Testimony of
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Before the
U.S Senate Committee on Banking, Housing, and Urban Affairs

Hearing titled
"Examining the Fintech Landscape"
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Dirksen Senate Office Building Room 538

Chairman Crapo, Ranking Member Brown, and members of the Committee,

Good morning, and thank you for inviting me to testify today. My name is Eric Turner, and I am a Research Analyst with S&P Global Market Intelligence, where I cover financial technology.

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Today I hope to provide the Committee with an overview of some key areas in the growing financial technology sector as well as the benefits and challenges presented. My comments represent insights gained through our research and are not necessarily the views of S&P Global.

Industry Background

Financial technology, more commonly known as fintech, is one of the fastest growing industries in the U.S. Close to $13 billion was invested in U.S.-based fintech companies in 2016 alone.[1]

Building on the increased ubiquity of the internet and connected devices, fintech companies leverage advanced technology to provide innovative financial products to consumers.

Defining all areas of fintech is a difficult, if not impossible task. Technology has long enabled innovation by financial institutions, and in many ways fintech is a new name for old ideas. But it is useful to define emerging subsectors of the space that have the most potential to provide benefits to consumers and the financial industry as a whole.

Some key segments of the fintech landscape are digital lending, mobile payments, digital investment management, insurance technology, and distributed ledger technology.
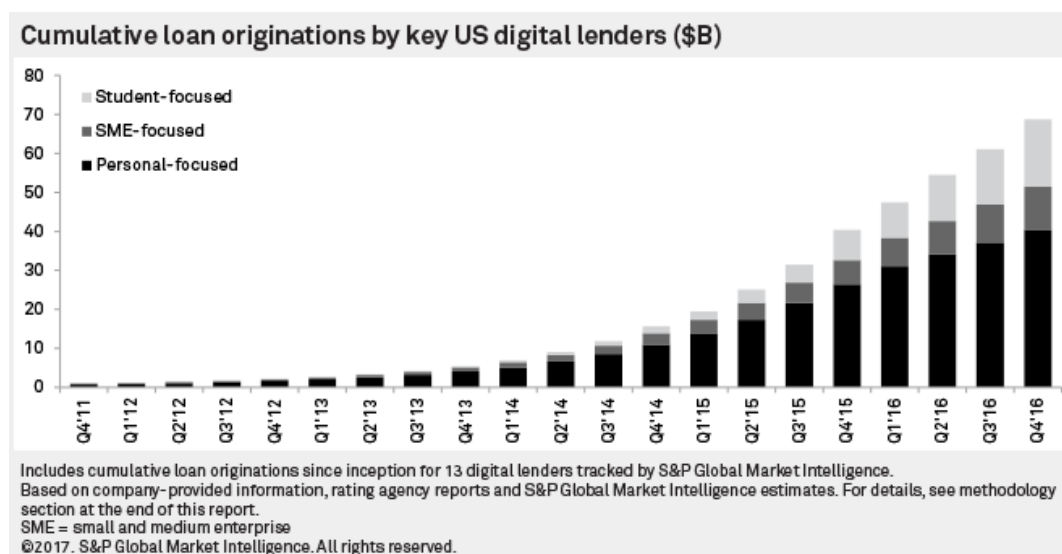
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[1] KPMG, " U.S. Fintech Funding And Deal Volume Drop Significantly In 2016: KPMG Q4'16 Pulse Of Fintech Report" https://home.kpmg.com/us/en/home/insights/2017/02/us-fintech-funding-and-deal-volume-drop-significantly-in-2016-kpmg-q4-16-pulse-of-fintech-report.html

Digital Lending

Overview

Digital lenders primarily operate as non-bank lenders offering loans through web and mobile platforms. They rely on robust analytics and alternative data sets to create proprietary credit scoring models. Alternative data is information not contained within a traditional credit report that can better show a borrower's capacity to repay a loan. Many of these lenders have also integrated advanced technologies reliant on big data, machine learning, and artificial intelligence in order to enhance underwriting.
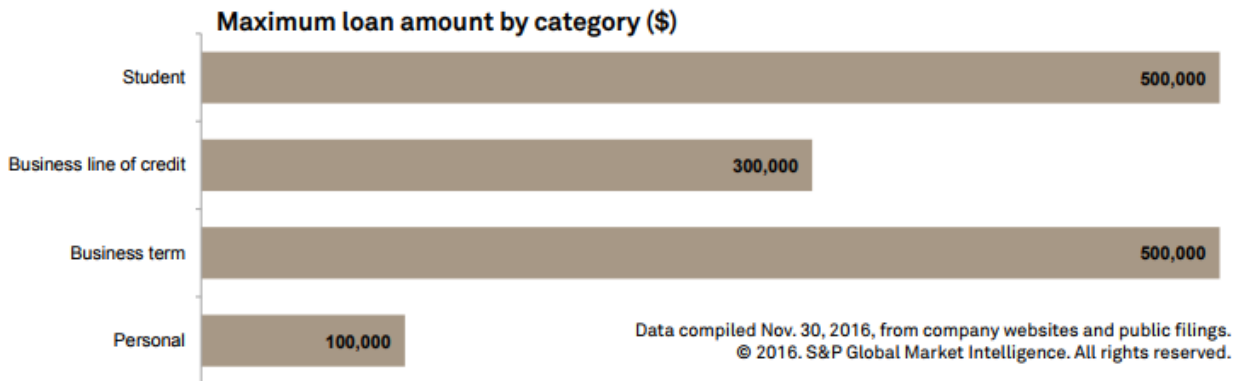
Our estimates show that thirteen of the largest digital lenders in the U.S. together originated $28.39 billion in loans last year. Through the end of 2016, they had originated a cumulative $68.75 billion since their respective inceptions.[2]

Cumulative loan originations by key US digital lenders ($B)

