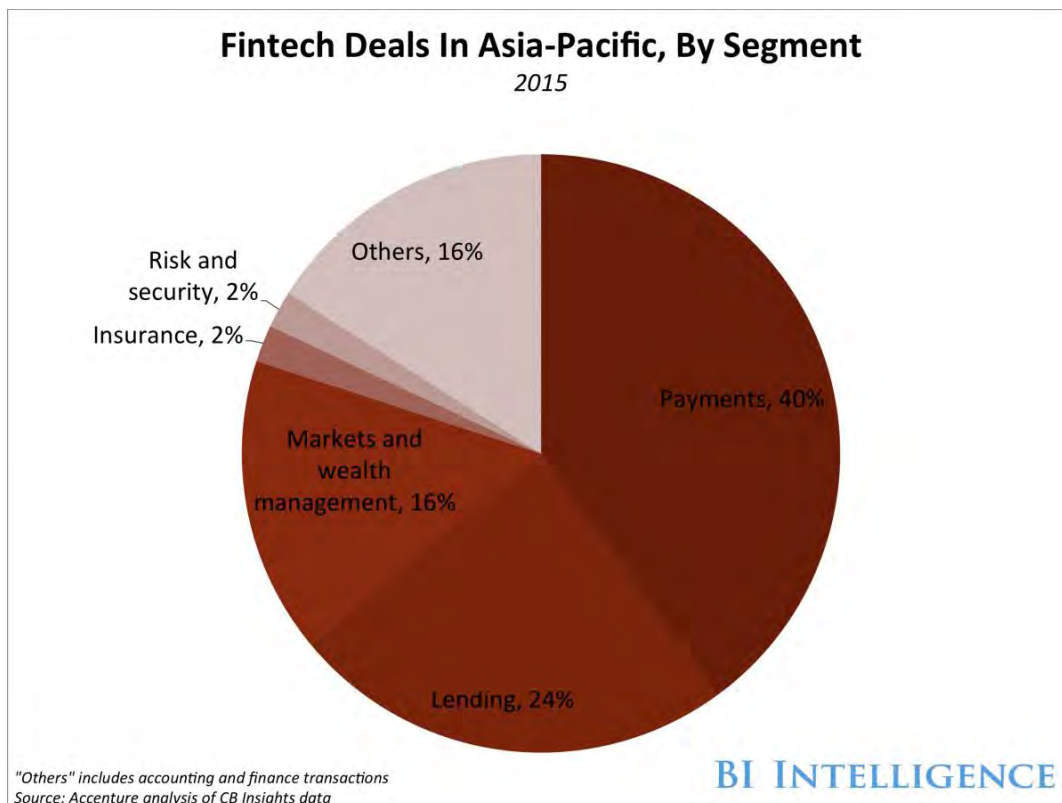


Asia, particularly China, has been a hotbed of activity in two areas: payments and lending. A combined 64% of Asia-Pacific's fintech investments in 2015 have been directed toward payments and lending companies.

- Payments:** Mobile payments have surged in China, driven by products from Alibaba and Tencent. China's payments market is highly innovative mainly because it hasn't had to overcome robust legacy payment infrastructures. Third-party mobile payment platforms like Alipay and Tenpay processed [5.99 trillion Yuan](#) (\$936 billion) in gross merchandise volume (GMV) in 2014, marking 391% YoY growth. Alipay processed

\$14.3 billion in GMV during the Singles' Day online shopping event this year.

- **Lending:** Internet finance, which encompasses P2P lending, is attracting huge investments, with companies like Lufax and China Rapid Finance generating world-leading loan volumes. The latter company raised \$35 million in Series C funding, boosting the company's valuation to \$1 billion.

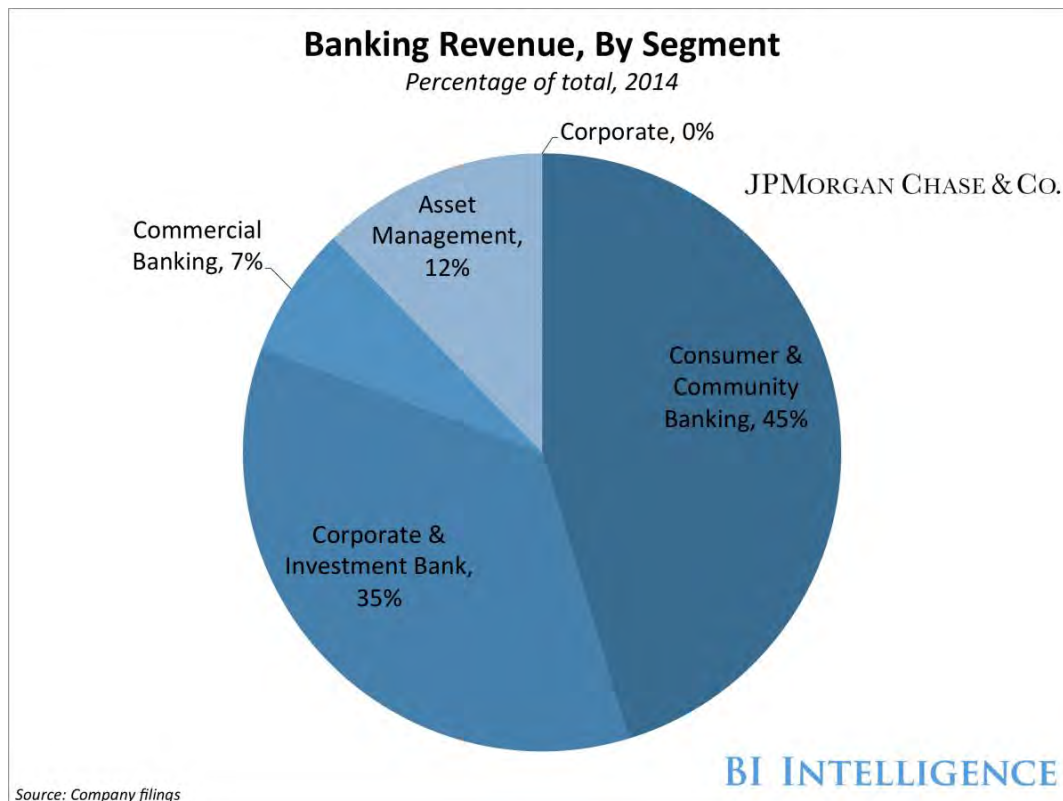


Financial sectors facing disruption

Retail banking

Although no banking sector is immune to disruption by technology, retail banking is perhaps the most vulnerable. As banks' largest revenue source, it also makes for an inviting target.

Retail banking is any banking service aimed at consumers. Deposit banking — taking and holding deposits from clients, usually through accounts like checking, savings, CDs, and money markets — is the foundational segment of retail banking, and supports the lending of those deposits to consumers in the form of credit cards, mortgage loans, and more.



Retail banking requires compliance with strict regulations, including a banking license, FDIC insurance on deposits, and reaching a certain liquidity coverage

ratio. These regulatory hurdles have discouraged many fintech startups from pursuing retail banking.

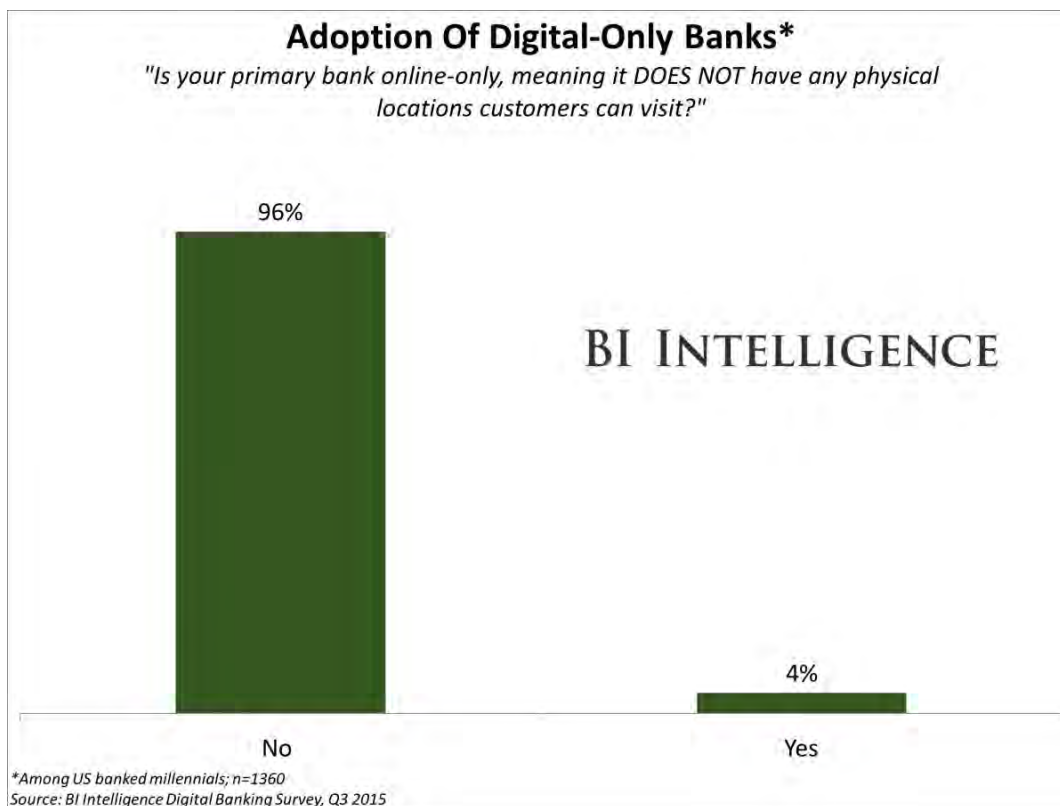
But two things are happening that make retail banking ripe for disruption:

