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Digital Financial Services and the Pandemic: Opportunities and Risks for Emerging and Developing Economies

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The COVID-19 pandemic and the need for social distancing have put a spotlight on digital financial services. Digital financial services allow for social distancing; they allow governments to disburse funds to those in need quickly and effectively; and allow many households and firms to rapidly access online payments and financing. However, risks to stability and integrity, always present, may worsen if the use of digital financial services is scaled up quickly in times of crisis without appropriate regulations and safeguards. At the same time, efforts to ramp up the use of digital financial services should avoid increasing existing divides across users.

I. DIGITAL FINANCIAL SERVICES AND THEIR USE

Digital financial services (DFS) are financial services (e.g., payments, remittances, and credit) accessed and delivered through digital channels, including via mobile devices. These encompass established instruments (e.g., debit and credit cards) offered primarily by banks, as well as new solutions built on cloud computing, digital platforms, and distributed ledger technologies (DLT), spanning mobile payments, crypto-assets and peer-to-peer (P2P) applications. These new solutions are commonly referred to as fintech. Box 1 examines the use of DFS in emerging and developing economies (EMDEs) at the onset of the current pandemic.²

Digital financial services can be harnessed to respond to the COVID-19 shock, and the crisis has the potential to accelerate their development and use.^{3,4} For countries where DFS have not been developed,

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² Financial services by banks in EMDEs are more limited; hence, nonbank DFS providers may add greater value and contribute more to financial inclusion in such countries than in advanced economies.

³ See, e.g., [Arner and others \(2020\)](#), [Auer, Comelli, and Frost \(2020\)](#), [Garcia-Mora and Rutkowski \(2020\)](#), [Goodwin-Groen \(2020\)](#), [GSMA \(2020\)](#), [Huang and others \(2020\)](#), [IMF \(2020a, b\)](#), and [Pazarbasioglu and others \(2020\)](#).

⁴ Sahay and others (2020) show that digital finance is increasing financial inclusion and is also associated with higher GDP growth.

however, making progress to satisfy important preconditions will smooth the transition toward DFS' use.⁵ These include having an adequate digital infrastructure (e.g., high-quality communication services that facilitate access to the internet and mobile connectivity) and putting in place legal and regulatory requirements that enable DFS (e.g., allow the use of third-party agents to facilitate access to DFS and develop a strong network of local agents, establish a risk-based and proportionate anti-money laundering (AML) framework, foster interoperability and competition). Incentives for local adoption and the existence of a national ID system can also facilitate the development of DFS.

This note explores the opportunities associated with an expansion of DFS in EMDEs where these preconditions are increasingly met, and highlights the potential risks associated with their rapid ramping up.

Box 1. The Use of Digital Financial Services Pre-COVID-19 in Emerging and Developing Economies

Digital payments, digital lending, and digital remittances have grown in recent years. Digital payments are non-cash transactions processed through digital channels. These include digital commerce and mobile point-of-sale (POS) payments (Digital Payments Report 2019, Statista). Digital commerce refers to consumer transactions directly related to online shopping for products and services that can be made via various payment methods (e.g., credit cards, direct debit, invoice, or online payment providers, such as PayPal and AliPay). Mobile POS payments are transactions processed via “mobile wallets” (e.g., M-Pesa) where the payment is made by a contactless interaction of the mobile application with a suitable payment terminal belonging to the merchant. Both digital commerce and mobile payments have increased in EMDEs over the last three years (Figure B1.1). The numbers are, as expected, largely driven by China and, to a lesser extent, India.