Includes cumulative loan originations since inception for 13 digital lenders tracked by S&P Global Market Intelligence.
Based on company-provided information, rating agency reports and S&P Global Market Intelligence estimates. For details, see methodology section at the end of this report.
SME = small and medium enterprise
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Borrowers include individuals looking to refinance high interest credit card debt, small and medium sized enterprises (SMEs) in need of working capital, and people consolidating student debt at lower rates. Mortgage and auto loan refinance are also emerging areas of digital lending.
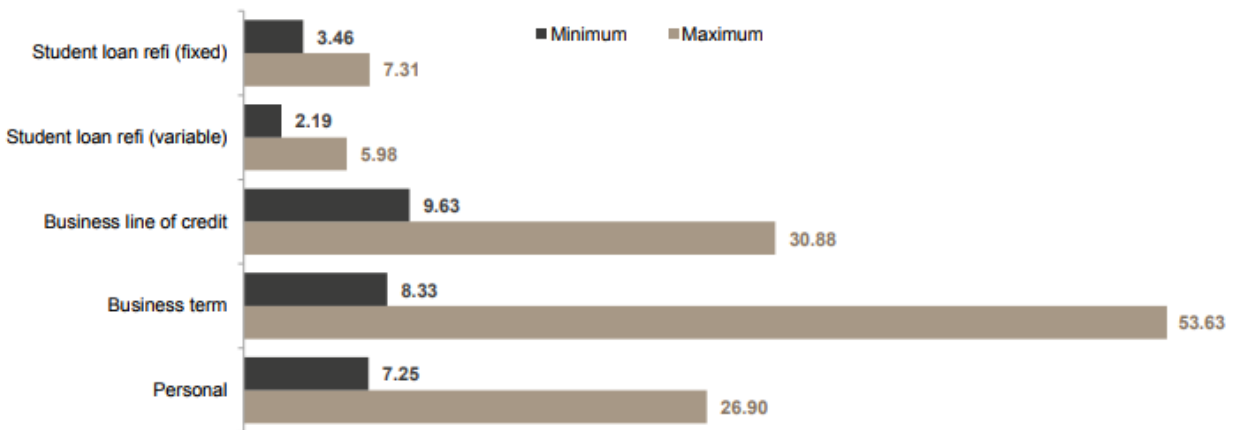
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[2] S&P Global Market Intelligence, "Q4'16 Loan Originations Fall YOY For Digital Lenders, Capping Off A Rocky Year" https://marketintelligence.spglobal.com/our-thinking/ideas/q4-16-loan-originations-fall-yoy-for-digital-lenders-capping-off-a-rocky-year Origination volumes are based on company-provided data from LendingClub (all periods), OnDeck (all periods), SoFi (Q4'11, Q3'12-Q4'16), Prosper (all periods), Kabbage (Q1'14 and Q2'16), Upstart (all periods), Credibly (Q3'16), Earnest (Q3'16), Square Capital (Q2'15-Q4'16), CommonBond (Q2'15), and LendingPoint (Q4'15). This includes information from company contacts, press releases, SEC filings and websites. Upstart originations have been updated for all historical periods as of March 27, 2017, to reflect company-provided numbers. BestEgg originations were updated for Q3'16 based on a Kroll Bond Rating Agency pre-sale report dated March 23, 2017.

Although most lenders offer term loans, SME-focused lenders also offer line of credit products. Individuals can borrow up to $100,000 on some platforms, while SME loans can go up to $500,000. Student loan refinancing depends on outstanding balance, with loan amounts generally capped at $500,000.

Maximum loan amount by category ($)

Category	Amount
Student	500,000
Business line of credit	300,000
Business term	500,000
Personal	100,000

Data compiled Nov. 30, 2016, from company websites and public filings.
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Digital lenders charge interest rates that are comparable to those charged by banks or credit card companies, with variance based on a borrower's credit grade, the loan size, and the term of the loan. We have observed an average APR range of 7.3% to 26.9% for personal-focused lenders, 8.3% to 53.6% for business term loans, and 3.5% to 7.3% for fixed-rate student loan refinancing.[3]

Average minimum and maximum interest rates (APR %)

Category	Minimum	Maximum
Student loan refi (fixed)	3.46	7.31
Student loan refi (variable)	2.19	5.98
Business line of credit	9.63	30.88
Business term	8.33	53.63
Personal	7.25	26.90

Data compiled Nov. 30, 2016, from company websites and public filings.
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Digital lending platforms provide instant credit decisions, allowing for visibility into the rate borrowers will pay, the amount they can borrow, and the total amount they will pay back. Because these platforms rely on automated credit models and electronic documents, loans can be funded in as little as a day. By contrast, many traditional lenders can take days or weeks to fund loans.

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[3] S&P Global Market Intelligence, "2016 U.S. Digital Lending Landscape"
https://www.snl.com/web/client?auth=inherit#news/document?KeyProductLinkType=2&id=38632470

Marketplace lenders and direct lenders are two categories of digital lenders. Loans are funded by groups of individual or institutional investors in the case of marketplace lenders and by internal capital for direct lenders.

Marketplace lenders generate revenue from origination and servicing fees and do not retain credit risk in most cases. The risk and corresponding return are instead passed on to investors. Banks and other institutions generally purchase whole loans, while individuals typically invest in fractional shares of loans.

Direct lenders rely on balance sheet capital or lines of credit held at commercial banks. These lenders hold loans until maturity and generate revenue through interest payments from borrowers. At their core, these businesses make money the way any lender does, by collecting a spread between interest income and their cost of borrowing.

As the market has matured, many digital lenders have also entered the securitization market. This market, which neared $8 billion in 2016[4], has become an important source of capital for digital lenders, which often find that demand for loans outstrips available capital.