- **Digitization and commoditization of traditional retail banking.** Since consumers now expect their financial experiences to be optimized for digital, big banks are developing online and mobile banking platforms that allow customers to manage their deposit and credit card accounts. This convenience can help retain customers, however, it also makes the relationship between customers and banks more transactional, potentially lowering perceived switching costs.
- **The rise of online-only banks.** Ally Bank and Capital One 360 have built robust retail banks without building a single bank branch. Forgoing branch networks allows them to deliver convenient digital products that consumers crave at relatively high savings rates, a result of lower operating costs. Since then, startups have mimicked this business model in order to break into deposit banking. These banks have cropped up across the globe, and many, like Atom Bank and Number26, are even mobile-only. Some of these startups, like Portland-based Simple, don't charge any monthly account fees thanks to their lower cost basis.

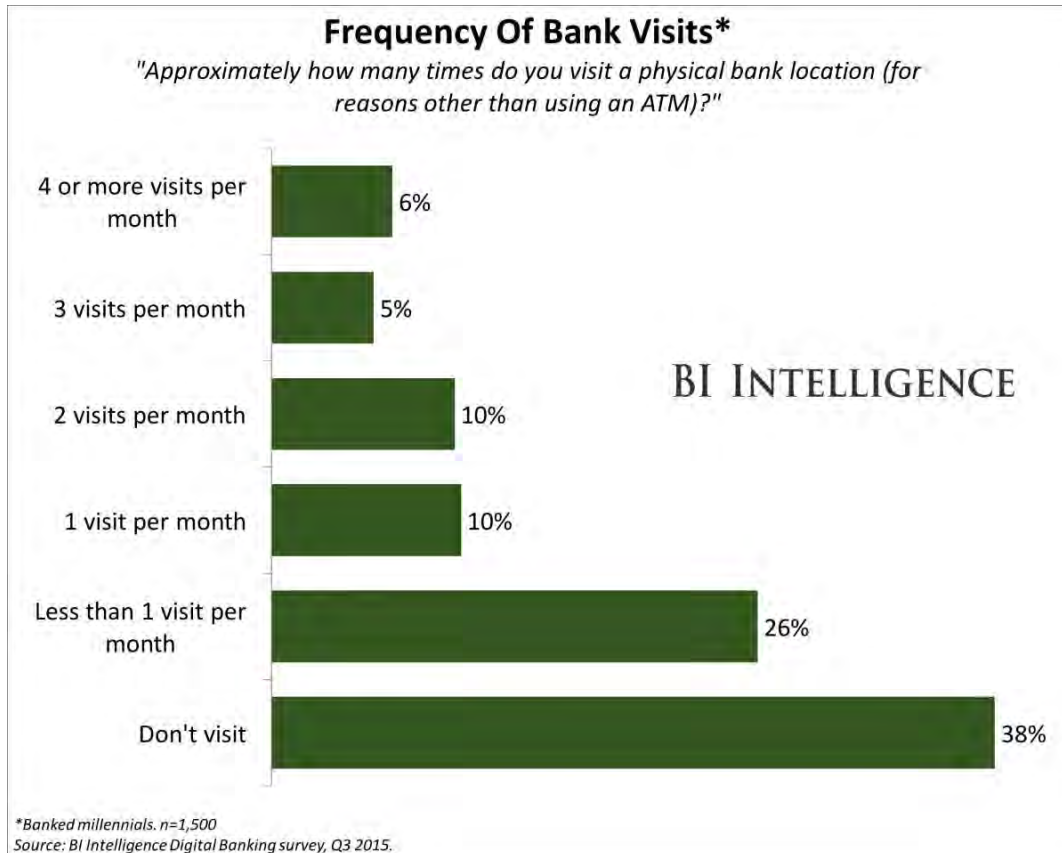
These neo-banks represent one of the greatest threats to traditional banks. Although deposit banking is a low-margin business, it is a crucial customer acquisition point for traditional banks. Banks extract a high value out of deposit banking customers over time, as the customer moves upstream to higher-margin products. There is also a huge cross-sell opportunity — Wells Fargo estimates that it cross-sells [6.17 retail banking products](#) per customer household. Therefore, if a young consumer chooses to open a checking account with Ally instead of Wells Fargo, Wells Fargo potentially also loses a future IRA customer. Although every major player, new and old, is now delivering digital banking products, the online-only players could gain an advantage over time as

customers place a higher value on the kinds of superior digital experiences that digital-first startups typically are able to provide.

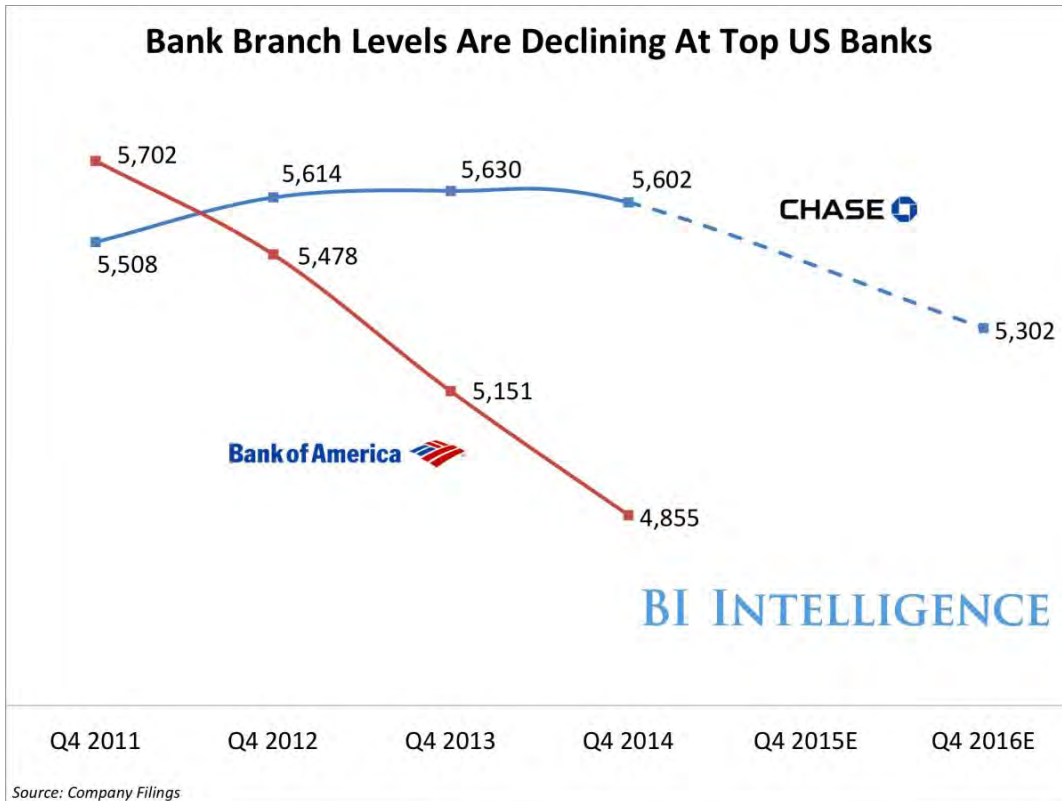
Luckily for the incumbents, consumer adoption of digital-only banks is low — for now. Only 4% of millennials in a recent BI Intelligence survey said they banked at a digital-only bank. However, this number likely will rise over time as more digital banks enter the market and as younger, digital-savvy consumers make up a larger portion of the population.