Figure B1.1: The value of digital payments transactions

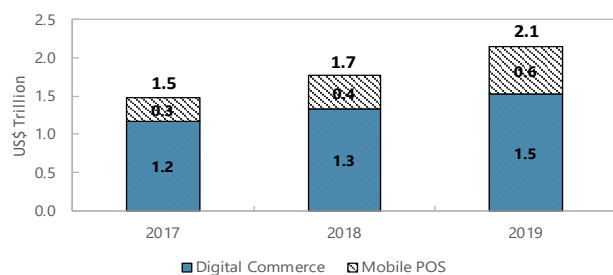
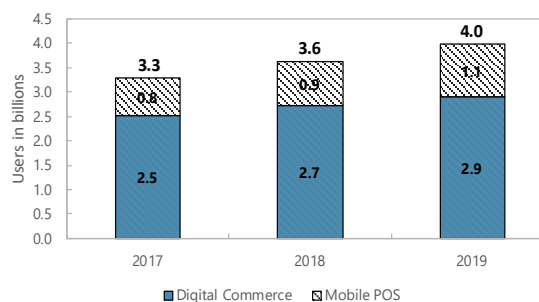


Figure B1.2: Number of users of digital payments



Source: Statista.

The value of payments associated with digital commerce in EMDEs rose from \$1.2 trillion in 2017 to \$1.3 trillion in 2018 and reached \$1.5 trillion in 2019—an increase of approximately 8 percent and 15 percent, respectively. While the value of mobile POS payments is significantly smaller—\$613 billion in 2019—these payments rose by 33 percent between 2017 and 2018 and by 50 percent in 2019, relative to the previous year.⁶ In EMDEs the number of digital payment users has also risen since 2017 starting at 3.3 billion that year and reaching almost 4.0 billion (or 64 percent of the population) in 2019 (Figure B1.2). In terms of the breakdown by type of service, in 2019, 2.9 billion users conducted digital commerce transactions and 1.1 billion users conducted mobile POS payments.

⁵ There is an extensive literature on the preconditions for the growth of DFS. See [WEF \(2014\)](#), [CGAP \(2018\)](#), [GSMA \(2018\)](#), [D’Silva and others \(2019\)](#), [Davidovic and others \(2019\)](#), [OECD \(2019\)](#), [Alper and Miktus \(2019\)](#). For countries newly using DFS, the appropriate speed of scaling up DFS will be country-specific and depend on the country meeting prerequisites highlighted in these references.

⁶ Data on the value of all payment transactions (digital and non-digital) are not available for the same EMDEs for which data on digital payments exists; hence, numbers are reported in dollar terms and cannot be reported as shares of all payment transactions.

Digital lending to SMEs (i.e., crowdlending) and to individuals (i.e., marketplace or peer-to-peer lending), through private or institutional investors via online platforms, grew by 57 percent from a combined value of \$143 billion in 2017 to \$225 billion in 2019. Over this period, business (SME) lending increased from \$96 billion to \$166 billion while consumer lending rose from \$47 billion in 2017 to \$59 billion in 2019 (Figure B1.3). In turn, the number of digital loans grew from 53.2 to 62.6 million between 2017 to 2019, with business loans growing from 31.3 to 37.3 million and consumer loans increasing from 21.9 to 25.3 over this period (Figure B1.4).

Figure B1.3: The value of digital lending

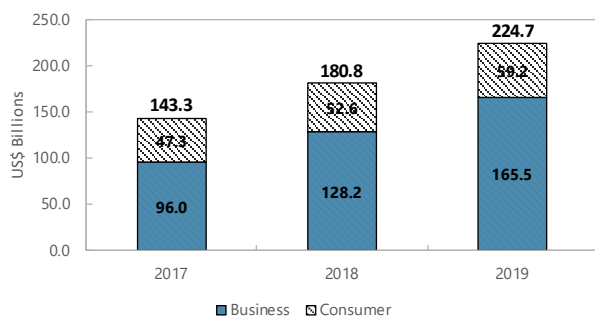
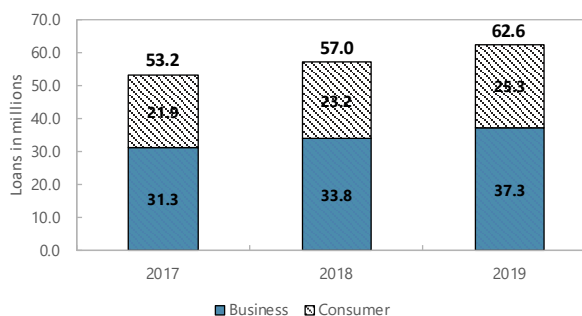


