Abstract

Purpose – This paper reviews recent advances in the empirical literature of FinTech and household finance.

Design/methodology/approach – We survey the effects of FinTech on three different aspects of household finance: payments, lending and portfolio decisions. Specifically, we examine the impact of digital payments, mobile money, FinTech lending, marketplace lending, robo-advising and crowd-funding.

Findings – Studies suggest that FinTech has positively benefited households by increasing consumption and borrowing. This allows them to smoothen their consumption across time. Furthermore, there is an improvement in their portfolio diversification. Nonetheless, there is also evidence that certain households overconsume and borrow beyond their means.

Originality/value – Despite the importance of this topic, there has been a lack of empirical evidence until recently. In this paper, we take stock of the empirical evidence in the literature through the lens of household finance.

Keywords FinTech, Household finance, Payments, Lending, Portfolio Investments

Paper type Research paper

Everything we do in FinTech must always have a larger purpose – to improve the lives of individuals, to build a more dynamic economy, to promote a more inclusive society.

– Ravi Menon, Managing Director of Monetary Authority of Singapore

1. Introduction

FinTech – the use of technology to provide new and innovative financial services – has the potential to benefit households by giving them real-time control over their finances (Brainard, 2016). These innovative services impact the entire household’s balance sheet through new forms of payments, lending and investment management services (Bank of International Settlements, 2018). With the growth of FinTech in recent years, it is imperative to examine if households have indeed benefited from the new financial innovations. In this paper, we take stock of the empirical evidence in the literature through the lens of household finance.

There has been an increase in investments into FinTech companies worldwide. According to KPMG (2019), the total amount of deal value grew from US$46 bn in 2014 to US$120 bn in 2018. The number of deal counts increased from 1,556 to 2,590 during the same time period. While financial innovations are expected to disrupt current industry structures, the impact of FinTech to households is an empirical question. As documented by Philippon (2015) and Philippon (2016), the unit cost of financial intermediation has been kept constant (around 2%) for the past 130 years, suggesting that households did not benefit from advances in information technologies for the past century. It will be of interest to both policymakers and academics to see whether this time is different.

JEL Classification — D1, E4, G2,

We thank Kylie Lim and Enqi Teo for outstanding research assistance.
Despite the importance of this topic, there has been a lack of empirical evidence until recently. This is because many companies did not exist one and a half decades ago. Ant Financial, one of the highest valued FinTech company in 2019 (around US$150 bn), was founded in 2014. Its precedent, Alipay, was established as a third-party mobile and online payment platform in 2004. M-PESA, Africa’s largest mobile transfer service (with 26 mn users in Kenya), was only launched in 2007. Prosper.com, America’s first peer-to-peer (P2P) lending marketplace, which had funded more than US$7 bn worth of loans, was founded in 2005. Moreover, high-quality microeconomic data is required for causal inference, and identification is often challenging. The motivation of this paper is to summarize main findings from the empirical literature and shed light on how FinTech has influenced household finances across different countries to date. As highlighted by Badarinza et al. (2016), the use of international data allows us to exploit the best data and study how households behave differently in different contexts. In this paper, we focus on the effects of payments, lending and portfolio investments.

We first examine payments. The growth of FinTech is expected to accelerate the adoption of digital payments and mobile money. In examining the costs and benefits of phasing out paper currency, Rogoff (2014) highlighted that in the long run, there will be a fall in domestic demand for currency due to growth in digital payments. In the United States, it is estimated that the cash component of retail sales will fall by 2.54% per year (Wang and Wolman, 2016). In the future, the introduction of a central bank digital currency can potentially transform the entire monetary system (Bordo and Levin, 2017). In our review, we leverage on natural experiments to study the effects of digitalization of payments in different countries. These include the Indian banknote demonetization, debit card adoption through the conditional cash transfer programme Prospera in Mexico and introduction of the Quick Response (QR) code payment function in Singapore. We then proceed to examine mobile money in Kenya and Tanzania.

Subsequently, we proceed to lending. The impact of FinTech on household lending is particularly important. On one hand, credit expansion will increase household consumption, stimulating growth. This is particularly relevant during economic downturns such as the Great Recession (Agarwal et al., 2018b). Moreover, credit expansion can increase financial inclusion by catering to households that are underserved by traditional banks. On the other hand, excessive credit growth and leverage could result in financial crisis (Mian et al., 2017). It is hence instructive to study whether FinTech lending technologies have led to lax screening, resulting in an increase in lending to riskier borrowers. In our survey, we study the impact of FinTech lenders in the US, Germany and India. We then discuss about Marketplace Lending, also commonly known as peer-to-peer lending (P2P lending) in the US, Germany and China.