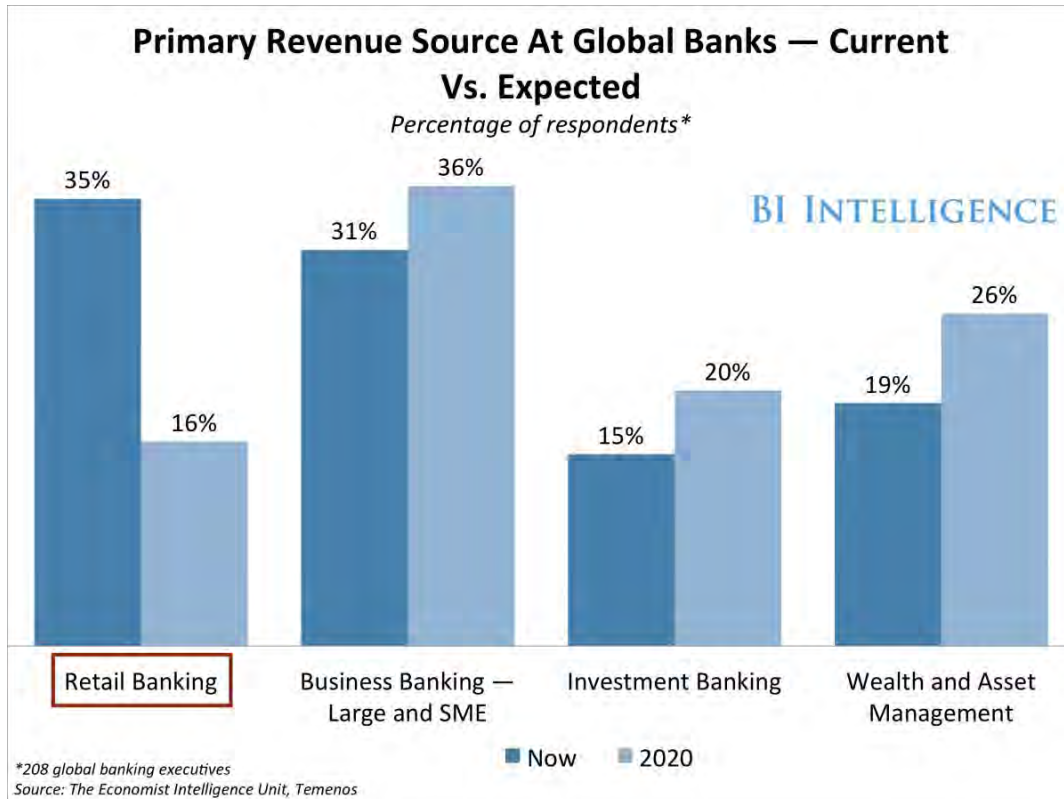
As digital banking takes hold, incumbents face difficult decisions about their branch networks. Branch foot traffic is declining, driven by the banking habits of millennials, 74% of whom visit a branch once per month or less, or not at all, according to the same BI Intelligence survey. As millennials and future generations compose a larger share of the workforce, we expect that branch activity will continue to drop.



Large banks in the US already are starting to condense their branch networks. JPMorgan Chase plans to cut 300 branches by the end of 2016, and Bank of America shuttered almost 1,000 branches between Q4 2011 and Q4 2014. Although cuts will help reduce costs, they will decrease the convenience of visiting a branch, which may prolong the cycle of less frequent visits and precipitate even deeper branch cuts.



All of the above factors may explain why banks foresee a decline in their retail banking business. Although 35% of banking executives identify retail banking as their current primary source of revenue, only 16% see retail banking as their primary source of revenue in 2020. This suggests retail banking is highly vulnerable to being affected by technological developments over the next five years.



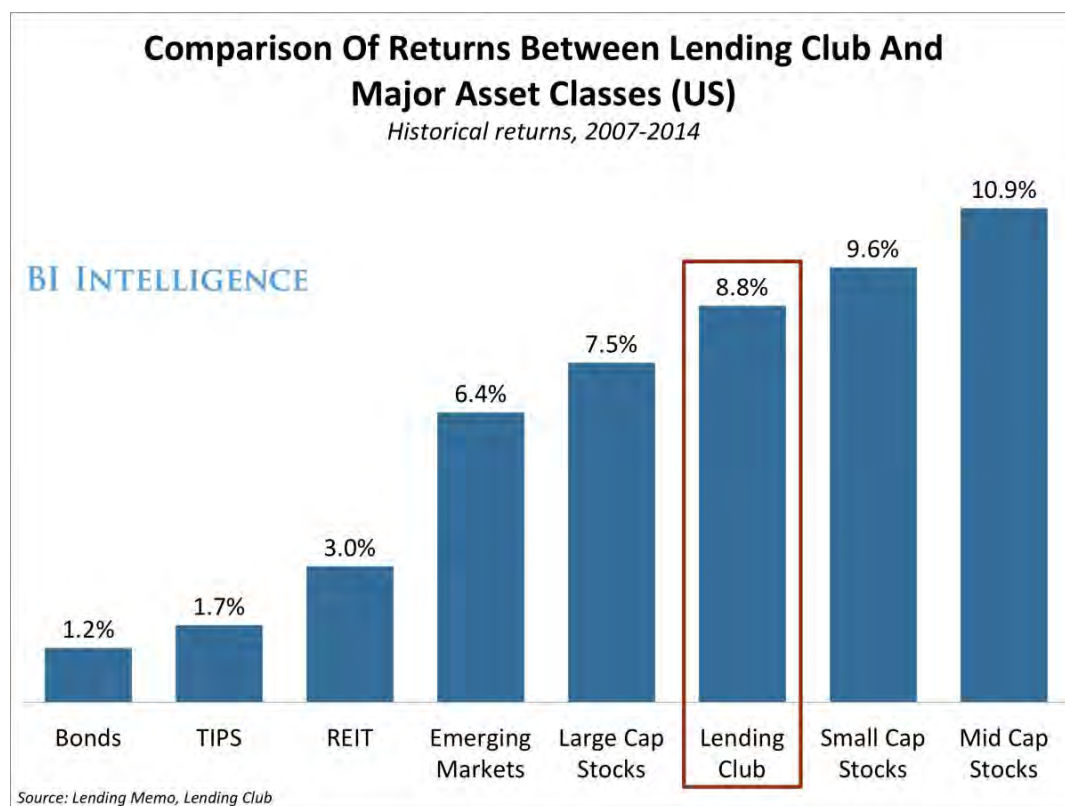
Lending and financing

Loans historically have been the business of banks, but fintech startups have worked their way into the lending industry by creating online marketplaces that match borrowers with investors, sidestepping the laborious and often costly process banks use to evaluate borrowers and fund loans. From there, these P2P lenders work with a third-party bank to manage the exchange of funds. Similar to other popular startups like Airbnb, Uber, ZocDoc, and Orbitz, P2P lenders act as middlemen connecting people to services via the internet. P2P lenders can use

the marketplace model for consumer, small business, mortgage, real estate, and student loans.