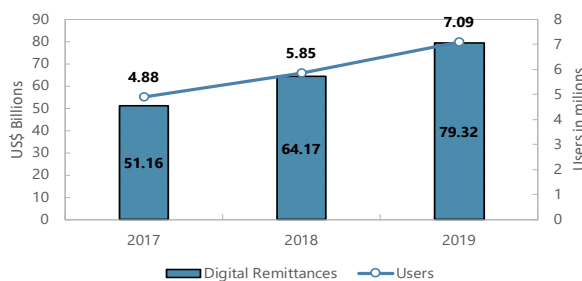
Figure B1.4: Number of digital loans



Source: Statista.

Digital remittances are cross-border money transfers made over the internet by the migrant population. The value of digital remittances (which here include those sent from advanced economies to EMDEs and across EMDEs) has grown by 55 percent between 2017 and 2019. Over this period, the number of users of digital remittances grew from almost 5 to 7 million (Figure B1.5).

Figure B1.5: Digital Remittances



Source: Statista.

II. OPPORTUNITIES FROM EXPANDING DIGITAL FINANCIAL SERVICES DURING THE COVID-19 CRISIS

This section considers opportunities from the use of digital financial services during the COVID-19 crisis in five areas: payments and transfers by governments, businesses, and households, as well as credit to businesses and households.

Payments and transfers by governments⁷

Several governments already make digital payments and transfers to households and businesses. Government payments to households, commonly referred to as G2P, include payments (or transfers) of tax

⁷ For social assistance programs introduced by various countries since the start of the crisis, see [Gentilini and others \(2020\)](#), IMF (forthcoming), and [Jerving \(2020\)](#). Our note discusses opportunities and risks in a general sense, encompassing different payments and credit services across uses. For a more detailed look at digital government services, see [IMF \(2020a, 2020b\)](#).

refunds, subsidies, social programs, salary, stipends, pensions, scholarships, and emergency assistance. According to the 2017 Global Findex Survey, approximately 16 percent of individuals received government payments or transfers digitally during that year.⁸ Pre-COVID-19 examples of digitized G2P payments include Brazil's Bolsa Familia Program (providing low-income families with monthly transfers via electronic benefit cards issued by a state-owned financial institution), Mexico's direct electronic payments to the bank accounts of providers of goods and services of the federal government, as well as payroll payments to the accounts of most federal employees, and India's use of electronic means of payment for government salaries, pensions, tax refunds, and other G2P payments.^{9,10} Payments to businesses from the government (G2B) have also been increasingly disbursed using digital payment methods, including in developing countries. In the case of Peru pre-COVID-19, 59 percent of subnational government G2B procurement payments were made via checks and 41 percent via electronic transfers.¹¹

Digital payments can support the social distancing measures imposed in several countries and help reduce the spread of COVID-19. Digital payments allow payment transactions to continue and financial support to reach those in need, when other forms of disbursement become cumbersome due to health guidelines.¹² Paying public wages and other public transfers (both G2P and G2B) digitally is also more cost-effective.¹³

Digital payment technologies improve the ability to target cash assistance to households, particularly to the unbanked, to women,¹⁴ and to the informal sector. These technologies can also improve the speed of transfers, which is of particular value in the COVID-19 crisis, as large informal sectors in many developing economies are in urgent need of assistance.^{15,16} Examples of country-specific uses include China (consumption coupons disbursed via Alipay and WeChat pay), India (transfers via Aadhaar-linked accounts), as well as Colombia, Morocco, Peru, and who have been expanding or leveraging existing digital payment systems, particularly to the informal sector.¹⁷ M-Pesa using countries (e.g., Kenya, Tanzania, Uganda) are also leveraging the system for transfers. Digital payments have also been successfully used in past health crisis experiences (Box 2). In addition, in crisis times digital G2B payments could include grants to cover wages for staff, employee retention funds for small businesses, and lending programs for businesses.¹⁸