Benefits

Digital lending started as a way for consumers to consolidate high interest credit card debt into lower rate term loans. This remains a focus of personal lenders today, with the service now also extended to recent graduates with student debt. Automation and a lack of physical offices allow digital lenders to offer competitive rates, potentially saving borrowers thousands of dollars in interest.
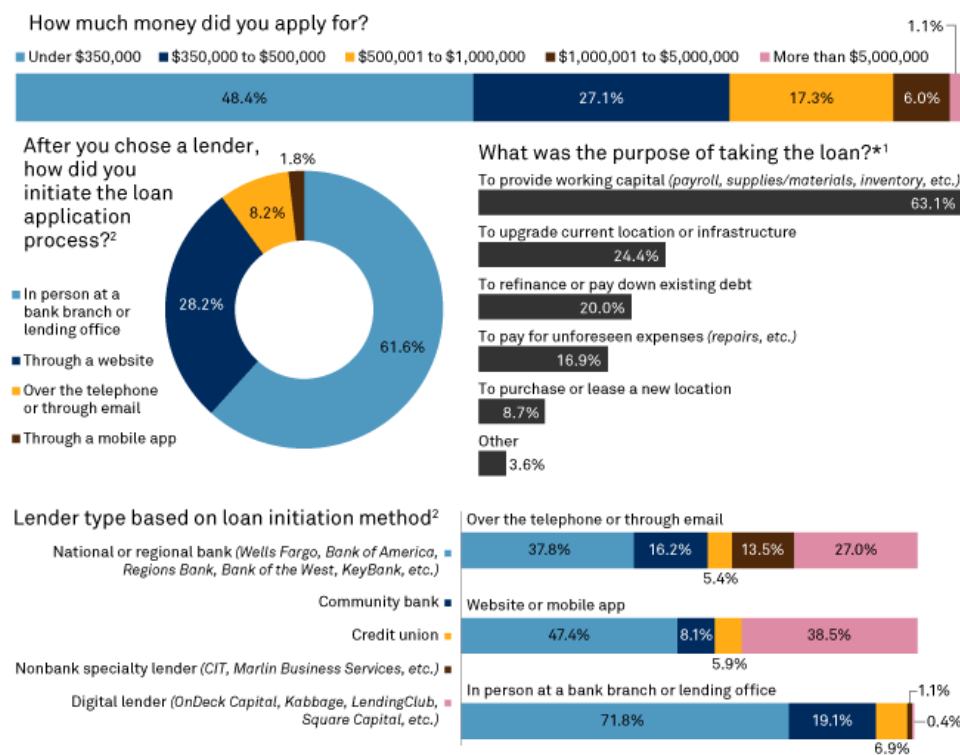
Speedy funding is especially important for small businesses needing access to working capital. A survey fielded by S&P Global Market Intelligence earlier this year shows that 63% of small businesses that took a loan in 2016 did so to obtain funding for payroll, supplies, materials, or inventory.[5] Working capital is the lifeblood of any small business.

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[4] PeerIQ, "Marketplace Lending Securitization Tracker: 4Q2016"
http://www.peeriq.com/assets/PeerIQ%20MPL%20Securitization%20Tracker%20(4Q2016).pdf
[5] S&P Global Market Intelligence, "2017 small business survey shows importance of branches, relationship lending"
https://www.snl.com/web/client?auth=inherit#news/article?id=40682569&KeyProductLinkType=2

The borrowing process

How much money did you apply for?

- ■ Under $350,000
- ■ $350,000 to $500,000
- ■ $500,001 to $1,000,000
- ■ $1,000,001 to $5,000,000
- ■ More than $5,000,000

48.4%	27.1%	17.3%	6.0%	1.1%

After you chose a lender, how did you initiate the loan application process?[2]

- ■ In person at a bank branch or lending office
- ■ Through a website
- ■ Over the telephone or through email
- ■ Through a mobile app

61.6%
28.2%
8.2%
1.8%

What was the purpose of taking the loan?*[1]

To provide working capital (payroll, supplies/materials, inventory, etc.)
63.1%

To upgrade current location or infrastructure
24.4%

To refinance or pay down existing debt
20.0%

To pay for unforeseen expenses (repairs, etc.)
16.9%

To purchase or lease a new location
8.7%

Other
3.6%

Lender type based on loan initiation method[2]

- National or regional bank (Wells Fargo, Bank of America, Regions Bank, Bank of the West, KeyBank, etc.) ■
- Community bank ■
- Credit union ■
- Nonbank specialty lender (CIT, Marlin Business Services, etc.) ■
- Digital lender (OnDeck Capital, Kabbage, LendingClub, Square Capital, etc.) ■

Over the telephone or through email

37.8%	16.2%	13.5%	27.0%

5.4%

Website or mobile app

47.4%	8.1%	38.5%

5.9%

In person at a bank branch or lending office

71.8%	19.1%	6.9%	0.4%	1.1%

Data compiled May 3, 2017.
N= 450. N signifies the number of survey takers sampled.
* N=45 for question "What were the loan proceeds used for?" and N=405 for question "What was the purpose of taking the loan?"
[1] Responses do not sum to 100% because users could select more than one response.
[2] Excludes "other" responses (less than 1%).
Source: Survey fielded between Jan. 26, 2017, and Feb. 4, 2017, that S&P Global Market Intelligence commissioned.
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Credit: Cat Weeks

Alternative data sets and unique credit scoring models also allow digital lenders to provide credit to the underbanked. These individuals or businesses may lack the robust credit history needed for an accurate credit score from credit bureaus. While many digital lenders use at least the basic details provided in a standard credit report, these inputs are augmented with potentially hundreds of other data points and fed into proprietary scoring systems. In the case of a small business, for example, lenders can look at accounting statements, user reviews on social media sites, and even shipping volumes in and out of facilities.

Opportunities

Banks started to take notice of digital lenders as the latter experienced years of rapid loan origination growth. While many financial institutions initially considered these companies a threat, partnerships have increased between startups and incumbents. Many digital lenders now offer access to their technology to help banks create branded lending platforms.

Through these partnerships, banks benefit from access to customers that had previously been out of reach due to geography or acquisition cost. Digital lenders capture new revenue streams and further promote awareness of their offering. And the overall economy benefits from increased financial inclusion and access to credit.

Challenges
Questions around the underlying credit quality of loans originated by digital lenders began to emerge early last year. Some previous vintages of loans started to underperform expectations, leading many lenders to reassess their underwriting models. Further pressure has come from legal challenges, state regulators, and industry groups.