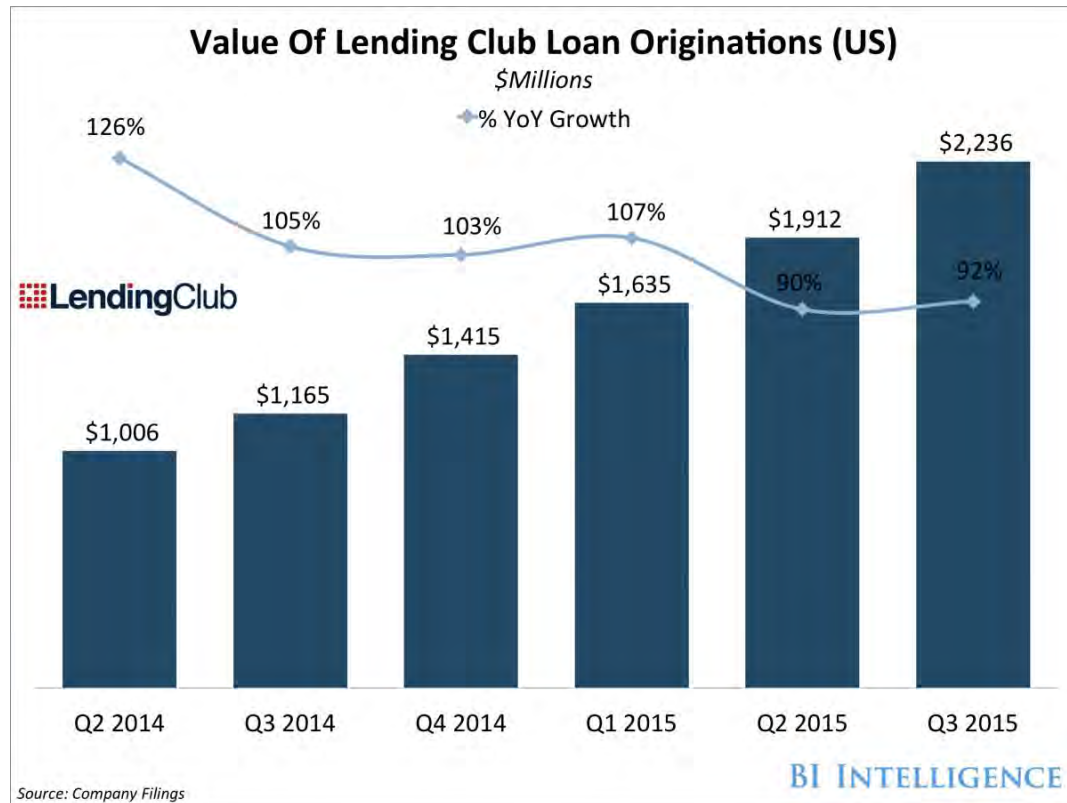
Zopa, the original P2P lender, was founded in the UK in 2005, followed by Prosper in the US. The two firms created mechanisms that connect borrowers and investors in such a way that both parties can find the optimal interest rate — a model that has been widely replicated.

For example, with Lending Club, another P2P lender, borrowers consolidating outstanding debt pay an average 14.8% interest rate, vs. a 21.8% average with other lenders. Lending Club investors have earned an average annualized return of 8.8% historically from 2007 and 2014, higher than the performance of large-cap stocks over the same period.



Lending Club shattered its 2014 loan total halfway through Q3 2015, a sign the industry remains strong. The company originated \$2.2 billion in loans during Q3, representing 92% YoY growth. Lending Club has originated nearly \$5.8

billion in loans so far this year, a number that shatters the \$4.4 billion issued in all of 2014. BI Intelligence [has estimated](#) that Lending Club will ultimately process \$8.4 billion in loans in 2015.

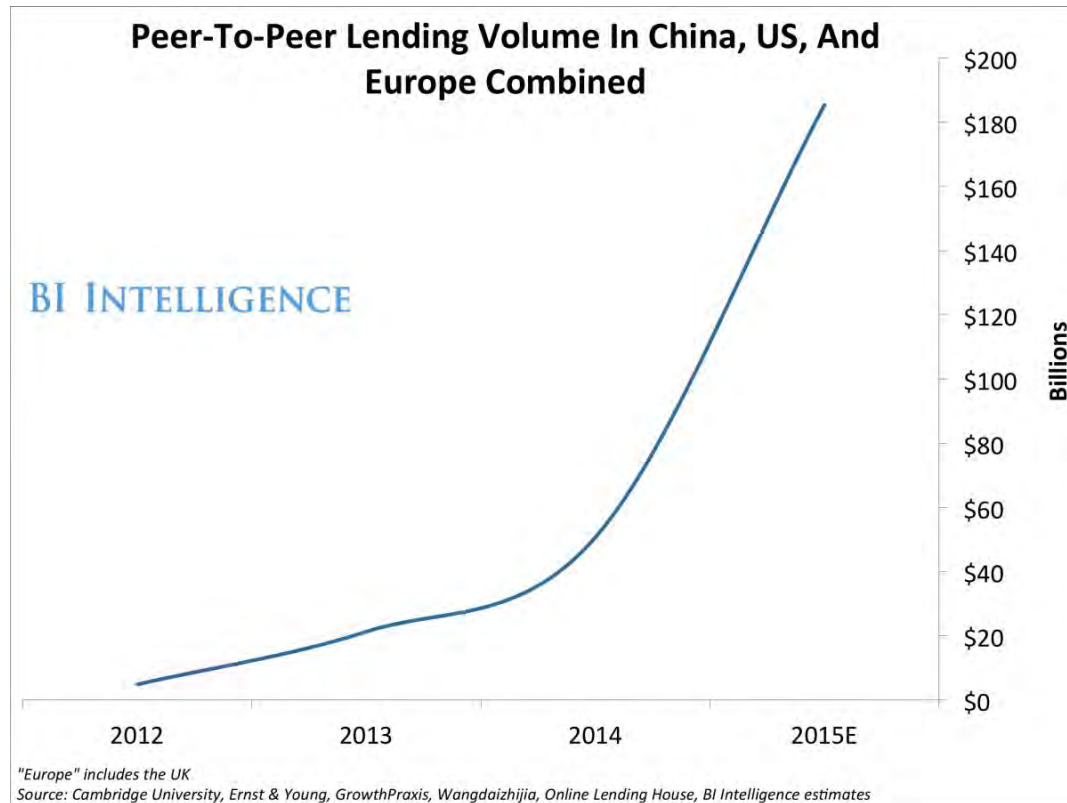


The marketplace model is efficient for two main reasons. One, it leverages vast troves of data instead of human underwriters to quickly assess borrowers, and two, it operates as a platform and not a bank. These factors allow P2P lenders to operate with lower costs than financial institutions.

The efficiency of this new lending model is the main reason lending attracted the second-most investment dollars in 2014. Investors poured \$2.5 billion into US lending startups in 2014, making lending the second-most active sub-sector behind payments.

P2P lending has proved to be a winning formula in Europe and China as well. In 2014, the US, Europe, and China processed a combined \$50 billion in P2P loans. In 2015, we estimate that they will generate \$185 billion,

representing 266% YoY growth. This is largely because of China, which is on pace to originate one trillion yuan (\$157 billion) this year, representing 84% of the total volume in 2015.



P2P lending is highly disruptive because it cuts out retail banks entirely. Major P2P lenders work with an industrial loan company, such as BofI or WebBank, to issue the loans, which means that traditional banks aren't servicing the borrowers and therefore aren't directly profiting from the service. This ultimately could reduce their revenue in a number of areas, including business and consumer banking.

The daunting possibility of lost revenue likely is driving early reactions from the big banks. JPMorgan recently announced that it will use OnDeck's underwriting technology to provide small business loans more efficiently. Goldman Sachs is creating its own digital lending service, due in 2016. In both cases, the banks are leveraging the new lending model to help

protect and sustain their lending businesses — proof that P2P lending is disruptive.

Banks that don't participate in the new lending model also risk losing small business clients.

The cost of underwriting a small business is on par with the cost of assessing a large enterprise, making the economics of traditional underwriting unattractive when applied to small businesses, since the loan sizes are much smaller. P2P small business lenders like Funding Circle, however, can service these borrowers much more cheaply, allowing them to absorb many of the small businesses that have been shut out by banks. This could deter those small businesses from returning to a traditional bank in the future.

Payments and transfers

The payments industry, which saw \$5.3 billion in funding in the US last year, has captured the largest share of fintech investments and has evolved further than most other fintech categories. This is mainly because payments processing has followed customers to digital channels. Mobile and online commerce are growing faster than general US retail sales, and both established and new payments providers are building out digital solutions in response.

Payments stands out relative to other areas of fintech for the level of collaboration between incumbents and startups.

This is because the legacy institutions in many cases provide the necessary infrastructure to support the flow of money. A highly limited number of card networks like Visa and MasterCard, for example, have built out global payment infrastructures that serve as the primary means of transmitting credit card data. Meanwhile, startups are leveraging these networks to create their own solutions.

Similarly, the digital imperative has yielded many high-profile partnerships between incumbents and startups.