Fintech developments could give governments the ability to better track consumer spending patterns in real-time. This may be the case once central banks issue digital currencies (CBDC),¹⁹ whose transactions they can track or if digital service providers are willing or required to share their data with the government. If so, this can help inform which sectors are suffering the largest consumption declines, based on payment transaction records, and, therefore, where best to target government assistance to firms. Where granular

⁸ https://globalfindex.worldbank.org/#data_sec_focus

⁹ See, e.g., Cangjiano Gelb, and Goodwin-Groen (2019), who discuss digitization of G2P for four cases: India, Mexico, Estonia, and Ghana.

¹⁰ In India, the national digital biometric identify system (Aadhaar) facilitates KYC processing, providing residents with broader access to the banking system.

¹¹ Better Than Cash Alliance (2016, p. 45).

¹² There has been increasing public concern about the health risks of using cash for payments: while some of these concerns may be unwarranted according to medical research, both cash and in-store card payments do often involve a degree of physical contact that can be avoided by the use of mobile payments (Auer, Comelli, and Frost 2020).

¹³ According to Better Than Cash Alliance (2019) the cost of a cash G2P payment is higher than a digital G2P payment and varies across countries. The digital payment is also more cost effective for the recipient (CGAP 2014).

¹⁴ Digital payments give women greater control over their income, potentially benefitting their entire household, especially children (McKinsey Global Institute 2016). While this benefit is always relevant, it may be even more important in crisis times, when for instance malnutrition risks affect a larger part of the population.

¹⁵ Reaching the informal sector with digital payment methods can also contribute to financial inclusion more broadly (i.e., offering opportunities beyond the current crisis). As digital payments become more widespread, different stakeholders (from public authorities to financial institutions, payment service providers, and businesses) can play a role in reducing the size of the informal economy. Digital payments can raise profits by lowering the costs of transacting with customers, suppliers, and government officials. Informal sector workers and businesses would benefit from digital payments' higher efficiency and security relative to cash.

¹⁶ See IMF (2020a, b).

¹⁷ See Gentilini and others (2020) and <https://qz.com/1828923/china-issues-digital-coupons-to-aid-coronavirus-economic-recovery/>. Also, for various examples of how informal sector workers are identified and reached, see Gentilini and others (2020) and IMF (2020a, 2020b).

¹⁸ e.g., COVID-19 SME financing in China via virtual banks that receive government support. In addition, for other cases of digital payment use in health crises, see Gurung and Perlman (2018).

¹⁹ e.g., CBDC pilots have been run, are currently being run or are planned by the central banks of The Bahamas, China, the Eastern Caribbean, Ecuador, and Uruguay, while the Republic of Korea, Sweden, and Ukraine are working on proofs of concept for CBDC. It should be understood that the introduction of a CBDC is a multiyear effort. It may not be advisable to rush this process in response to a crisis.

payments data would allow a government to see not only transaction values, but also a breakdown of transaction volumes and prices in different sectors, this could also help quickly identify where production bottlenecks are occurring (i.e., from the observation of high inflation in specific product categories). Such collection and disclosure of data would, however, depend on country's information and privacy laws.

Box 2. Mobile Cash Transfers to Frontline Workers in Sierra Leone during the Ebola Crisis²⁰

Sierra Leone was among the countries hardest hit by the Ebola outbreak of 2014–16. Frontline response workers numbered more than 60,000 and played a critical role in stemming the epidemic. However, cash-based payments to these workers posed a significant problem, as missed, reduced, or delayed payments became a major cause of strikes. In December 2014, Sierra Leone and the donor community turned to mobile wallets to make payments to frontline response workers.

A crucial factor underpinning the feasibility of the mobile cash transfer approach in Sierra Leone was its relatively high level of connectivity. Sierra Leone entered the crisis with 95 percent mobile phone penetration, and a national network of more than 5,000 mobile payment agents, which could convert mobile payments to cash.^{21,22} Moreover, the Bank of Sierra Leone issued mobile money guidelines during the Ebola crisis.