Finally, we survey the effect of FinTech on household’s portfolio decisions. Since Jensen’s (1968) seminal paper, studies have shown that active professional managers underperform relative to passive investment strategies net of fees. French (2008) documented that between 1980 and 2006, one would increase his/her average annual return by 67 basis points if he/she switched from active investing to a passive market portfolio. Nonetheless, Gennaioli et al. (2015) highlighted that financial advising can help investors achieve better results as they can improve diversification and reduce investors’ perception of risk. This is attributed to trust in professional managers. FinTech can potentially help household investors enjoy the benefits of financial advisors at a lower cost. Moreover, it opens up new investment opportunities that were not made available to them. In this paper, we focus on robo-advisors and crowd-funding in the US, India and the Netherlands.

From our review, we find that the growth of FinTech in the past decade has indeed transformed the lives of many. With the development of new payment technologies, households have increased their consumption of goods and services, and took advantage of the increase in convenience and security of digital payments vis-à-vis holding on to cash. Households who are unable to gain access to credit previously can now capitalize on their social network and borrow
from FinTech lenders or through marketplace lending platforms at a lower interest rate. Moreover, household investors can leverage on robo-advisors and crowd-funding platforms to diversify their investment strategies at a lower cost. In the words of Ravi Menon, Managing Director of the Monetary Authority of Singapore, FinTech has reached its wider purpose of “improving the lives of individuals and creating a more inclusive society.”

Nonetheless, this is not without any costs. Arguably, the new technologies could contribute to over-consumption, over-borrowing and over-investment. These can have detrimental effects on households, especially those with low financial literacy. With easy access to capital, debt and delinquencies in the wider economy could be further exacerbated. Therefore, if left unchecked, excessive growth in FinTech could hence lead to instability in the financial system and macroeconomy. Moreover, as FinTech is still in its nascent stage, it is also vulnerable to fraud and abuse. For instance, there has been an implosion of fraudulent P2P platforms which wipe out the savings of household investors in China. In February 2019, more than 380 P2P platforms were probed by the Chinese police on the suspicions of illegal fundraising. Subsequently, more than 10 bn yuan (US$1.5 bn) worth of assets were frozen. These platforms do not operate only from China but rather worldwide, creating more challenges for monitoring and enforcement. Consequently, the onus is on regulators in different countries to work hand in hand to reduce systemic risk, while allowing area for growth and development. This is particularly significant as most of these new developments are currently operating outside the purview of financial supervisors and regulators traditionally. There needs to be a concerted effort to work together globally.

The rest of the paper is organized as follows. In Section 2, we study recent developments in consumer payments. Section 3 discusses the impact of FinTech on lending, while Section 4 reviews households’ portfolio investments. Section 5 proposes suggestions for future research. Section 6 concludes.

2. Payments
Payments refer to the different ways to transfer money. Advances in payment technology could influence household’s choice of payment methods (Rysman and Schuh, 2016). Consequently, it is of interest to study how switching between payment types will affect the welfare of households. In this section, we focus on two important innovations in the payments system that affect households: digital payments and mobile money.

2.1 Digital payments
Digital payments are payment methods that allow households to pay digitally instead of via traditional means such as cash or cheque. These include the use of credit cards/debit cards, e-wallets, as well as mobile phones. We seek to shed light on the impact of digital payments on households that switch from cash on demand to digital payments. As households’ decisions to switch to digital payments are potentially endogenous to their consumption patterns, it is often challenging to determine the casual effect of the impact of digital payments on consumption. To overcome this issue, several papers have exploited natural experiments involving policy changes. We look at case studies in India, Mexico and Singapore.

We first examine Indian banknote demonetization in 2016 as an exogenous shock that induce consumers to switch to digital payments. On 8 November 2016, the Indian government demonetized two of the highest value banknotes in circulation (INR 500 and INR 1,000) in an unanticipated move, leading to a shortage of cash in the economy. Overnight, 86% of cash in circulation was declared to be illegal tender. This led to a significant increase in the level of digital payments involving both cards and e-wallets (Agarwal et al., 2018a). Accounting for geographic variation in the severity of
demonetization, Chodorow-Reich *et al.* (2020) showed that a pronounced, temporary decrease in currency led to a decrease in ATM withdrawals and faster adoption of alternative payment technologies by districts. Moreover, by examining merchant-level transactions from one of the leading digital wallet companies in India, Crouzet *et al.* (2019) found that the temporary cash crunch led to a persistent growth of the user base of electronic wallets, suggesting the presence of positive adoption externalities.

Studies have shown that post demonetization, Indian households who switched to digital payments tended to spend more. Using customer receipt-level transaction data from a large supermarket chain in India, Agarwal *et al.* (2019a) found that consumers who were forced to switch to digital payments purchase more expensive goods and take lesser advantage of promotional offers. Over-spending arises as digital payments have lower salience than cash, causing consumers to be complacent in their spending. This is not due to changes in income or responses from suppliers. Similarly, using sales data of more than two and a half million transactions from a leading online fashion retailer in India, Bandi *et al.* (2019) found that consumers who switch to digital payments maintain their purchase frequency but spend more and are less likely to return their purchases. This is attributed to both an increase in the average price and number of goods purchased. These changes in consumer habits are broadly consistent across product categories.