For example, Visa made a huge investment in Stripe this year that valued the company at \$5 billion. The companies' strategic alliance will give Stripe access to Visa's global network of issuers and acquirers. The companies also will collaborate to [create](#) online

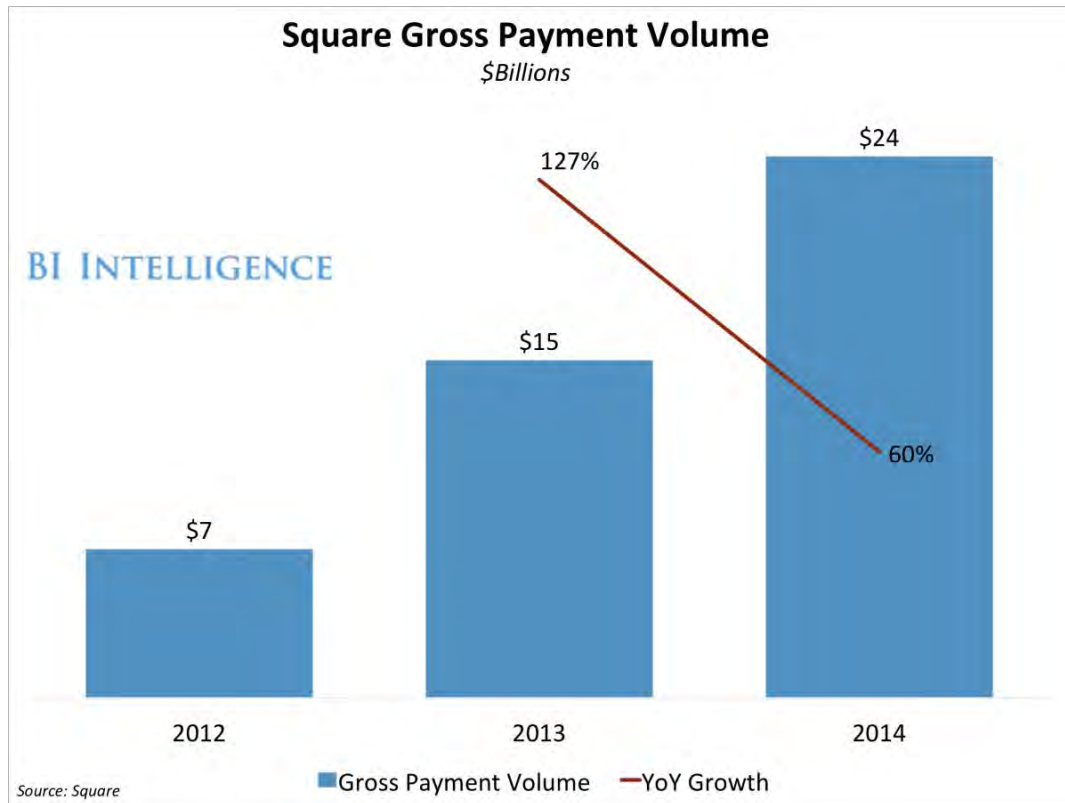
checkout solutions and buy buttons that can be plugged into developers' websites anywhere. In mobile payments, hundreds of banks made their credit and debit cards available in Apple's mobile wallet, Apple Pay.

Here are some examples of how major payments stakeholders are adjusting to the rise of digital:

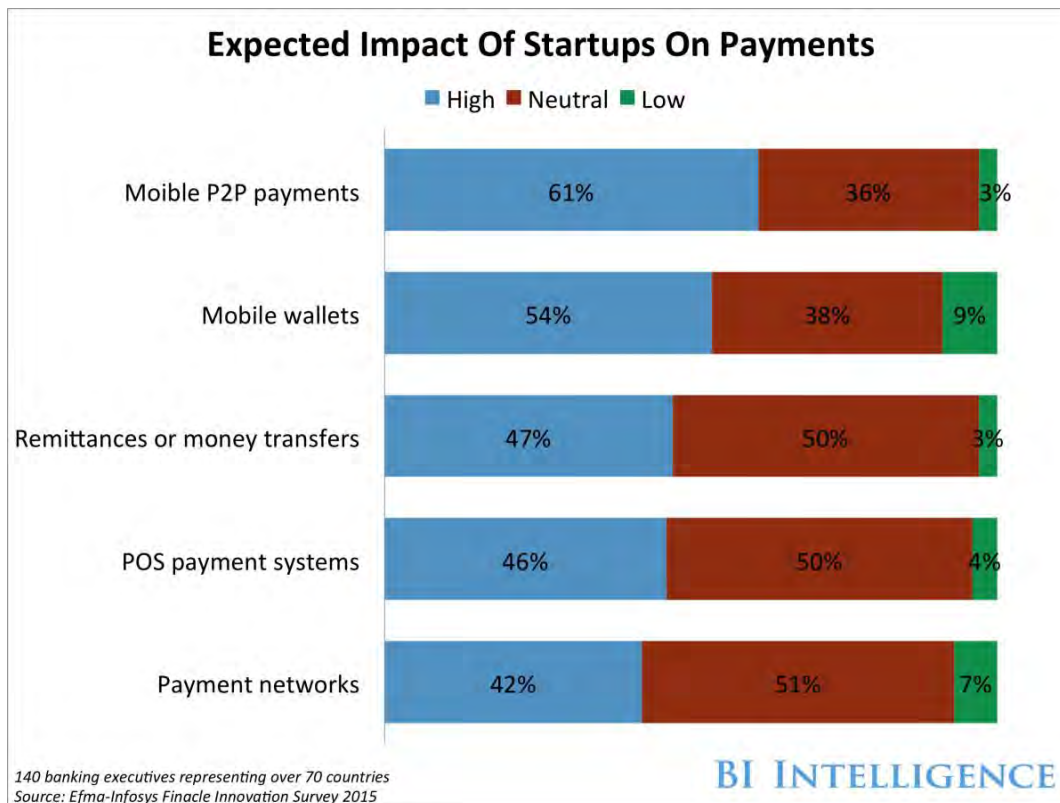
- **Issuers.** Issuers are trying to follow consumers to their mobile phones by partnering with mobile wallet providers like Apple, Samsung, and Google. Citi, for example, was an early participant in Google Wallet, however, issuers didn't flock to the mobile wallet space until Apple Pay launched in fall 2014.
- **Merchants.** Merchants are dealing with the ongoing [EMV migration](#), which is pushing payment fraud online, forcing them to implement stronger online security standards or risk being hacked.
- **Processors/Acquirers.** Processors like Heartland Payment Systems are moving beyond traditional payment solutions toward e-commerce. For example, Heartland's Omni-Channel Commerce Engine (XCE) now helps [support](#) Taco Bell's highly successful mobile order-ahead app.
- **Networks.** Networks are quickly building out tokenization technology to support the routing of mobile wallet-originated payment data. And networks like Visa are starting to build consumer-facing one-click checkout products like Visa Checkout to ease the friction of online shopping.
- **Consumers.** More consumers are using their smartphones to make purchases, creating a need for and an expectation of easier browser- and app-based payment options.
- **ISOs.** Independent Sales Organizations (ISOs) now have to focus on selling software products in addition to traditional payments equipment.
- **Terminal providers.** Terminal manufacturers like VeriFone and Ingenico are rolling out leaner mPOS devices. They also are trying to develop a presence online.

- **Card manufacturers.** Card manufacturers like Gemalto and Oberthur face a developed world that inevitably will decrease its reliance on plastic cards over the long term. As a result, these firms are manufacturing products like Secure Elements, which ensure they can participate in the coming mobile payments revolution.
- **Money transfer operators (MTOs).** MTOs like Western Union and MoneyGram can no longer rely on traditional cross-border transfers via brick-and-mortar agent locations. They are beginning to build out digital capabilities, and digital channels now represent their fastest-growing segments.

Startups that can make payments as invisible as possible will gain the most traction. Square, for example, has disrupted the POS industry by giving micro-merchants a way to start accepting card payments with as little effort as possible. The company originally launched a simplistic mPOS reader that attached to the headphone jack of a mobile device. Micro-merchants quickly embraced this and moved beyond cash-only payments. Square processed \$24 billion in 2014 and now counts two million sellers as active clients.



Mobile P2P payments is seen as the area that will be most affected by fintech startups. Among global banking executives, 61% believe startups will have a "high" impact on mobile P2P payments, according to a survey from Efma and Infosys. Mobile wallets trailed closely behind, at 54%, followed by remittances, at 47%.



Meanwhile, the old guard will continue to play a key role for two reasons:

- **They still control much of the piping.** As noted above, card networks like Visa have spent decades building payment pathways that banks, consumers, merchants, and even startups rely on to move money.
- **They're following the path of startups by innovating.** Visa and American Express have both launched their own online and mobile express checkout buttons that allow customers to save their payment information and make faster purchases. Although other companies like PayPal and Klarna have one-click solutions of their own, Visa and American Express can easily mimic these products and simultaneously leverage their large customer bases to ensure widespread adoption.