The largest looming challenge for digital lenders today is regulation, since they have no clear regulatory framework. Many lenders rely on regulated banks to issue loans on their behalf. Other lenders have sought state-level licensing for their businesses, but this can be an expensive and time-consuming process and make it difficult for lenders to offer consistent rates to their borrowers. Some lenders have attempted to find regulation through industrial loan company (ILC) charters, which has already elicited pushback from incumbents.

Fintech companies themselves have increasingly called for regulation. Many digital lenders crave a clear framework in which they can operate. This will involve addressing distinctive characteristics of their business models such as a lack of physical locations, no access to insured deposits, and differing sources of capital. This is one area where the proposal of a limited bank charter from the OCC could be helpful, although it remains to be seen what implementation would look like.

The digital lending industry is still young. Lenders are constantly improving their credit models and the algorithms that drive them. This has led to periods of higher than expected losses for certain lenders. Many lenders have found it difficult to reach a steady level of profitability due to these issues, and investors are less enthusiastic about the space than they were a few years back.

Maintaining a high and consistent level of credit quality is imperative for the success of the industry. This is also important as individuals and institutions increasingly invest in these loans, both directly and through securitizations.

Losses can also come from borrowers who stack loans or do not use loan proceeds for their stated purpose. Loan stacking, which is usually considered fraudulent, happens when borrowers take loans from multiple lenders in a short period of time. Automated processing, a delay in credit reporting, and digital lenders' online-only presence have made this easier.

Some other borrowers take loans for the purpose of repaying other debt and but actually use the funds for something else or max out balances soon after paying down debt. This is hard to track as lending platforms do not require borrowers to use a loan for its stated purpose.
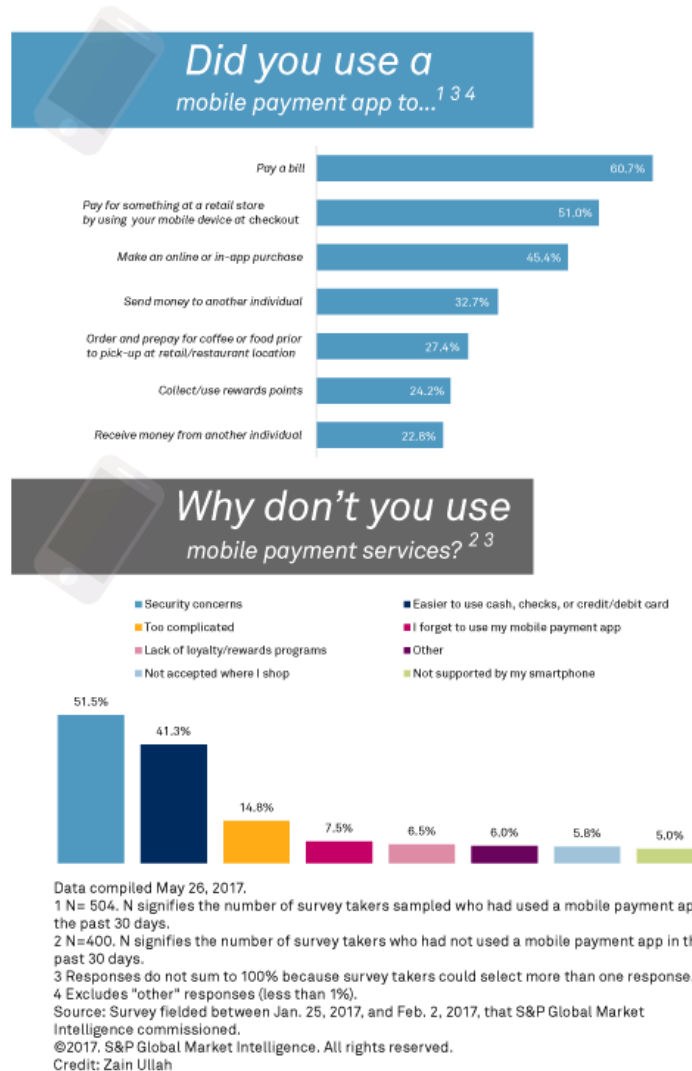
The industry has taken steps to enhance transparency when it comes to borrower habits and to prevent issues like loan stacking. Even so, the potential for fraud will remain an issue for lenders in the space.

Mobile Payments

Overview
Mobile payments encompass a wide range of services. The most popular mobile payment activities include paying bills, making purchases in a retail store or online, and making peer-to-peer payments.[6] Users access payment platforms through mobile devices such as phones, tablets, and smartwatches.

Millennials, or people under 35 years of age, tend to be the most active mobile payment users, according to our survey results. More than 60% of users we surveyed have an annual income of less than $75,000 per year, with more than 20% making less than $35,000. [7]

Did you use a mobile payment app to...[1][3][4]

Activity	Percentage
Pay a bill	60.7%
Pay for something at a retail store by using your mobile device at checkout	51.0%
Make an online or in-app purchase	45.4%
Send money to another individual	32.7%
Order and prepay for coffee or food prior to pick-up at retail/restaurant location	27.4%
Collect/use rewards points	24.2%
Receive money from another individual	22.8%

Why don't you use mobile payment services?[2][3]

- Security concerns
- Too complicated
- Lack of loyalty/rewards programs
- Not accepted where I shop
- Easier to use cash, checks, or credit/debit card
- I forget to use my mobile payment app
- Other
- Not supported by my smartphone

51.5% | 41.3% | 14.8% | 7.5% | 6.5% | 6.0% | 5.8% | 5.0%

Data compiled May 26, 2017.
1 N= 504. N signifies the number of survey takers sampled who had used a mobile payment app in the past 30 days.
2 N=400. N signifies the number of survey takers who had not used a mobile payment app in the past 30 days.
3 Responses do not sum to 100% because survey takers could select more than one response.
4 Excludes "other" responses (less than 1%).
Source: Survey fielded between Jan. 25, 2017, and Feb. 2, 2017, that S&P Global Market Intelligence commissioned.
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Credit: Zain Ullah

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[6] S&P Global Market Intelligence, "2017 US mobile payment survey shows PayPal dominates diverse channels" https://www.snl.com/web/client?auth=inherit#news/article?id=40854598&KeyProductLinkType=2
[7] Ibid.