On the other hand, studies from Mexico show that when debit cards are given to poor households, there is an increase in savings. From 2009 to 2012, the Mexican government gave 1 mn debit cards to urban recipients of the conditional cash transfer program Prospera who have existing bank accounts. The program transfers cash to poor households with children between age 0 to 18, as well as pregnant women, on the condition that they send their children to school and complete preventive health check-ups respectively. Households received payments once every two months and have the cash being deposited into their banks account.

The debit card rollout changed how they consume and save. Bachas *et al.* (2017) found that before the provision of debit cards, beneficiaries typically withdrew the full amount upon receipt of the money and did not save. However, beneficiaries with debit cards managed to save up to 2% of their annual income 2 years after the policy implementation. This can be attributed to higher trust in the bank, as well as a fall in transaction cost. In a related paper, Bachas *et al.* (2018) showed that the provision of debit cards reduced the median travel distance to access banking from 4.8 to 1.3 kilometres. The percentage of households that need to forgo daily activities (such as household chores, childcare or work) to access the bank has fallen from 84% to 25%. Finally, Higgins (2019) highlighted that the adoption of debit cards generated externalities, increasing the number of point-of-sale (POS) terminals offered by small retailers. In turn, this encouraged other consumers to adopt debit cards. The adoption of debit cards by other consumers was estimated to be 21%. Consequently, consumers benefited from being able to shop at a wider variety of stores, though the effect was larger for richer consumers.

We turn to studies investigating how households change their pattern of consumption with the adoption of mobile wallets. We focus on Singapore, which introduced the Quick Response (QR) code payment function for mobile wallets in April 2017. This new technology allows consumers and producers to complete their transaction simply by scanning the QR codes through their mobile phones. Agarwal *et al.* (2019c) found that the introduction of the QR code payment function in Singapore led to strong adoption of mobile payment by households, with small merchants enjoying an increase in sales vis-à-vis larger merchants. Furthermore, Agarwal *et al.* (2019b) showed that business-to-consumer industries witnessed a higher growth rate of business creation by 8.9% per month relative to business-to-business industries. This is attributed to the reduction in transaction cost, allowing households to increase their spending capacity. Part of the increased consumer demand is captured by credit card spending, which reflects consumers’ continued preference for other cashless payment method and the bank’s endogenous response to maintain its credit card business.
2.2 Mobile money
Mobile money enables users of mobile phones to deposit, transfer and withdraw money without having a bank account (Suri, 2017). This is distinct from mobile banking, which allows users to perform online banking tasks through their mobile phones. Mobile banking is provided by telecommunications companies and allows households to pay directly through their SIM card. Transfers are done via short messages. To open an account, the individual just needs to register at a mobile money agent. Cash deposits and withdrawals are also conducted through the agent. In recent years, there has been a growth in the use of mobile money, especially among developing countries with limited bank branches but high usage of mobile phones. Mobile money has the potential to bring the unbanked population into the financial system, increasing financial inclusion (Demirguc-Kunt et al., 2020). Countries where the mobile money system was first deployed include Kenya and Tanzania.

In Kenya, access to the mobile money system, M-PESA, is estimated to have increased per capita consumption levels and brought 194,000 households, or 2% of Kenyan households, out of poverty Suri and Jack (2016). Using the geographical proximity of individuals to M-PESA agents as an indicator for access to the mobile money system, it is documented that an exogenous change in access to agents affects consumption and poverty. It was also found that mobile money had led to a more efficient allocation of consumption and labour resources across time in Kenya. This is particularly significant for Kenya as 97% of households had an account with M-PESA as of 2014. Moreover, female-headed households benefited to a larger extent as they experienced an increase in financial resilience and savings. The implications of FinTech on gender have also been discussed in other forms of digital payments. For instance, Schaner (2017) found that the adoption of ATM cards only had positive impacts on accounts primarily owned by men or joint accounts with women in Kenya. Strikingly, the ATM cards did not have any effects on women’s accounts. This is attributed to intra-household issues, such as household bargaining power.

Furthermore, there is evidence of risk sharing due to mobile banking. In Kenya, Jack and Suri (2014) showed that when households are exposed to economic shocks, the consumption of households that use mobile banking is unaffected. In comparison, consumption of non-users decreased by 7%. This suggests that a fall in transaction cost will improve risk sharing through informal networks. As families and social networks in Kenya spread over a large area, it is challenging to remit money across the country. Prior to mobile banking, it is done by hand or through friends or bus drivers. This is costly and results in delays and thefts. With the adoption of mobile banking, users could transfer money through a short message instead. Likewise, Riley (2018) found that mobile money led to an improvement of risk sharing in Tanzania. As some households are subjected to large changes in consumption due to aggregate shocks (such as rainfall), mobile money can help them access remittances from other locations not affected by the shock. This leads to consumption smoothing. Nonetheless, the overall welfare effects are uncertain. Kinship networks can impose extra burden, leading household members to signal to family and friends that they are poor (Baland et al., 2011).