Ultimately, a reordering of the top payment providers is likely. The migration to digital payments will present new challenges to incumbents and startups alike. Those that navigate this shift most effectively will rise to or

remain at the top of the industry. Meanwhile, card manufacturers and point-of-sale producers, which historically have relied on in-person interactions, will probably be in the greatest danger of disruption.

Wealth and asset management

Despite attracting just 4% of fintech investments in 2014, wealth management is one of the most data-driven and process-oriented services in finance, and therefore is being rapidly disrupted.

Wealth management traditionally pairs clients with an advisor who examines assets and determines how to allocate them into different investment vehicles that raise the value of those assets over time. Startups have proven this process can be managed with algorithms.

Robo-advising — the automated management of investments — is a relatively new phenomenon driven by startups like Betterment and Wealthfront. These companies allow customers to set their preferences, such as risk appetite, objectives, and terms. Based on these specifications, the robo-advisor builds a profile of the customer and automatically creates a unique investment portfolio with assets automatically allocated across a number of classes. Customers can view their portfolio's performance at any time and tweak their preferences.

The new wealth management business model has a number of benefits:

- **It removes brokers from the investment process, but still generates solid returns.** Customers now can set up a portfolio instantly, without the help of a human advisor, and can gain direct access to and control over their funds. All the while, the platform is still helping advise the client by interpreting incoming data. Customers who don't seek the advice of a broker but want to maximize returns will find this process much more efficient.

- **Platforms use up all the funds.** Traditional investment managers offer typical customers portfolios that often don't make use of all their investable cash, which is especially problematic for smaller accounts. If the customer doesn't have enough funds to purchase an entire share of a security, the leftover cash sits un-invested until the customer builds up enough to afford another. However, Betterment is able to allocate 100% of a client's assets into an ETF-based portfolio with "no cash drag by offering fractional shares," Joe Ziemer, Director of Communications at Betterment, told BI Intelligence.
- **Lower fees.** Robo-advisors often don't charge transaction, trade, or rebalancing fees, a result of their lower operating costs and automation. Their annual fees are also usually 15 to 35 basis points (bps), much lower than the [100 bps](#) charged by incumbents.
- **Lower minimums.** Betterment, for instance, does not have a minimum account balance requirement. This helps make wealth management more accessible for clients of all types, including young professionals. Vanguard's quasi-robo advising service, [Vanguard Personal Advisor Services](#), however, has a \$50,000 deposit minimum.

These robo-advisors have grown much more quickly than older players. It took Wealthfront just [two years](#) to reach \$1 billion in assets under management (AUM), a volume that Charles Schwab took six years to achieve.

Their rapid growth poses a threat to traditional advisories. Traditional investment managers like Vanguard and Fidelity still rely primarily on human advisors, which results in a higher cost of doing business and more time investment from the client's perspective. Startups can undercut these costs, and further, can provide customers with a better user experience. The combination of these elements means robo-advisors have a chance to pull clients away from traditional firms while keeping costs under control.

Some incumbents recognize this threat and are partnering with startups. For example, Fidelity advisors are now using Betterment's digital platform to glean more insights about the performance of different assets and

offer better financial advice to clients. In this way, Fidelity can benefit from Betterment's data platform while Betterment benefits from Fidelity's scale.

Although robo-advising is disruptive to the wealth management process, incumbents likely will be safe for the following reasons:

- **They are still vastly larger than the startups.** Vanguard has \$3 trillion of AUM, compared with Betterment's \$3 billion.
- **The incumbents still have an advantage with high-net-worth clients.** Millionaire investors still require the care of a human advisor, since there are a number of nuanced ways to handle larger assets. These clients, who are the most valuable, likely will continue using private services, which will help the incumbents maintain very high AUM totals. It also means these incumbents arguably can afford to lose lower-net-worth customers.
- **Copying the robo-advising business model is not difficult.** Charles Schwab, for example, launched its own robo-advisory called Schwab Intelligent Portfolios. However, this has a \$5,000 investment minimum, which crowds out many younger customers, who may continue adopting platforms like Betterment.

Markets and exchanges

Fintech hasn't had a large effect on exchanges thus far — markets only captured 3% of fintech investments in the US last year. Stock exchanges have undergone a general upgrade to digital over the years that has rendered in-person traders less essential. Otherwise, financial technology hasn't fundamentally altered markets, making it difficult for startups to find an entry point.

However, fintech companies are offering alternatives in foreign exchange, cryptocurrency exchange, and secondary exchanges.

- **Foreign Exchange:** Foreign exchange (forex) trading is "the most traded financial market in the world," with \$4 trillion worth of currencies traded every day, [according to forex.com](http://accordingtoforex.com). Banks, institutions, and

individual investors speculate on the future value of currencies and attempt to trade for currencies at a profit. Fintech startups are beginning to address consumer-to-consumer (C2C) forex. For instance, WeSwap is a "social currency" platform that allows users to trade currencies directly with other travelers, with transparent fees that range from 1% to 1.4%. This is notably lower than the fees charged by traditional transfer companies, which often add a mark-up of 1% to 3% on top of the base rate to cover potential currency fluctuations.

- **Bitcoin exchanges:** Although Bitcoin usage has lagged, Bitcoin is very popular as an exchange method because it's more speculative than other currencies. Bitcoin has oscillated wildly — the currency went from about \$81 in July 2013 to nearly \$1,000 by November 2013, [according to Coinmarketcap](#). These fluctuations open opportunities for traders to earn a significant return compared to other currencies, which only experience minor changes on a day-to-day basis. Fintech startups like Coinsetter and Bitstamp now provide exchanges where people can buy and sell Bitcoin, usually in US Dollars or Euros. Bitstamp now processes about \$5.3 million in a 24-hour period, [according to CoinDesk](#).
- **Secondary exchanges:** Marketplace lending robo-advisor LendingRobot enables investors to trade fractions of loan notes on a secondary market in real time. These markets give investors the ability to make instant trades and liquidate their notes.

Insurance

Insurance is among the most underdeveloped areas of fintech, bringing in just 1% of investments in 2014. However, a number of insurance startups are using the Internet of Things (IoT) and other technologies to break into the industry.

The insurance industry is massive. US insurers earned \$1.1 trillion last year in net premiums, [according to the Insurance Information Institute](#).

But the regulations are burdensome. Insurance firms are required to have a large amount of cash on hand, and they must grow their liquid assets along

with the increase in the risk they take on, Brendan Dickinson, a principal at Canaan Partners, [wrote on TechCrunch](#). The level of risk often increases quickly because the highest-risk customers sign up for new insurance products. Moreover, some states regulate pricing, which restricts the potential margins an insurer can secure.

Despite these barriers, some startups have found unique ways to improve different lines of insurance:

- **Machine-to-machine (M2M) communications are improving auto insurance.** US-based startup MetroMile charges for car insurance by the mile, which translates to huge savings for drivers who drive below-average distances. According to the company's website, 65% of drivers pay exorbitant premiums to cover longer-distance drivers. The firm uses a wireless device called Metromile Pulse, which plugs into a car's diagnostics port, to track a car's mileage. This enables people to pay a few cents per mile instead of a monthly fee.
- **Health insurance startups are embracing digital to simplify the user experience.** Oscar, the health insurance company, developed a clean, user-friendly interface that allows people to book doctor visits, search for doctors by cost, experience, and location, and also track their consultations, prescriptions and more. Oscar's main value proposition is that it simplifies healthcare.

These startups will by no means disrupt insurance giants anytime soon, but given IoT advancements and the potential to simplify the insurance experience, we expect insurance startups to see high growth in the coming years, at which point they may be able to challenge incumbents. At the same time, it's easy to imagine how incumbents could co-opt startups' disruptive business models.

Blockchain technology

Banks and startups alike are exploring the technology behind the blockchain because it represents a major opportunity for both. The blockchain is a

distributed ledger that stores a public record of Bitcoin transactions, and is cross-verified by users to ensure security. The distributed ledger concept is now being applied to various financial processes, including exchanges and cross-border transactions. The reason is a public ledger has the potential to make any type of process cheaper, more secure, more transparent, and more efficient.

To date, investments in the blockchain have totaled [\\$285 million](#). Among the 30 financial institutions that have begun exploring it are companies like Nasdaq, MasterCard, Visa, and Santander. R3CEV, a blockchain startup looking to develop a global open-source blockchain to be used by major financial institutions, believes its service could be operating within a year, according to the [Sydney Morning Herald](#).