Many of these services started as standalone applications but have become increasingly integrated into apps from financial institutions, retailers, and hardware providers. Access to mobile bill pay, for example, comes primarily through a bank or credit card app and has become a feature that consumers expect from these apps.

Retail payment options have grown over the past five years as mobile wallets became a standard feature in new smartphones. People use these wallets, which digitize bank or credit card information, by scanning or tapping their mobile devices at payment terminals. Alongside these built-in wallets, retailers have started to offer their own branded apps for purchases. These apps store user payment information and include additional features such as transaction history and rewards balances.

Standalone payment apps run by fintech companies represent the most popular peer-to-peer payment platforms. These services allow users to send small amounts of money to friends or family for free. Such transfers are usually instantaneous, allowing users to see their balances in real time. Apps increasingly allow users to immediately transfer funds to a bank account or hold a balance for future use.

Benefits
Millions of consumers use mobile payment services because they reduce transaction costs and frictions while offering an enhanced user experience. Paying a bill with the tap of a button will always be easier than filling out and mailing a check. Splitting a dinner bill with friends can be completed just as easily.

Most functionality in peer-to-peer payment apps is free. For international transfers, specialized peer-to-peer apps charge low fees for the conversion and transfer of funds across borders and currencies. This benefits underbanked and immigrant communities.

Mobile wallets in particular help to create more secure transactions. Transactions involve the transmission of just token data through a payment terminal, with the actual approval happening through internal servers. Each transaction is unique. This prevents fraudsters from skimming card data or stealing PIN information. Additional features like biometric and two-factor authentication have further enhanced user security.

Challenges
Much like digital lenders, many mobile payment providers lack clear regulation at a federal level. Startups instead must register with every state in which they plan to operate. This process can be onerous and take years to complete, which for a young company can be too long.

Security is a significant issue for mobile payment providers. More than half of our survey respondents who did not use mobile payments cited security concerns as the primary reason. Mobile payment platforms offer access to bank accounts, debit cards, or other forms of payment.

Peer-to-peer payments are subject to fraud or identity theft that can lead to irrevocable spending in client accounts. This problem becomes more pronounced as platforms speed up settlement times and allow users to withdraw funds instantly.

This places a heavy burden on mobile payment providers to ensure secure storage of user data. These issues are further compounded by applications that access user data held at other financial institutions. There are also questions about data ownership. Many have argued that this data is owned by the individuals who created it, and not the institutions that store it. European legislators have addressed these issues through the recent Revised Payment Services Directive (PSD2).[8]

Despite sleek new interfaces and ways to complete payment transactions, these platforms rely on existing infrastructure like card networks and the ACH system. Merchants still have to pay processing fees, as they would with any traditional card payment, for retail purchases. Mobile payment platforms absorb costs in the case of peer-to-peer services but must eventually monetize these offerings.

These applications also lack a degree of transparency when it comes to the storage of user funds. If a user has a balance in a peer-to-peer app, that money is not in an insured deposit account. Instead, the payment company invests it in low-risk assets such as U.S. Treasurys or agency debt. Payment platforms retain the returns from these investments and do not pass the gains on to customers in the form of interest.[9]

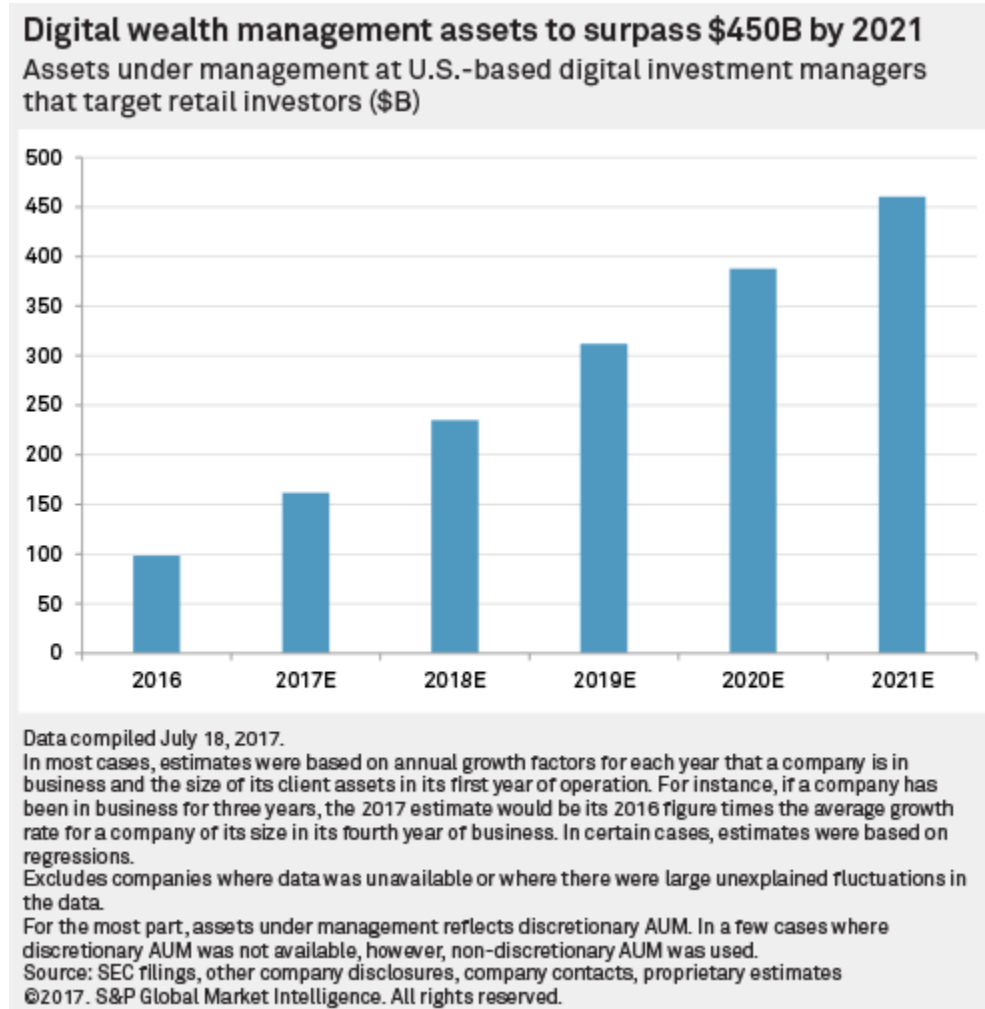[8] https://ec.europa.eu/info/law/payment-services-psd-2-directive-eu-2015-2366_en
[9] *Fast Company*, "The Sneaky Psychology Of Apple Pay–And How It Could Cost You"
https://www.fastcodesign.com/90128304/the-subtle-psychology-of-apple-pay-and-how-it-could-cost-you

