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## Overview of the Fintech Space

This note introduces the fintech industry, defined by the Financial Stability Board as “technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.”<sup>1</sup> Growing excitement and interest attend fintech’s ability to offer financial services that bypass traditional intermediaries, its rapid expansion into areas ranging from credit and payments to investment management services and insurance, which portends substantial disruption, and the considerable value already delivered to investors (see Chen et al., 2019).

The amount and type of investment attracted are useful metrics for gauging fintech’s growth to date. In June 2017, for the first time the combined market capitalization of the top ten publicly traded U.S. fintech companies surpassed \$100 billion. As of November 2020, 31 privately held fintech companies had equity valuations exceeding \$1 billion. Combined, they represent nearly \$200 billion worth of value for financial service business models that did not exist ten years ago. Other measures show similar growth of fintechs: PayPal’s market capitalization has surged past the credit card giants Mastercard and American Express, while Robinhood, a commission free stock trading application developed in 2013, has surpassed E\*Trade in number of accounts opened.

The success of fintechs is also evident when the performance of public fintech companies is compared to that of other key market participants.<sup>2</sup> **Figure 1** plots a market-cap weighted index that tracks the progress of a portfolio of 10 leading public fintech companies, benchmarked against both the financial and technology dimensions of the market, including portfolios of both large financial services incumbents like J.P. Morgan and Visa and large technologies companies like Alphabet, Amazon, and Apple as well as the S&P 500 as a proxy for market returns. Fintechs significantly outperformed all three benchmarks, financial services incumbents by 151, the S&P 500 by 170, and the big tech companies by approximately 100 percentage points.

Notwithstanding these initial successes, fintech is in its infancy, and many questions about its future evolution and ultimate impact on financial markets and traditional institutions remain unanswered.

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Professor Marco Di Maggio prepared this note as the basis for class discussion.

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**Figure 1** Performance of Public Fintech Companies



Source: Casewriter.

## Fintech Ecosystem

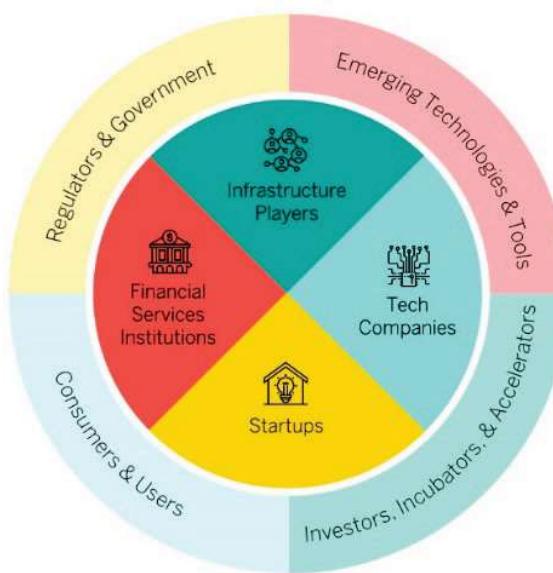
The fintech ecosystem consists essentially of four market participants (**Figure 2**). *Start-ups*, mainly business-to-consumer (B2C) companies providing services and products to different segments of the market, which often wrestle with the challenges of scaling up and reaching profitability. Examples include Stripe (a payments processing company) and Lemonade (a property and casualty insurance firm). *Traditional institutions*, which provide financial services, from banks and asset managers to insurance companies and real estate brokers; finding themselves challenged, they will be forced to innovate either internally (see the recent launch of Zelle, the person-to-person payment app developed in retaliation against fintech startups) or by the acquisition of more agile competitors. *Infrastructure players*, that provide the technological underpinnings of the industry (e.g. Plaid, a data transfer network provider, or Shopify, an e-commerce platform utilized by online retailers) tend to be business-to-business (B2B) firms that bridge the gap between incumbents and disruptors with Application Program Interface (API) technology or payment platforms. Finally, established *tech companies* have begun to look at financial services as a natural expansion. Their large userbase and the trust built among millennials afford opportunities to offer additional services (witness Apple's credit card, Google's payment processor, and Facebook's attempt to move into the cryptocurrency space).

These players do not interact in a vacuum. Regulators play an active role in providing regulatory sandboxes where startups can experiment with products, and existing regulations create opportunities by placing stricter constraints on incumbent institutions' operations than those of new entrants. Investors, incubators, and accelerators are fundamental to established institutions' ability to remain competitive, while at the same time fueling the growth of fintechs by providing the capital needed to develop products and find the right market fit.