There are also other benefits related to mobile money. For instance, households prefer mobile money for convenience and for the benefit of reducing risks related to crime. Using a natural experiment for an unanticipated increase in transaction fees in Tanzania, Economides and Jeziorski (2017) found that households are willing to pay up to 1.25% of the transaction amount to avoid carrying it in the form of cash for an extra kilometre, and 0.8% of the transaction amount to avoid storing money at home.

3. Lending
The provision of household credit is one out of the two key activities that contributed to the growth of finance for the past decades; the other being asset management (Greenwood and
Nonetheless, in recent years, the growth of FinTech has reshaped the lending process and transformed the entire underwriting process. This has disrupted the finance industry and challenged the role of traditional financial intermediaries such as banks. Traditionally, banks specialise in the screening and monitoring of borrowers and are able to enjoy substantial economics of scale in reducing asymmetric information in the credit markets. Nonetheless, with FinTech, this advantage could disappear. We study the impact of FinTech Lending and Marketplace Lending on households in this section. The latter is also commonly known as P2P lending.

3.1 FinTech lenders
FinTech lenders refer to lenders that allow the entire application process to be completed online. As the entire process is automated, applicants are not required to talk to a loan officer or visit a physical location. This will lead to a reduction in cost (such as labour and rent) and provide more convenience to the applicant. There has been a huge growth in the market share of FinTech lenders in recent years. In US, their lending has increased from $34 bn of total originations in 2010 to $161 bn in 2016. Correspondingly, their market share has quadrupled from 2% to 8% during the same time period (Buchak et al., 2018; Fuster et al., 2019). Studies have shown that the growth in FinTech lending is driven by technological innovation.

FinTech lending can result in more efficient financing and refinancing decisions by households. Using loan-level data on US mortgage applications and originations, Fuster et al. (2019) showed that technology is able to reduce frictions in the mortgage origination process. Loan processing times are being reduced and FinTech lenders are able to increase their efficiency by processing applications 20% faster without raising their risk profile. Defaults did not increase and the authors found no evidence that FinTech lenders lend more to borrowers with low accessibility to finance. In addition, FinTech lenders are more agile and are able to respond more elastically to changes in exogenous mortgage demand shocks. This eases capacity constraints that are related to traditional mortgage lending. Studies such as those by Campbell (2006) as well as Keys et al. (2016) have highlighted that many US households refinance inadequately. Fuster et al. (2019) showed that when the lagged market share of FinTech lenders increased by 8 percentage points, the likelihood of refinancing increased by 10% of the average. This suggests that FinTech lending can improve the interest rate pass-through of monetary policy, providing cost savings for households.

In addition, borrowers value other aspects of FinTech lenders such as convenience. Interest rates are not the only factor considered in borrowers’ decision-making. In studying nonbank mortgage lending in the US, Buchak et al. (2018) found that shadow banks have grown in areas with higher regulatory burden, serving riskier borrowers. Nonetheless, as compared to other shadow banks, FinTech lenders lend more to credit-worthy borrowers, and charge a premium of 14–16 basis points. Furthermore, FinTech lenders set interest rates differently as compared to other lenders. The different algorithm used by these firms could benefit borrowers who are unable to meet the requirements by traditional banks.

Indeed, one of the advantages of FinTech lenders is that it can leverage on unstructured data and big data analytics to better predict loan behaviour. Such data include “mobile footprints,” which refer to the households’ online behaviour that are captured from their mobile phones. Using data from one of the largest FinTech lenders in India, Agarwal et al. (2020) found that the mobile footprint of an individual outperforms traditional credit bureau scores in predicting loans approvals and defaults. With deep digital information of the applicant’s social connections or type of applications that they used, FinTech firms can proxy for otherwise hard to quantify and unobservable aspects of individual behaviour. Moreover, the authors found that measures of borrower’s “deep social footprints” based on call logs significantly improves default prediction.
There is also evidence from digital footprints using a dataset covering approximately 250,000 purchases from an e-commerce company located in Germany, Berg et al. (2019) found that digital footprints act as a complement to the credit bureau scores, allowing for lenders to make more informed lending decisions. With the adoption of digital footprints, default rates fell significantly. Evidently, customers with good digital footprints gain access to credit, while customers with poor digital footprints lose them. Consequently, digital footprint opens lending opportunities to those who lack access to services in the formal financial sector, leading to financial inclusion and lowering inequality. However, results are subject to the Lucas critique, as customers may change their online behaviour if digital footprints are widely used.