Digital Investment Management

Overview

Digital advisors, sometimes referred to as robo-advisors, are automated investment management platforms primarily focused on retail investors. Users can create diversified portfolios of exchange-traded funds by answering simple questionnaires about investment goals and risk tolerance. Features like automatic rebalancing and tax loss harvesting allow a hands-off approach to investing with minimal input needed from users. Fees for these platforms are usually much lower than what an investor would pay a traditional financial advisor.
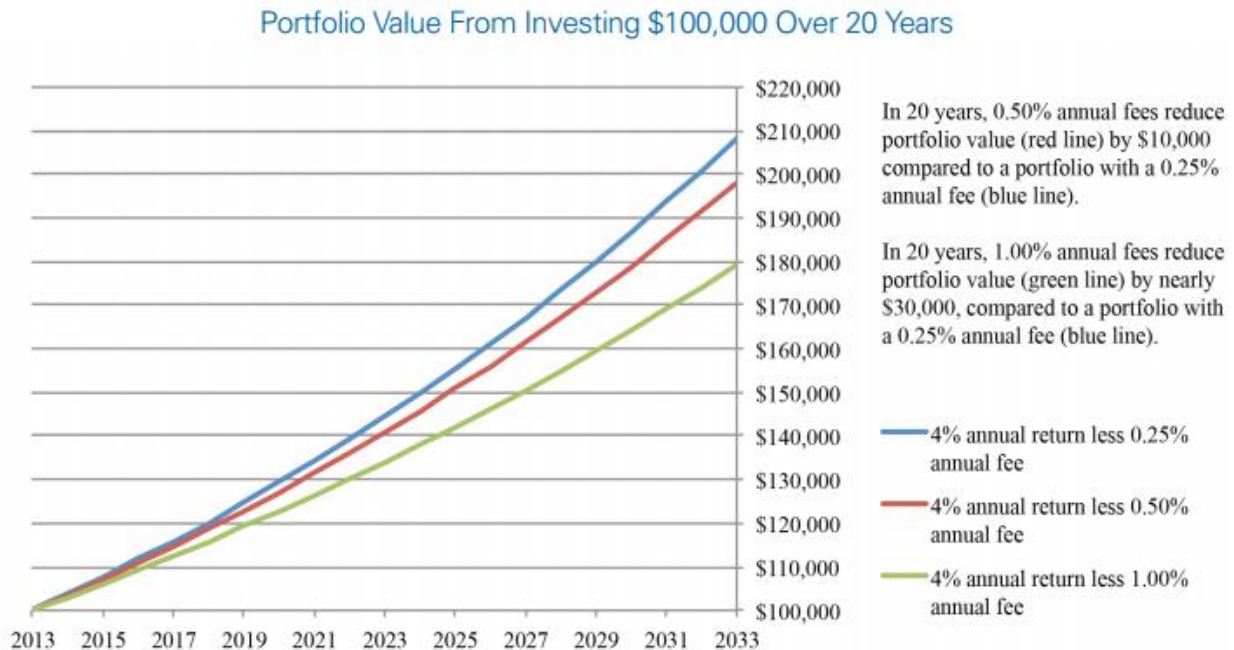
We estimate that these advisors will manage more than $450 billion by 2021, a fourfold increase from where the industry stood in 2016.[10] This growth is due largely to the entry of incumbent asset managers into the space, with more companies planning to launch digital advisory services in the coming years.

Digital wealth management assets to surpass $450B by 2021
Assets under management at U.S.-based digital investment managers that target retail investors ($B)

Data compiled July 18, 2017.
In most cases, estimates were based on annual growth factors for each year that a company is in business and the size of its client assets in its first year of operation. For instance, if a company has been in business for three years, the 2017 estimate would be its 2016 figure times the average growth rate for a company of its size in its fourth year of business. In certain cases, estimates were based on regressions.
Excludes companies where data was unavailable or where there were large unexplained fluctuations in the data.
For the most part, assets under management reflects discretionary AUM. In a few cases where discretionary AUM was not available, however, non-discretionary AUM was used.
Source: SEC filings, other company disclosures, company contacts, proprietary estimates
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[10] S&P Global Market Intelligence, "U.S. Digital Adviser Forecast: AUM To Surpass $450B By 2021"
https://www.spglobal.com/our-insights/US-Digital-Adviser-Forecast-AUM-To-Surpass-450B-By-2021.html

Benefits

According to the SEC, a 1% annual fee can reduce the value of a $100,000 portfolio by $30,000 over a 20-year period when compared to a fee of 0.25%.[11] Digital advisors charged annual fees ranging from 0.01% to 0.89% as of mid-2016.[12] Many investors do not understand the compounding effects of high fees over time. Overall fees can often end up higher after accounting for the underlying expenses of investment vehicles. The firms managing these vehicles often offer a commission to advisors who recommend them to clients.