Although nearly all response workers owned mobile phones, at the outset of the mobile cash transfer program only 15 percent of them were registered for mobile money. Authorities worked to fast-track minimum know-your-customer (KYC) requirements so that response workers could be quickly registered and start receiving digital payments. In this regard, a lack of identity documents proved particularly challenging. Sierra Leone's national identification system covers only 15 percent of the population. Moreover, 70 percent of the population share the 10 most common surnames, compounding the problem of identifying payees. While the risk of transmission of the Ebola virus by physical contact meant fingerprint scanning was problematic, the use of facial recognition software proved an effective biometric identification solution.

Recipients reported a high level of satisfaction with the mobile transfers. During the program, 98 percent of response workers were paid on time and in the correct amount. Mobile transfers also effectively ended unauthorized deductions by managers, which ran up to 50 percent of workers' hazard payments when payments were made in cash. As a result, strikes subsided. Overall, Bangura (2016) estimates that mobile transfers led to cost savings of US\$10.7 million for the government, development partners, and response workers.

Payments by businesses

Digital wage payments and digital tax payments ensure social distancing, in addition to being cost effective and more secure. As compared to cash and check payments (to the extent that these are handed over and cashed physically) the digital payment of wages, taxes and transfers to, respectively, employees, the government, and other businesses benefits both payers and payees by better maintaining social distancing. Some country case examples include Bangladesh and the Philippines on wage payment digitization, and Tanzania on the benefits of digitizing B2G (as well as P2G) payments.²³

Distributed computing has the potential to transform payments and securities settlement as well as back-office functions by reducing costs and allowing direct business-to-business (B2B) transactions that bypass intermediaries. Bypassing intermediaries may be of value where intermediaries are affected by the COVID-19 crisis. For instance, banks may process payments more slowly due to staff shortages from

²⁰ This Box is based on Bangura (2016) and Dumas, Frisetti, and Radice (2017).

²¹ In contrast, there were only 50 ATMs available in Sierra Leone.

²² Nevertheless, some rural areas in Sierra Leone did face connectivity issues, especially in the northern Koinadugu district, where response workers faced difficulties receiving text message notifications of their digital payments.

²³ Better Than Cash Alliance (2017, 2019), and Pillai (2016).

quarantines or illness. Moreover, certain types of payments, particularly cross-border transactions, can involve chains of intermediaries, including correspondent banks, which can be vulnerable to global economic conditions. For example, in the aftermath of the global financial crisis, correspondent banking links toward smaller developing countries were reduced.²⁴

Payments and transfers by households

Contactless digital payments for P2P transfers and for purchases in stores could help maintain social distancing and reduce the potential spread of COVID-19. Existing modalities for digital payments (debit/credit cards, internet banking, mobile wallets, digital payment apps, Unified Payments Interface service, Unstructured Supplementary Service Data, and bank prepaid cards, mobile) have been increasingly used by households around the world. As an example, a recent survey of Indian households indicates the rising use of transactions conducted using digital payments during the COVID-19 crisis.²⁵

Some governments are currently providing incentives to pay for goods or services digitally, through mobile money or e-wallets. For example, Uganda has cut mobile money transfer fees, Egypt, Liberia, and Myanmar have increased transaction size limits, while authorities in Bangladesh, Cameroon, the Democratic Republic of Congo, Ghana, Kenya, Mozambique, Pakistan, Rwanda, Senegal, and Zambia have taken both sets of measures (cutting mobile transfer fees and raising transaction size limits) in response to the pandemic.²⁶ As the reliance on the online provision of goods and services increases during the pandemic, there will be a greater need for digital methods of payments that are compatible with online use.