Another advantage of FinTech lenders is that it can reduce face-to-face discrimination. With the emergence of FinTech lending, algorithmic lenders discriminate approximately one-third less than face-to-face lenders overall in terms of loan pricing. This could be attributed to the convenience in applying and shopping around online through different platforms Bartlett et al. (2019). Linking the Home Mortgage Disclosure Act (HMDA) with ATTOM and the McDash/Equifax datasets from the US, the authors found that besides benefiting from algorithmic innovations in credit scoring, there is an increase in access to loans for minority groups that would otherwise have been rejected, with African-American and Latinx applicants benefitting from such FinTech loans. However, this might not always be true. Fuster et al. (2018) merged Home Mortgage Disclosure Act (HMDA) data with the McDash mortgage servicing data from Black Knight, and found that with the adoption of machine learning approaches, there could be worsening racial disparity in credit access and interest rates, even though it can expand credit access for some borrowers. Therefore, changes in technology can potentially lead to larger inequality as well.

Despite the advantages mentioned, it is noteworthy that the ease of credit access might be exploited by consumers with present bias and short-term impatience (Di Maggio and Yao, 2019). Relying on data from one of US’s largest credit bureaus, the authors showed that even though the profile of FinTech borrowers are young professionals with higher income, they are more likely to default as compared to their peers that borrow from traditional banks. For identification, the authors made use of the Madden vs Midland Funding LLC court ruling in May 2015 between a New York-based borrower and a collection agency which led to a fall in credit supply from FinTech lenders in the state. After the court ruling, they showed that the average riskiness of the traditional banks did not change, suggesting that there is no substitution effect. However, the average level of indebtedness fell for those borrowers from FinTech lenders. It was found that the convenience of FinTech borrowing had encouraged borrowers to consume more and increase their standard of living, rather than improving their financial situation. This results in worse credit outcomes.

3.2 Marketplace lending
Marketplace lending, also known as P2P lending, enables individuals to obtain loans directly from other individuals without any financial intermediaries. Borrowers are usually matched directly to lenders through a lending platform or social marketplace. A borrower is usually matched to multiple lenders, which will decide how much to lend at a specific interest rate. Globally, P2P lending has grown dramatically. In the US, lending volumes exceeded US$77 bn in 2015, and P2P lending outperformed traditional loans both in terms of size and reach (Morse, 2015). As one of the world’s largest P2P credit markets, China’s lending volumes exceeded US$90 bn in 2015. This makes up 20% of all the consumption loans to households (Deer et al., 2015). As an alternative source of lending, they might be able to offer credit to households who would otherwise be rejected from traditional banks. We discuss the implications of P2P lending on households.
The availability of P2P lending can potentially allow riskier borrowers who are denied by traditional banks to be able to take on loans. This could be a consequence of regulatory arbitrage, whereby households capitalize on differences in regulatory systems between P2P lending and commercial banks to obtain loans. Using data from Auxmoney (the largest and oldest P2P lender for consumer credit in Germany) as well as Deutsche Bundesbank, De Roure et al. (2018) found that when banks in Germany face higher regulatory costs, total bank lending decreases and P2P lending increases. While P2P loans are riskier than bank loans, the risk adjusted interest rates on P2P loans are lower as compared to bank loans. Hence, they are less profitable than borrowers from banks. It suggests that P2P lending is related to a bottom-fishing strategy and not skimming the cream as they compete for lower quality borrowers than commercial banks.

There is also evidence of regulatory arbitrage in China. Exploiting a regulatory change in the Chinese real estate market in November 2013, Braggion et al. (2019) found that households circumvent loan-to-value (LTV) cap tightening by borrowing more from P2P platforms. As a macroprudential tool, LTV cap tightening in China prevents households from borrowing beyond a certain fraction of the value of the assets to be purchased with the loan. In this case, the Chinese government raised the minimum down-payment to obtain a mortgage loan from 60% to 70% of the value. Using a hand-collected database from Renrendai, a leading Chinese P2P credit platform, the authors found that as compared to the control cities, P2P loans increase in the cities affected by the tightening of LTV cap. This could explain why the regulatory policy appears to be ineffective in curbing the growth in house prices.

In comparison, there is also evidence that credit expansion from P2P lending stems from borrowers with existing access to credit. Tang (2019) took advantage of a regulatory change in the US that caused banks to reduce lending and found that P2P lending is only a substitute for commercial banks when they lend to infra-marginal bank borrowers. In terms of providing small loans, they complement bank lending. For identification, the author leverage on a new regulation FAS 166/167 introduced by the Financial Accounting Standards Board (FASB) in 2010. The new regulation required banks to consolidate their securitized off-balance sheet assets and include them as part of their regulatory capital (when they were not expected to include them previously). Consequently, this led to a fall in borrowing due to a reduction in the risk-based capital ratio. Based on the different degree of exposure by local banks to the new accounting policy, the author then examines the differential treatment effect on P2P loan applications from Lending Club, a leading P2P lending platform in the US.