Portfolio Value From Investing $100,000 Over 20 Years

In 20 years, 0.50% annual fees reduce portfolio value (red line) by $10,000 compared to a portfolio with a 0.25% annual fee (blue line).

In 20 years, 1.00% annual fees reduce portfolio value (green line) by nearly $30,000, compared to a portfolio with a 0.25% annual fee (blue line).

— 4% annual return less 0.25% annual fee

— 4% annual return less 0.50% annual fee

— 4% annual return less 1.00% annual fee

Digital advisors also serve people who may not meet minimum investment thresholds at a traditional advisor. Minimums tend to be low or even non-existent on some platforms, allowing investors to receive portfolio advice they previously could not access.

Challenges

The use of model portfolios and a relatively hands-off approach provide benefits but also present potential issues. As digital advisors continue to grow their assets under management, incorrect assumptions in a model portfolio or overconcentration in an investment that goes bad could lead to substantial investor losses. Many incumbents have pointed out that these newer advisors have come into favor during a bull market and have yet to weather a substantial economic event like a recession or crisis.

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[11] Securities and Exchange Commission, "Investor Bulletin: How Fees and Expenses Affect Your Investment Portfolio" https://www.sec.gov/investor/alerts/ib_fees_expenses.pdf

[12] S&P Global Market Intelligence, "An introduction to fintech: Key sectors and trends" https://marketintelligence.spglobal.com/documents/our-thinking/research/an-introduction-to-fintech-key-sectors-and-trends.pdf

This could create problems when outside shocks impact markets, something an algorithm might not recognize. Questions have been raised about a digital advisor's ability to act in a client's best interest during times of market turmoil, or the extent to which a digital advisor is even required to adhere to a fiduciary standard.

The role of the modern financial advisor is as much about education as it is about portfolio management. Investment managers are often trained to ascertain a client's willingness and ability to take certain risks based not only on their statements but also contextual clues.

Digital advisors, while often providing multiple portfolio options, still rely on investors' answers to questions about investment goals and risk tolerance. Computers lack the opportunity to gain other clues from investors that are available through in-person interactions or a long-standing relationship. This could lead to issues with investment suitability. Some digital advisors have made human representatives available by phone to help overcome some of these issues.

Insurance Technology

Overview
Insurance technology, more commonly known as insurtech, is an emerging area of fintech targeting the property and casualty, life, and health insurance sectors. The goals of startups in these areas include reducing inefficiencies in existing systems, offering a more customer-friendly experience, and collecting data and analytics to improve services and profitability.

Some insurtech companies offer web and mobile platforms for users to purchase coverage, track their policies, and file claims. Much like with digital lenders, algorithms underlying these insurtech platforms make quick coverage and pricing decisions based on a variety of data points supplied by the applicant and readily accessible through other channels. These companies benefit from decreased overhead related to human-driven sales, underwriting, and claims adjustment processes.

Various insurers have adopted tools like telematics technology and the internet of things. This allows them to better track the underlying behaviors such as driving habits and physical activity that help quantify risk related to insured individuals.

Benefits
Insurtech allows for faster, more customized, and potentially less expensive access to insurance. Many platforms offer the ability to obtain insurance in only minutes with simple questionnaires and automated assistants to guide applicants. Some insurers offer on-demand policies that can be turned on or off via a mobile app to allow for savings when insurance is not needed.

Such innovations make it easier and more appealing to switch providers for necessary coverage such as auto and homeowners insurance. They may also encourage more consumers to apply for and follow through on purchasing more discretionary coverage such as term life insurance.

Telematics and other connected devices offer the ability for users to receive customized rates, allowing for potential savings on premiums. Insurers benefit from increased understanding of their risk pools and faster pricing adjustments.

Challenges
Insurance is a heavily regulated industry, and startup carriers in the space must find ways to comply with these regulations, which vary by state.

Insurtech startups are operating in a crowded market. Incumbent insurers have been adopting new technology, to varying degrees, for many years, and direct-to-consumer platforms are not new to the industry. As in other areas of fintech, partnerships have emerged that pair insurtech companies' technological innovations with established carriers' capital resources and market knowledge. So far, many insurtech startups have acted primarily as platforms for customer

acquisition and rely on established insurers to underwrite policies.[13] For insurtech companies that write their own business, profitability has been a challenge.[14] But they have been writing business for a relatively short time, and the property and casualty insurance industry as a whole produced net underwriting losses in the latest quarter.

Underwriting arrangements of select startups focused on homeowners, renters and condominium insurance markets

Company	Underwriting partner(s)
Bungalow	American Family Insurance Group, Chubb Ltd., Travelers Cos. Inc., WT Holdings Inc.
Hippo	Topa Insurance Co.
Jetty	State National Cos. Inc.[1]
Lemonade	Lemonade Insurance Co.
Quilt	Security First Insurance Co., WT Holdings Inc.
Sure	AmTrust Financial Services Inc., Chubb Ltd., Nationwide Mutual Group, QBE Insurance Group Ltd.

Data compiled May 26, 2017.
Based on a best-efforts collection of information from company and state regulatory websites, company contacts, press releases and product filings.
Limited to primary underwriters for which information could be obtained. Top-tier entities shown.
[1] State National acts as a fronting company for Jetty. Munich Re assumes the actual risk.
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As insurers increasingly rely on data from connected devices, data privacy issues can emerge. Telematics and connected devices like fitness trackers are already allowing insurers to track driving habits and user health. This data is important to users, and it should be clearly defined how it will be used. Insurtech companies may also encounter challenges from regulators and consumer groups to the use of certain alternative data points in underwriting and pricing decisions.