The ecosystem is fluid, as the emergence of new technologies affects entry barriers and alters the competitive landscape. For instance, API technology, and the possibility for developers to access data on users spawned a wave of financial management companies that capitalize on that information (e.g. Credit Karma and Intuit Mint). For their part, startups and established tech companies share consumers and users, which shapes the distribution strategies of new entrants and potential data-sharing

agreements (e.g. Apple's choice of Goldman Sachs for its credit card). Fintech also relates to the broad set of topics revolving around platform competition (Zhu, 2020 HBS Nos. 620-108, 620-109) and digital transformation (Gupta, 2018; Iansiti and Lakhani, 2020).

**Figure 2** Fintech Ecosystem: Player Types



Source: Casewriter.

## *What Is Different from Traditional Financial Services?*

What is distinctive about fintech compared with other kinds of financial service innovations? First, big data substitutes for soft information, i.e. information that, not being quantitative, cannot be easily collected, stored, and transmitted. Consider fintech lenders vis-à-vis traditional banks. Access to large amounts of financial and non-financial data about borrowers has circumvented the costly building of customer relationships. Banks historically segmented borrowers based on a handful of observables (say, by using rate sheets whereby each FICO score bin, debt-to-income and loan-to-value ratio corresponds to an interest rate). Fintechs instead exploit alternative data on individuals' spending behavior, transactions, and education. They make physical distance significantly less important (Petersen and Rajan, 1994) and bolster financial inclusion, but with a potential for undetected bias (Bartlett, Morse, Stanton, and Wallace, 2019).<sup>a</sup>

Fintechs use data to go beyond the cross-selling of new products and services and perform entirely new functions. Plaid, for example, has built a data transfer network that enables both fintechs and traditional institutions to offer and connect digital finance products. And Zillow Offers has taken on a

<sup>a</sup> On the differences between fintech and traditional banking, see also Thakor (2020) and Boot et al. (2020).

completely different role, using data on listings and house transactions to become a real estate market maker.

Second, by disintermediating traditional players like banks, fintech firms match borrowers and savers more directly. This has meant broader access to the stock market and specific asset classes, such as real estate, which were once available only to institutional investors. The ability to allocate capital to its best use promotes efficiency, but at the cost of fewer safeguards for investors and reduced public accountability.

Third, there is a significant shift away from fee-based service models, perhaps the best example being brokerage firms forced by the cheaper alternative offered by fintechs to go over to no-fee services. This evolution has been accompanied by the rise of payment and infrastructure companies built around transactions, which have an incentive to acquire users by offering zero fees, as they can instead directly monetize their access to data by offering targeted advertising or selling data to other market participants. Robinhood, for example, generates revenue by selling order flow data to market makers, which can use retail investors' orders to fill those submitted by institutional investors.

Finally, the role of network effects in reaching proper scale, equally essential for fintechs and for platforms that do not offer financial services, is likely to differ between fintech and non-fintech firms. Customers are significantly more likely to search for the lowest interest rate when applying for a loan than for the lowest price when purchasing a book on Amazon, and aggregators like Credit Karma and LendingTree, which recommend financial services, provide the comparison free of charge. Financial services are also inherently more subject to *multi-homing* (Cusumano, Gawer and Yoffie, 2019), customers tending to have multiple accounts and credit cards with various institutions.

Having presented the key features characterizing fintech, it may be helpful to specify what is *not* fintech; notably, that it is not simply the transition to digitalization. Companies merely offering tried-and-true solutions to untapped consumer markets, with no role for technology, are not fintechs. Nor are simple extensions of a company's principal business activities (e.g. online lending and innovations aimed at improving the customer experience). Examples include comparison sites, which merely trawl the Internet for information, much like search engines, and online branches of established financial institutions. Tech companies developing Artificial Intelligence (AI) tools and blockchain companies not interested in disrupting financial services are also outside the scope of this note. To be a fintech company, a firm has to exploit an important technological innovation, be it a new credit underwriting model or a new investment platform, to offer financial services in direct competition with incumbent financial institutions.

## Drivers of Fintech Growth

What has driven fintech's accelerated growth in recent years? The aftermath of the 2008 financial crisis proved to be fertile ground for the rapid development of new entrants that threaten financial institutions' core business. That period was characterized by four fundamental trends.

First, the U.S. finance, insurance, and real estate sector (FIRE) now accounts for some 20% of GDP, compared to 10% in 1947.<sup>3</sup> Philippon (2015) suggests that unlike many other industries, the financial sector overall has not benefited from productivity growth. That improvements in information technology have not been passed through to the end users of financial services implies opportunities for new entrants.

Second, new technologies enable change. Mobile devices, in enabling new entrants to quickly access customers around the world, create opportunities for new business models. Big data, in conjunction

with machine learning and artificial intelligence techniques, improves business operations, and application program interfaces (APIs) have turned financial institutions into pipelines of customer data, widely available even to new companies seeking to gain traction.