An advantage of P2P lending is that it allows borrowers access to capital based on their social network. As each potential lender can observe the funding that others have contributed, borrower’s creditworthiness can be accessed based on characteristics such as endorsements by friends and group membership. There are several studies that leverage on the unique panel data set of borrower listings and their social network on Prosper.com, US largest online P2P lending marketplace. In Prosper.com, friendships can be classified into different hierarchy, with numerically higher levels of friendship signalling stronger information of borrower quality. Level 1 refers to friends who have registered into the platform, Level 2 refers to friends who have passed the screening tests, Level 3 relates to friends who have a lending history, Levels 4 and 5 indicate friends who have managed to bid and win the listing respectively. Using data from the different hierarchy of friendship, Lin et al. (2013) found that friendship ties are signals of credit quality for individual investors and investors incorporate them into their lending decisions. The authors showed that the presence of quality friendships increases the likelihood of successful funding and decreases the interest rates on funded loans. Furthermore, borrowers with quality friendships are less likely to default, suggesting that social network data may help lenders discern good borrowers based on the roles and identities of their friends. In a related paper, Freedman and Jin (2017) consider group and friend characteristics together, and quantify the effects of social networking. Similarly, they found that there is a high probability for lenders to provide social
network affiliated loans and offer them lower interest rates. They found that this is not likely to be caused by altruism, but rather better screening and monitoring.

In addition, the use of non-standard or soft sources of information in screening processes can help borrowers obtain loans. This is particularly relevant for borrowers of lower quality, and they have shown to outperform traditional credit scores. Iyer, Khwaja, Luttmer and Shue (2016) found that peer lenders are able to forecast the probability of an individual defaulting on a loan 45% more precisely with the usage of rich information in Prosper.com vis-à-vis the use of the borrower’s (unobserved) exact credit scores. They are also able to achieve 87% of the predictive ability of an econometrician who possesses all standard financial information and in-sample future default realizations. In fact, Balyuk (2019) showed that FinTech innovations in lending can play an important role in mitigating credit market imperfections by relieving information frictions for consumers and generating information spillovers to traditional credit intermediaries such as banks. Using data from Prosper.com, the author showed that traditional banks provide and increase credit to households who have obtained P2P loans. This increase in credit is largest for households who have lower credit scores (approximately 5.2%). This is not due to banks responding to higher competition but rather information spillover effect.

Notwithstanding the above, the ability to borrow through P2P is subject to the behaviour of the bidders in the different platforms. For instance, Zhang and Liu (2012) found evidence of rational herding whereby borrowers who have attracted a large number of lenders are more likely to obtain funding. Lenders strategically learn about the creditworthiness of a borrower from one another. Furthermore, P2P borrowing is also subject to biases and stereotypes that might influence the ability of a borrower to obtain a loan. This includes the narratives, writing style and even appearance of the borrower.

Herzenstein et al. (2011) study the role of personal narratives to secure a loan through P2P lending. They classify applicants into different identities such as trustworthy, successful, hardworking, economic hardship, moral and religious. The authors found that households with poor credit scores, but which have compelling personal narratives may find it easier to secure a loan through P2P lending rather than through a conventional lending method. Loan funding increases alongside the number of identity claims. Identities claiming to be trustworthy or successful tend to have increased loan funding but are ironically less predictive in terms of loan performances.

Moreover, Gao et al. (2018) show that words matter. Borrowers whose writing are more readable, positive, with fewer deception cues are more likely to get funded and charged a lower rate. The authors found that borrowers’ linguistic styles contain economically meaningful information. Particularly, fewer deception cues are associated with a lower probability to default.

Appearance also matters. Duarte et al. (2012) showed that borrowers who appear to be more trustworthy are more likely to have their loans funded. Nonetheless, they found that borrowers with a more trustworthy appearance indeed have better credit scores and default less often, which suggest that appearance might convey additional information about an individual’s creditworthiness. Similarly, Ravina (2019) found taste-based discrimination among online lenders. Beautiful borrowers are more likely to obtain loans and when given a loan, pay lower interest rates than an average-looking borrower. There is also racial discrimination. While black borrowers are as likely to get a loan as white borrowers, they pay a higher interest rate despite not being more delinquent.

In sum, we find strong evidence that P2P lending benefits households by providing them with excess liquidity at a lower cost. Nonetheless, it might only be a temporary respite for borrowers if they do not change their fundamental behaviour. Chava and Paradkar (2018) showed that in the short run, P2P borrowers who are in debt (from traditional banks) benefit from a fall in interest payments and an improvement in credit scores after obtaining a loan.
from P2P. However, this merely gives them the opportunity to draw down on their higher credit limits and borrow even more from traditional banks. Consequently, they are worst off and default a higher rate as compared to those non-P2P borrowers with similar ex ante credit dynamics.

4. Portfolio investments

The digitalization of finance has provided opportunities for household investors with different risk appetites. For risk averse investors, digital economics have led to lower search and verification costs (Goldfarb and Tucker, 2019), allowing them to obtain professional advice at a lower price. This has democratized the use of financial service advisors, extending access to a larger group of households. For risk loving investors, FinTech has the capability to transform them into venture capitalists overnight by exposing them to start-ups and small businesses with high growth potential. In this section, we examine robo-advisors and crowd-funding.