A global blockchain could sweep through the financial industry, cutting costs dramatically. Banks are pursuing blockchain tech in part because it could save them billions of dollars. Santander InnoVentures [forecasts](#) that a distributed ledger like the blockchain could collectively save banks \$15 billion to \$20 billion per year by 2022 by removing intermediaries and making it cheaper for them to process certain types of transactions. Leveraging blockchain tech could enable banks to compete more effectively with nimble fintech startups.

Here are some examples of how financial processes could benefit from the blockchain:

- **Settlement and clearing.** Currently, clearing houses process bank payments in batches. The blockchain could eliminate the need for a centralized clearing authority, which would speed up payment processing and could reduce costs. Blockchain tech could provide real-time and transparent updates on transactions, which also would expedite the process of settling securities, according to Santander.
- **Exchanges.** The blockchain already is being leveraged to manage trades in shares of private companies. Nasdaq announced the launch of Linq, a blockchain-based exchange, in October. The blockchain can help private

companies keep track of the trades and can enable easier auditing of their records, [according to Forbes](#).

- **Cross-border transfers.** The blockchain also could help route fiat currencies across borders more efficiently. Visa Europe is currently [testing](#) blockchain tech to enable both routing and conversion of currencies from things like US Dollars to M-Pesa wallets in Kenya.

One factor will be very important: who licenses out the

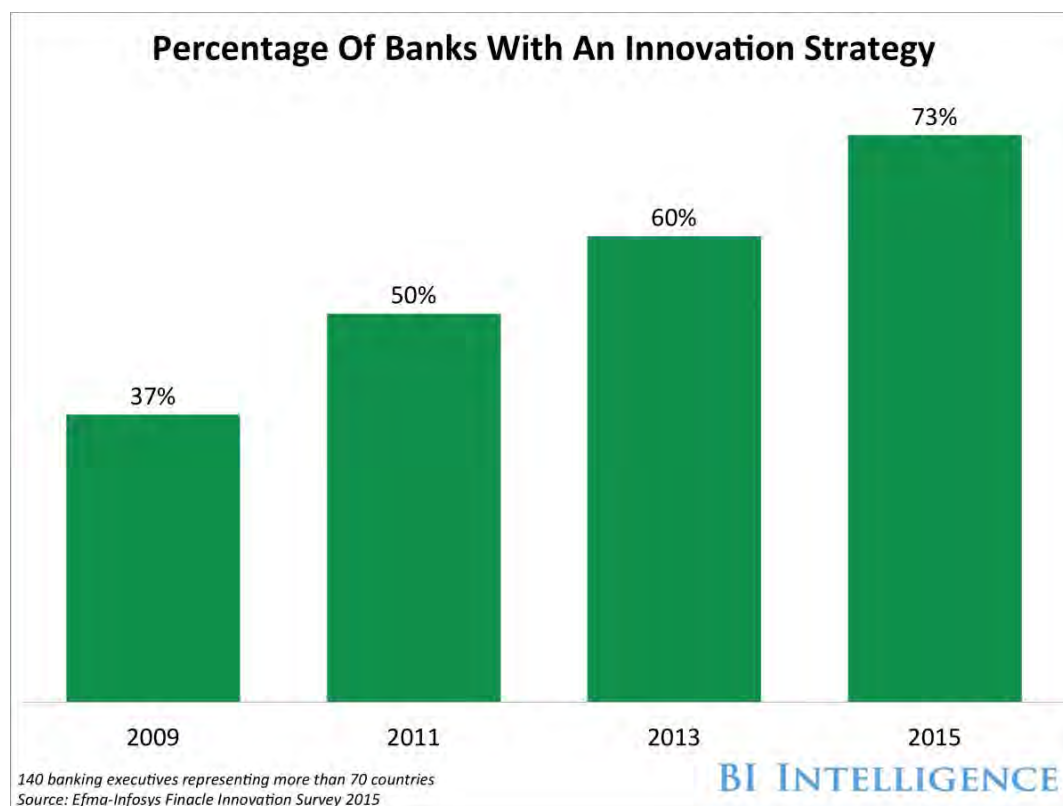
technology? Banks and startups are both running experiments on distributed ledgers, however, a select few firms likely will control the licensing and intellectual property behind specific technology that can be scaled out for big enterprises. It seems probable that a fintech startup ultimately will develop this technology because, as Bruce Wallace, Chief Digital Officer (CDO) at Silicon Valley Bank pointed out to BI Intelligence, it's difficult for organizations to innovate processes from within. This seems to be happening already with the startup R3CEV, which has rallied a coalition of banks.

Even if a startup owns the technology, the costs of purchasing the license to operate blockchain technology probably will be eclipsed by the benefits that this technology will have on an entire organization. Banks may be able to process transactions at near-zero cost, which will enable them to secure stronger profits in areas where margins are compressing.

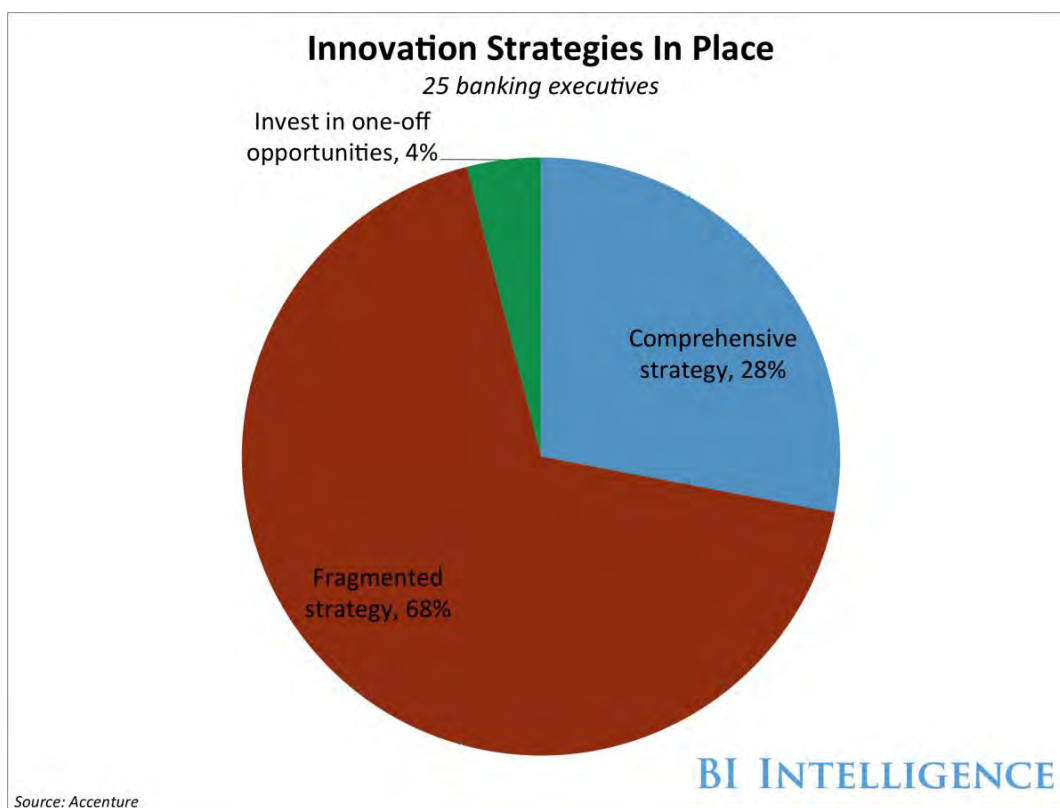
Key challenges for incumbents and startups

Banks are still trying to broaden their innovation strategies, while startups are grappling with regulations. Banks that optimize their innovation projects likely will stay afloat during the migration to digital, while startups that manage regulations effectively while scaling out their business will have the best chance to disrupt financial services.

Banks are upping their innovation game. Nearly three-quarters (73%) of banking executives said they now have an innovation strategy, compared to 50% in 2013 and 60% in 2014, [according to an Efma/Infosys survey](#). This suggests banks largely recognize the need to invest in innovation or face obsolescence.