Third, the financial crisis and the ensuing regulatory response introduced business limits (e.g. on trading, with the Volcker rule), regulatory obligations (e.g. capital and liquidity requirements), and compliance costs that put traditional financial institutions at a disadvantage relative to more agile, less rigorously regulated entrants. New entrants were able to exploit some forms of regulatory arbitrage by operating in market niches that were off-limits to incumbents (e.g., SoFi offering student loan refinancing).

Lastly, the financial crisis of 2008 dramatically affected the trust that younger generations place in banks. According to Bain and Company (2017), millennials are significantly more likely to entrust their savings to one of the big tech companies (Apple, Google, Amazon) than to any of the big four U.S. banks. This has afforded startups the opportunity to exploit banks' severely damaged reputations by tailoring a superior customer experience to this demographic.

## Main Opportunities

New technologies have enabled fintechs to offer an array of financial services that serve customers better than other financial institutions. From the consumer's viewpoint, this translates into lower fees and more streamlined, less cumbersome procedures. The value of this to consumers cannot be overstated – financial services account for 8% of GDP (Greenwood and Scharfstein, 2013). Lowering the cost of intermediation frees resources for other activities.

The potential benefits go beyond cost reduction, as new technologies have the potential to correct financial mistakes and broaden access to financial services. The common assumption that individuals seek to smooth consumption over time by borrowing and saving, diversifying investments, and insuring risks has been called into question by a substantial recent body of evidence that the complexity of financial services is pushing household behavior away from what these models predict (Campbell, 2006).<sup>b</sup> Most household investment portfolios lack sufficient diversity, with limited equity market assets (especially among low-income households), have a "home bias" that constrains global diversification, and insufficient savings to cover retirement or unexpected expenses. A key promise of fintech is that it can simplify navigation of the complexities and constraints that households face in many areas of their financial life.

Another dimension along which fintechs outperform traditional institutions is in expanding access to financial services. In 2020, two billion people without bank accounts possessed a smartphone. Cole (2014) is a good reference on financial services for the poor, although, interestingly, technology played only a minor role at the time of that study. Fintech is driving inclusion in emerging markets; many business model innovations, in fact, have come in poorer countries and only subsequently been exported to or adopted by advanced economies. The FDIC reports that at least 25% of U.S. households are unbanked or underbanked (FDIC, 2017); the members of these households either do not have a bank account, or if they do they routinely use financial services outside the traditional banking system, such as payday loans. Fintechs have the tools to offer these people an array of financial products that could well result in better, more affordable credit as well as facilitating payments and cross-country

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<sup>b</sup> The theoretical underpinnings for this behavior were laid down in the Permanent Income Hypothesis of Friedman (1957) and the Life-Cycle Income Hypothesis of Modigliani and Brumberg.

transfers.<sup>c</sup> This untapped segment of the market, overlooked by traditional institutions, represents a major opportunity for fintechs to improve credit availability and promote financial inclusion.

## *Second Generation Fintech Is Having a Broader, Quicker Impact on the Economy*

The fintech space has evolved and matured significantly over the past decade. Early on, new market entrants focused largely on the “B2C” space of the banking sector, in particular targeting payments, lending, and securities. Fintech entrants provided new, easier ways to perform standard financial tasks while improving the customer experience. Other entrants sought simply to supplant large financial institutions (e.g., Kabbage competing with banks in small business lending).

Fintech subsequently morphed from a set of scrappy startups into a major facet of established and legacy financial institutions. Incumbents, observing the changes in this space, responded by partnering with startups (e.g. Chase with OnDeck for small business loans) or creating innovation incubators, labs, and investment vehicles (e.g. Santander with Mouro Capital and Citi with Citi Ventures). Under the wing of some of the world’s most widely recognized institutions one now finds fintech nest eggs. J.P. Morgan invested \$25 million in fintech startups in 2019, Capital One is ushering young, digitally savvy customers through the doors of fintech-infused “banking cafés,” and Citi’s 2016 launch of the Citi Developer Hub invited third-party programmers to test and share feedback on APIs.

This second wave of innovation has changed the perception of fintech from a standalone industry to a strategy by which companies can continue to evolve and redefine the financial services industry. As Matt Harris (Bain Capital) has observed, “[M]ost technology companies will need to incorporate embedded financial services in order to win in their segments.” This reflects the transformation of financial technology from a primary business model to an ingredient, as financial functionality becomes a key component of most nascent firms. The trend suggests that fintech could join the Internet, the Cloud, and mobile as a fourth major platform technology. Companies began by building old products on each of these predecessor platforms, effectively pursuing an updated version of “radio on TV.” The Internet hosted the development of online versions of existing businesses, media, and retail. The real revolution only came with social media that provided a clearly novel functionality, like Facebook. With the Cloud, the breakthrough came with the founding of Amazon Web Services (AWS), which launched software as a service (SaaS). The advent of mobile companies saw a similar initial focus simply on making websites fit smaller screens, before they came to realize that the technology could be better exploited by integrating mobile apps with the phone and a separate set of functions.<sup>4</sup>