4.1 Robo-advisors

Robo-advisors are digital advisory platforms that replace human financial advisors. Based on the inputs of the household investor, algorithms powered by artificial intelligence will recommend an investment portfolio that meets the specific needs of the investor. In doing so, robo-advisors provide personalized services. It is easy and convenient to sign up for an account where users can access the robo-advisor throughout the entire day. Moreover, financial advice from robo-advisors is generated quickly, resulting in shorter wait times and lower fees. In comparison, using data on Canadian households, Foerster et al. (2017) found that actual financial advisors provided limited customized advice at a higher price: advised portfolios are estimated to cost 2.5% yearly. Furthermore, they have an unwieldy influence over their clients’ asset allocation.

There is evidence that robo-advisors have reshaped the portfolios of household investors. Using data from Vanguard Personal Advisor Services (PAS), the world’s largest robo-adviser in terms of asset under management, Rossi and Utkus (2019) found that with the adoption of robo-advisors, US household investors increased their bond holdings from 24% to 40%, and decreased their cash holdings from 22% to 1%. Even though there are no effects from equity holdings at the aggregate level, household investors switched from holding individual stocks and US active mutual funds to low-cost indexed mutual funds. This improved their overall risk-adjusted outcome. The authors showed that the key beneficiaries of robo-advisors are household investors with a lack of investment experience and those that primarily held on to cash holdings. This suggests that robo-advisors are able to benefit those with low financial literacy and with limited knowledge of investing. Furthermore, households that previously have little mutual fund holdings or invested in high-fee active mutual funds are better off after the use of robo-advisors.

In addition, household investors that adopt robo-advisors benefit from an improvement in portfolio diversification. Using data from a large brokerage house in India, D’Acunto et al. (2019) showed that adopters and non-adopters of robo-advisors have similar demographics and have interacted previously with human advisors. However, adopters are more active and have a higher amount of assets under management. As the brokerage house leveraged on a robo-advising technology that seek to maximise the household investor’s Sharpe ratio, the authors found that investors who hitherto held on to undiversified portfolios began to perform better as their portfolios now exhibit higher returns and lower volatility. For investors with hitherto diversified portfolios, they also enjoyed lower volatility and tend to trade more. Overall, they also found that adopters of
robo-advisers are less prone to behavioural biases such as the disposition effect, trend chasing and the rank effect.

Notwithstanding the above advantages, Jung et al. (2017) highlighted that adoption of robo-advisors by the general public have been low. The group that would benefit the most – inexperienced households with lower budgets – is not using robo-advisors. This could be attributed to a confluence of factors – low trust in banks, high expectations of transparency, as well as unwillingness to participate in investment activities. Consequently, it is important to make it more accessible for these group of households. One way is to improve the experience of using robo-advisors. For instance, Hohenberger et al. (2019) showed that households with higher self-assessed financial experience exhibit lower anxiety and are more positive towards the use of a robo-advisor. Furthermore, Belanche et al. (2019) underlined household’s attitudes and subjective norms as the key drivers to adopt robo-advisor. Household investors do not consider only the costs and benefits, but also consider their peers and other social norms in their decisions.

4.2 Crowd-funding
Crowd-funding is a form of equity investing. Entrepreneurs promote their early stage project and raise funds directly from a large number of people through online platforms. In turn, the investor will receive shares of the company. Consequently, this opens up a new asset class for household investors who are keen to take part in early-stage investment opportunities involving “the next big idea.” While it can potentially generate higher returns, it is arguably riskier than holding on to listed firms in the stock market.

According to Agrawal et al. (2014), the success for investing in crowd-funding is highly dependent on the ability of the creator. As first-time entrepreneurs do not have sufficient experience to produce goods and services, they face teething difficulties and bottlenecks involving their logistics and suppliers. Using data of 47,000 projects with total funding of US$198 mn from Kickstarter (the largest crowd-funding site in US), Mollick (2012) found that 75% of the projects were delayed despite the best efforts of the founders. Furthermore, household investors could be vulnerable to fraud and project risk. As crowd-funding operates in an environment with minimal oversight and regulation, asymmetric information between borrowers and lenders could be exacerbated. It is easy to create fraudulent fundraising campaigns, and monitoring is costly for an individual investor.

Despite higher risks, there are several advantages for household investors. These include access to new investment opportunities and new products (that they were formerly unable to access), as well as community participation. It also helps to formalize contracts between entrepreneurs and their family and friends who would have invested in them anyway. Moreover, there could be improvements in portfolio diversification for investors as holding crowd-funding investments are deemed to have a lower correlation than traditional investments such as bonds and shares listed in the stock markets. We discuss this in turn.