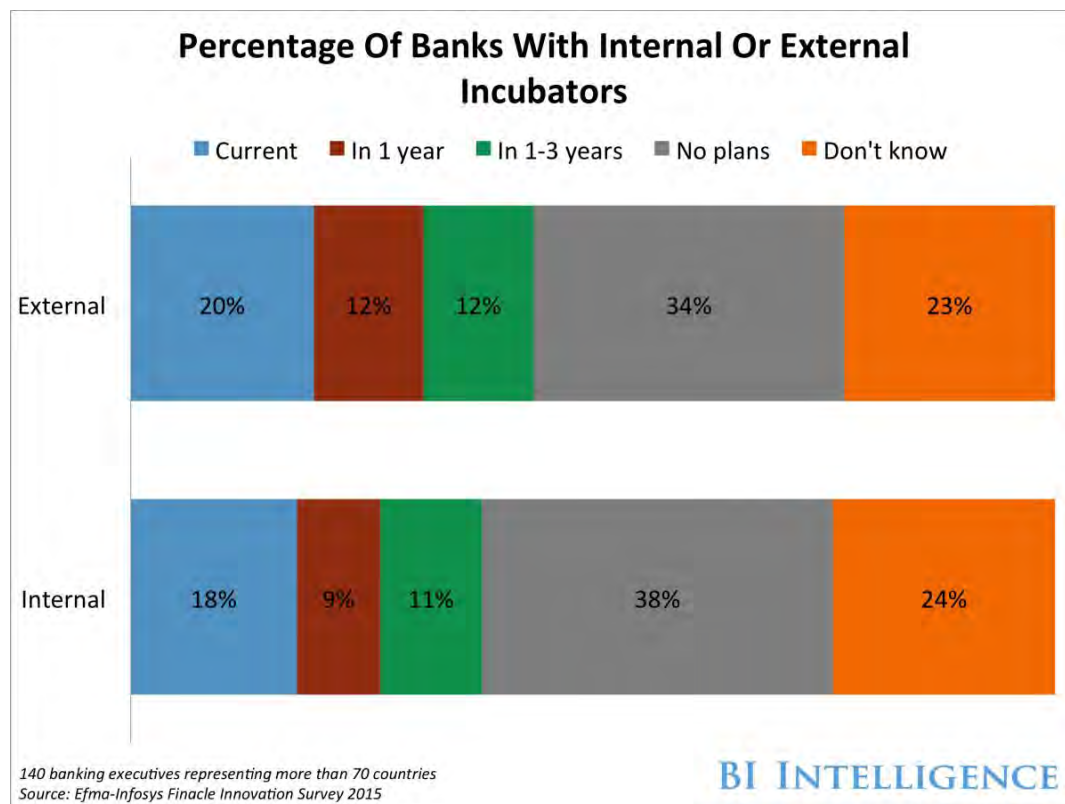
For the most part, however, banks haven't optimized their innovation strategies. Despite most bankers recognizing that innovation is critical, only a minority feel their strategies permeate all areas of their organization. Just over one-quarter (28%) of banking executives in an [Accenture survey](#) claimed they have a "comprehensive strategy" in place, while over two-thirds (68%) said their strategy is "fragmented." This puts banks at a disadvantage relative to startups, which almost by definition have a pervasive innovation strategy.



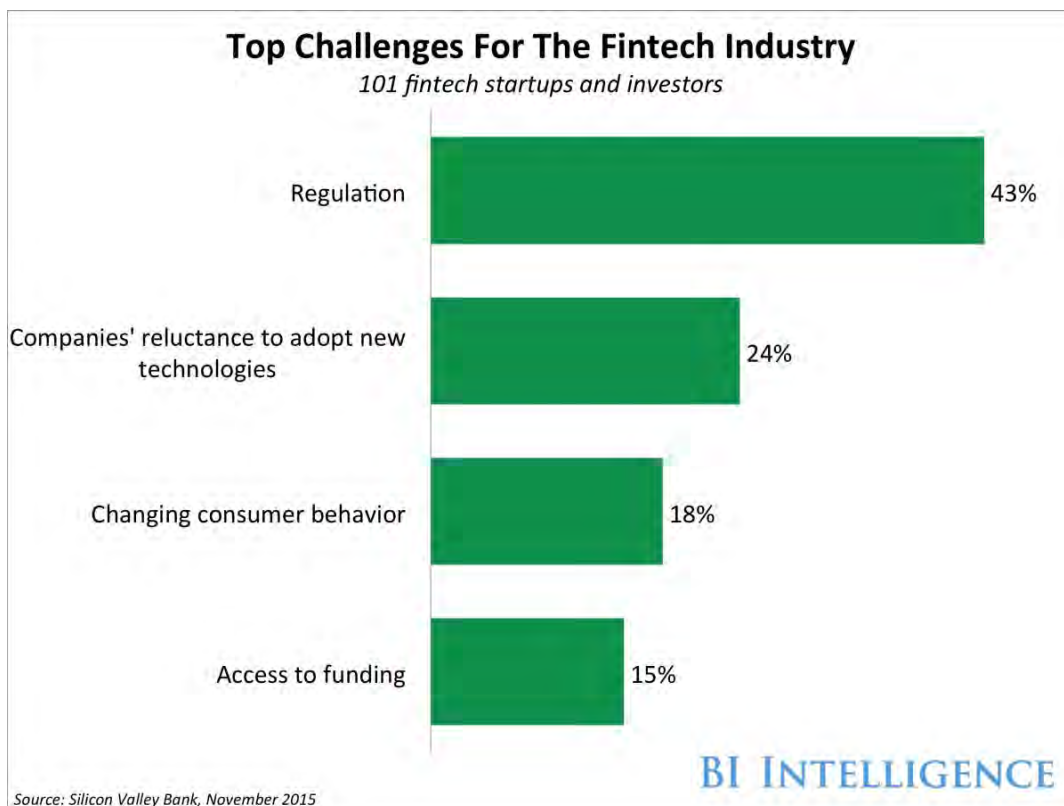
In addition to homegrown innovation strategies, banks are using incubators and accelerators to capitalize on the fintech boom.

Incubators give banks a chance to invest in a broad range of early-stage startups, and also can help them spark ideas about how to improve their own banking processes. Even if banks can't scale out any of the technologies in which they invest, operating an incubator can at least help them anticipate trends, allowing them to better defend against threats to their business.

An average of 19% of banks currently have an external or internal incubator, and another 10.5% expect to launch one within one year, according to the Efma/Infosys survey. A majority, however, either don't know or don't have plans to launch one.



Meanwhile, regulations are holding back startups. Over 40% of fintech startups and investors believe regulations are the top challenge facing the industry, according to a recent Silicon Valley Bank survey. Bruce Wallace pointed out to BI Intelligence that many startups begin with just 5-10 employees, making it difficult for them to navigate or devote resources to compliance. By contrast, large banks have entire departments dedicated to this area. However, we believe back-end improvements, like digital paperwork processing, could help reduce the time and resources needed to deal with regulations.



THE BOTTOM LINE

- **Fintech will bring sweeping changes to transactional sectors where digital is the most highly valued.** Low-touch, data-driven segments are the most vulnerable and likely the ones to experience the most significant near-term disruption. These include retail banking, payments, and lending. Ultimately, the ability to provide high-quality digital, and especially mobile, experiences at a scale that matches consumers' growing expectations and needs will determine winners and losers in these areas. Areas like wealth management and insurance also will be overhauled, but the timeline will be longer, either because of regulations or the continued need for a human element.
- **Europe and China will each take a much larger share of global fintech investments in the coming years.** Although the US has so far captured the lion's share of fintech investments, a surge in alternative lending within China makes it likely that the Asia-Pacific region will continue growing and eventually make up a large share of global investments. In Europe, the rise of digital banks and alternative lenders will help bolster investments.
- **The blockchain will ultimately help banks the most.** Banks are pursuing blockchain tech in part because it could save them billions of dollars. Santander InnoVentures [forecasts](#) that a distributed ledger like the blockchain could collectively save banks \$15 billion to \$20 billion per year by 2022. Banks may be able to process transactions at near-zero cost, which will enable them to secure stronger profits in areas where margins are compressing.
- **Established players and startups face very different challenges.** Banks are investing more heavily in innovation, however, they haven't yet fully diffused their innovation strategies throughout their organizations. Meanwhile, startups are trying to navigate the regulatory landscape, one of their top challenges. Banks will have to find a way to develop new platforms while overcoming legacy infrastructure; startups

will have to find a way to scale out their business while facing increased regulations, higher costs, and larger infrastructures that will be more difficult to change and manage.

- **They also have different opportunities.** Incumbents could use their size to acquire or partner with the new entrants, their brand visibility to generate high product adoption, or their regulatory standing to outlast fintech startups that could eventually face increased scrutiny themselves. Startups' opportunities will be to beat the incumbents on usability, specialize in a niche area of the market that incumbents haven't yet mastered, partner with incumbents, or exit through an IPO or buyout.

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