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[13] S&P Global Market Intelligence, "Lemonade not the only tech startup eyeing homeowners insurance market" https://www.snl.com/web/client?auth=inherit#news/article?id=40780313&KeyProductLinkType=2
[14] S&P Global Market Intelligence, "Profitability elusive for 3 insurtech startups" https://www.snl.com/web/client?auth=inherit#news/article?id=41757792&KeyProductLinkType=2
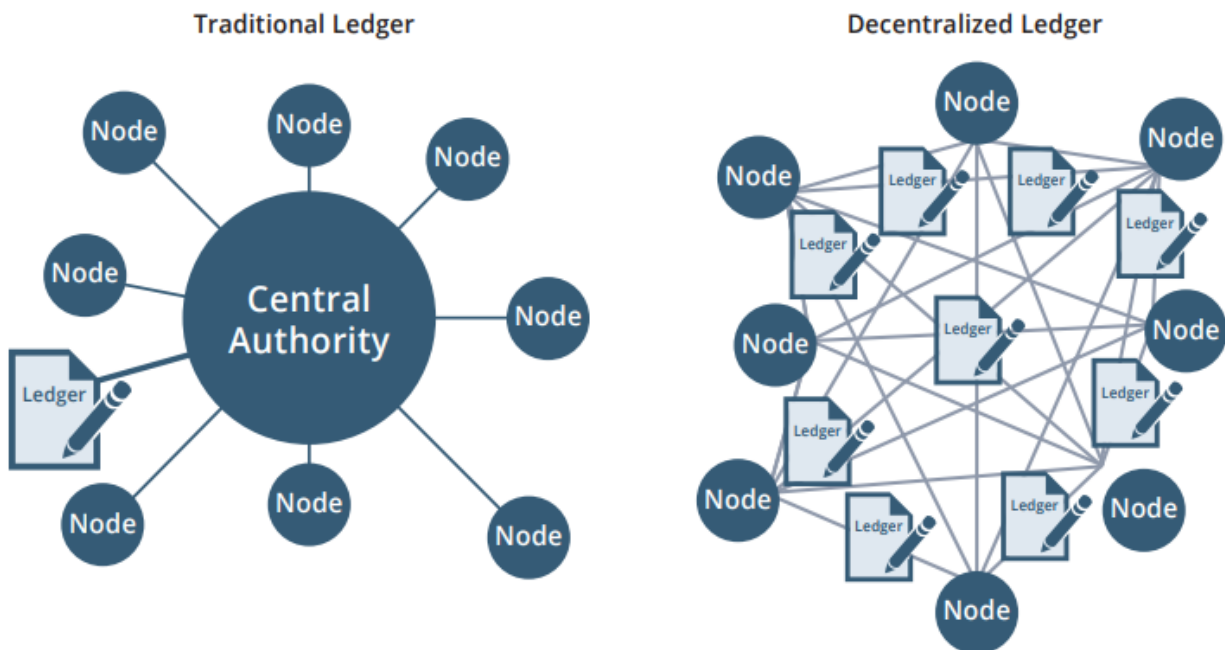
Distributed Ledger Technology

Overview

Distributed ledger technology, including blockchain technology, can best be described as a decentralized network of participants responsible for approving and recording transactions. In most implementations, network participants maintain nodes, with each holding a copy of a shared ledger. These nodes work together to verify and record transactions. Elements of cryptography such as public/private key pairs and digital signatures underpin most DLT solutions.

These networks allow participants to transact directly with each other, removing the need to pass transactions through a trusted third party. Once recorded, transactions are immutable and permanently stored in the ledger.

Removing the central counterparty with decentralized ledger technology

As the technology evolves, it will enable new features such as smart contracts. These software applications are built into distributed ledgers and can automate processes based on certain conditions being met, such as the transfer of money or the title to other items of value.

Benefits

If implemented as planned, DLT will revolutionize many parts of our financial system. Efficiencies will emerge in payments and international remittances, reducing costs and settlement times. Enhanced transparency will allow users to track payments as they pass from sender to receiver. Securities settlement and issuance will see significant reductions in cost and

processing time while audit trails are created automatically. Compliance with Know Your Customer (KYC) and Anti-Money Laundering (AML) regulations will be easier for financial institutions, and individuals will be able to control their financial data.

Many of these benefits have yet to be realized as we have just started to see the launch of enterprise-level DLT solutions. What is notable compared to other areas of fintech is the mix of startups and incumbents exploring the technology. Many businesses across a range of industries have joined together to form consortia focused on DLT implementations

As new advances such as artificial intelligence and the internet of things develop, many in the industry believe DLT will play an active role in underpinning these technologies. DLT will become not only a tool to increase access and decrease costs in the financial system but to drive innovation as well.

Challenges
As with any emerging industry, much of this technology is still untested and very few live applications are running today. It is still unclear how participants will work together to create these networks. Compounding these problems are competing implementations of the technology that could end up lacking the compatibility necessary to realize true benefits.

The idea of a shared ledger has also raised concerns around data security. Because nodes need to work in tandem to approve transactions, private data could become exposed. As processing power evolves, current cryptographic standards could become weak.

DLT represents a dramatic shift from our current financial world. Transactions can be completed within minutes or seconds. The question remains whether that should be possible. Because ledgers are generally immutable and transactions instant, there is in most cases no way to reverse an incorrect input. Reversing a transaction involves creating an offsetting entry and must be agreed upon by both parties.

Conclusion
Fintech offers tremendous benefits including increased access to financial services, lower costs, and reduced frictions. Financial institutions have moved from seeing fintechs as a threat and have learned how to harness their technological advances. Consumers are already seeing benefits from technologies like digital lending, mobile payments, digital investment management, and insurance technology. We are on the cusp of seeing all of these sectors potentially impacted by DLT.

Regulation has been unevenly applied to the sector, and in many ways the introduction of a clear regulatory framework could help further boost innovation. This may require firms to define their stake in the financial system and could lead to technology-only platforms exiting certain lines of business like lending. Overall, this will lead to a more fair and defined playing field for startups and incumbents alike.

Issues like cybersecurity, data ownership, and data privacy are important not just to fintechs but to the financial industry as a whole. Clear standards and regulation can provide clarity in these areas as well.

Once again, thank you for the opportunity to testify. I hope the Committee finds our input useful.