The benefits of embedding financial services in a technology company go beyond eliminating customer acquisition costs and enhancing cross-selling opportunities. Software that can both run a business and send and receive payments is an easier, significantly more natural venue than a complement of discrete financial institutions enlisted to deliver the same functionalities. An example is Shopify, which, though it began life as a shopping-cart software, now generates the bulk of its revenue from payments. Already familiar to its customers, Shopify could set up the business payment platform line of business quickly and easily, while competitors lacking access to its data take some time to acquire new customers.<sup>5</sup>

## *Proper Regulation of Fintech Presents a Daunting Challenge for Regulators and Firms Alike*

Among the issues attending the rise of fintech is that the space has not yet been exposed to major shocks testing its resilience. New entrants have proliferated and gained traction in an environment in

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<sup>c</sup> See Trumbull (2014) for the reasons behind the emergence of modern consumer lending in the United States.

which low interest rates incentivized investors to reach for yield by investing in loans securitized by fintechs. Whether these businesses prove to be sturdy in times of crisis remains to be seen.

As an example of this challenge, consider the recent shift among fintech lenders from a “peer-to-peer” model, whereby lenders choose which loans to fund, to a “marketplace” model whereby the platform sells loan portfolio products to lenders. With this shift, fintechs have come to resemble the traditional banks somewhat more closely, in that shorter-term liabilities are transformed into long-term assets (loans), exposing them to maturity mismatch risk exactly like that incurred by banks when they transform deposits into mortgage loans. In other words, fintech lenders are becoming more like the traditional banks they sought to replace, but without the regulatory safeguards that prevent bank runs, which could occur if there is distress in the industry.

As another example, consider the myriad issues around data privacy and algorithmic bias. With data becoming ever more central to the provision of financial services, privacy concerns around consumer data naturally arise. Who should have access to the data? Who owns it – the platform facilitating the transaction or the consumer making it? The use of alternative data raises potential problems of bias; algorithmic decision-making, although it can reduce face-to-face discrimination (Dobbie et al., 2020), is susceptible to inadvertent discrimination (Bartlett et al., 2019). Even if a model does not include race, say, as a predictor, the variables used to predict creditworthiness could well be correlated with race. For instance, using information on education, utility bills, or bank transactions could inadvertently limit credit access for some households. These concerns are exacerbated by the lack of transparency of most new underwriting models, it being largely unknown whether their alternative data is correlated with information that could result in discriminatory practices.

## *Summary*

Spawned by conditions in the aftermath of the 2008 financial crisis, long-term productivity deficits in the financial services sector, enabling technologies, and a shift in the loyalties of younger generations from traditional financial services providers to tech-oriented companies, the fintech industry is generating considerable excitement and interest around rapid and accelerating growth. New entrants exploiting alternative data and novel business models and funding schemes hold the promise of democratizing access to credit and what were formerly niche market segments. But such promise is tempered by issues of privacy with respect to data and the potential for inadvertent discrimination and bias consequent to lack of transparency in algorithmic models. Nor has the fintech industry—which has benefited from lax oversight relative to the regulatory framework imposed on the traditional financial services sector—been subjected to a significant external shock. The potential for major disruption, especially as might be occasioned by a proliferation or the predominance of cryptocurrencies, with attendant implications for consumer safeguards and even national and global monetary policy, suggests a role of growing importance for informed and enlightened regulatory oversight. As the fintech industry enters a second generation, some entrants are transitioning to forms that resemble incumbents even as the latter attempt to compete by transforming in whole or in part through innovation and alliances with new entrants. How this evolution will play out, and how the consequences of that evolution are managed, remains to be seen.

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## Endnotes

<sup>1</sup> Financial Stability Board, "Fintech," no date. Available at <https://www.fsb.org/work-of-the-fsb/financial-innovation-and-structural-change/fintech/>

<sup>2</sup> Jake Jolis, Dana Stalder, Ben Altshuler "Fintechs could see \$100 billion of liquidity in 2021," January 25, 2021. Available at <https://techcrunch.com/2021/01/25/fintechs-could-see-100-billion-of-liquidity-in-2021/>

<sup>3</sup> "America's Path To A FIRE Economy," June, 2019. Available at <https://global-macro-monitor.com/2019/06/05/americas-path-to-a-fire-economy/>

<sup>4</sup> Harris, M., "Fintech: The Fourth Platform – Part Two," Medium, November, 2019. Available at <https://medium.com/ideas-from-bain-capital-ventures/fintech-the-fourth-platform-part-two-78952feabd97>.

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