Using data from an online crowd-funding platform based in Amsterdam, Netherlands, (Sellaband) that links artist-entrepreneurs with investors to finance musical projects, Agrawal et al. (2015) showed that crowd-funding can reduce most distance-related economic frictions such as monitoring progress, provision of inputs, and information gathering. On average, the distance between artists and investors is found to be about 3,000 miles. Consequently, crowd-funding allows investors to diversify and hedge their risks away from local economic conditions. Notwithstanding the above, distance still matters. Local investors are most likely to invest early in the cycle, and they are less responsive to choices made by other investors. This is attributed to investors who have a personal connection with the entrepreneur, such as their family and friends.
With crowd-funding, household investors can learn from experts participating in the market as well. Using data from a crowd-funding market for mobile applications based in the US (Appbackr), Kim and Viswanathan (2019) showed that participation by individuals with experience can be beneficial to later investors in the crowd. The authors found that early investors with experience in app development are likely to have better understanding of the products and are therefore seen to be more influential for “concept apps” (apps in the pre-release stage). In comparison, early investors with experience in investment are more familiar with market performance and are seen to be the leaders for “live apps” (apps that are already being sold on the market). Most of the inexperienced investors are sophisticated in their ability to identify and exploit nuanced differences in the underlying expertise of the early investors. Further analysis of the ex-post performance of apps suggests that investors with experience indeed select better apps, making their investment choices credible signals of quality for the crowd.

Crowd-funding also allows household investors to protect their privacy. There is evidence that privacy matters for these investors. Since the online setting of crowd-funding brings about increased visibility and traceability of transactions, many crowd-funding platforms provide the option for campaign contributors to hide their identities or contribution amounts from others. Using a randomized control trial from one of the largest global reward-based crowd-funding platforms, Burtch et al. (2015) found that a fall in access to the information controls actually led to an overall increase in fund-raising. This is driven by two factors: an increase in probability of contribution, as well as fall in average amount per contribution – the fall in contribution can be attributed to a publicity effect, as investors reduce extreme contributions to avoid unwanted attention.

5. Future directions
In this section, we present several opportunities for future research.

While we have examined payments, lending and investing separately, we would expect them to consolidate into a single platform in the next phase of FinTech’s evolution. This could come in the form of financial aggregation platforms over mobile applications. In doing so, households will be able to access his/her entire financial portfolios at each point in time. They will be able to spend, borrow or invest all through just one application. Founded in 2009, Meniga from Iceland is an example of a financial aggregator. This platform consolidates all the customer’s bank accounts and credit cards from all the banks in one mobile application. Changes in transactions are automatically updated in the application. Consequently, each individual is able to check his/her balances, overdrafts and credit limits immediately. There are also elements of financial advice. Using data from Meniga between 2014 and 2016, Carlin et al. (2018) showed that decreasing costs of information access to households indeed increased their welfare. With a fall in search costs, financial information is now more salient. Households respond by paying more attention to their overdrafts and reduce their roll-over consumer debt. This leads to a decrease in financial fees. We will expect to see financial aggregator playing a more important role in the future.

In addition, future developments in FinTech will allow us to study dynamics between households. One possibility is through peer comparisons tools. Using a FinTech mobile application (Status) that provides households with crowd-sourced spending information of their peers in the US, D’Acunto et al. (2019) found that households react to information of their peers by converging to the mean. There is a fall in spending for users who overconsume vis-à-vis their peers. Meanwhile, users who under-consumed vis-à-vis their peers either increase their spending or did not change their spending. Lower income users and households that overconsume react to a larger extent. This is driven primarily by discretionary spending. It will be of interest to study the implications of peer effects on household finance as they reshape household behaviour in a dynamic economy.
6. Conclusion
Our review of FinTech and household finance showed that FinTech has evidently transformed all aspects of household finance. With an increase in economic uncertainties and volatile household income in the new economy, FinTech can help to smooth consumption through more efficient payments and lending systems. This is particularly relevant for households in the gig economy with less structured work arrangements (Abraham et al., 2018). Moreover, there will be an increase in financial inclusion as more households are provided with opportunities to access financial services.

We expect to see FinTech playing an increasingly important role alongside traditional banks. As households become more technology savvy across generations and adopt FinTech in their daily activities, there will be an increase in usage due to strong network externalities. This will further reduce cost and bring about more benefits to households. Nonetheless, not everyone will benefit from it. Relatively undisciplined households are likely to overspend and borrow beyond their means. If left unchecked, this could trigger a debt crisis in credit markets. Consequently, government regulators need to work alongside FinTech companies to protect the safety and soundness of the financial system.

For researchers, these regulatory changes and innovations by FinTech firms will provide us with an ideal platform to better understand household behaviour. We look forward to the exciting opportunities for future research.

References


Corresponding author
Sumit Agarwal can be contacted at: ushakri@yahoo.com

For instructions on how to order reprints of this article, please visit our website: www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: permissions@emeraldinsight.com