Digital forms of payment, including mobile money and digital currencies, can facilitate the processing of remittances in times of crisis. This is especially the case when traditional forms of remittances require physical queuing.²⁷ For instance, in the Pacific, the United Nations Capital Development Fund is working with mobile network operators to temporarily waive fees for mobile remittances, to help maintain the flow of remittances that is a key source of income for many Pacific island economies.²⁸

The digitization of P2G payments, aside from its social distancing benefits, has the scope to raise tax revenues. Digital payment of taxes could improve the visibility of tax payments, which can help combat tax evasion and corruption. For example, digitization schemes for the mobile payment of municipal taxes in Senegal, raised tax revenues by a factor of seven within three months.²⁹ Higher tax revenues can be particularly important during the ongoing pandemic given the large fiscal expenditure needs most governments will face.

Credit to businesses

Various technologies can be beneficial for lending to businesses, especially in times of crisis.³⁰ For example, machine learning algorithms can help nonbank lending platforms and digital banks that provide lending to SMEs assess the creditworthiness of businesses remotely and distribute loans rapidly by automating the due diligence process.³¹ Big data analytics could allow for the automation of credit approvals, facilitate regulatory compliance and fraud detection. Fintech firms that combine the provision of other services, such as payments or social media, with credit can harness data sources that other lenders cannot, subject to data and privacy

²⁴ See, e.g., [Erbenová and others \(2016\)](#).

²⁵ <https://www.statista.com/statistics/1111087/india-coronavirus-impact-on-digital-payment-app-usage/>

²⁶ See [GSMA \(2020\)](#) and [Goodwin-Groen \(2020\)](#).

²⁷ [Garcia-Mora and Rutkowski \(2020\)](#). Stablecoins are one example of digital currencies that could be used for cross-border payments and remittances.

²⁸ <https://www.uncdf.org/article/5452/covid-19>

²⁹ [Sock, Mvondo, and Mensah \(2018\)](#).

³⁰ This paragraph pertains to both nonbank fintechs and fintechs partnering with traditional credit intermediaries to leverage big data for credit assessment.

³¹ [Bazarbash \(2019\)](#). Possible risks, however, include the introduction of a machine learning bias resulting in the exclusion of segments of the population, over-indebtedness related to an expanded availability of credit, and the lack of digital and financial literacy to understand simple lending decisions, as well as more complex machine learning-based expertise.

rules, and competition policy.³² Such credit provision can be of particular importance in the informal sector, for SMEs and for the smallest entrepreneurs about which relatively little public information is available, and that may face difficulties accessing credit through traditional bank channels. This consideration is even more important during crises when information asymmetries can amplify credit rationing.³³ In the case of China, a reliance on fintech-based credit provision has been found to improve SMEs' shock resilience, both before and during the current pandemic.³⁴ Digital, contactless credit provision to businesses can also help implement social distancing during the COVID-19 crisis, by reducing the need for entrepreneurs to physically go to the bank to interact with or deliver documentation to loan officers. Finally, new nonbank lending platforms can become more important during the crisis if bank balance sheets are impaired and their lending is constrained.

Credit to households

P2P lending platforms can offer benefits, and these may increase in crisis times. P2P lending platforms operate with lower overhead and provide their services more cheaply than traditional financial institutions. Mainly small to midsize lenders participate in such platforms. Lending software providers create solutions to process loans faster, and lenders try to tap into new markets and demographics. Some examples, preceding the current crisis, include the case of Brazil where the central bank authorized P2P lending across the whole country, the introduction of a P2P scheme for first time home buyers by Malaysian authorities, and P2P lending in the United States, which is recognized and regulated by the Securities and Exchange Commission as other financial instruments. New P2P lenders often provide better service than established financial institutions due to recent advances in lending technology and fully automated lending processes. P2P financing platforms can facilitate access to credit, as highlighted for instance by emerging P2P lending platforms in China³⁵ and payment to businesses (P2B) crowdfunding platforms that have taken off in several countries.³⁶ In crisis times, when bank financing may be harder to obtain, such platforms could provide an alternative potential source of credit for some households and businesses, which would otherwise likely be credit rationed due to their small size and potential lack of documentation.³⁷ Digital, contactless credit provision to households can also help implement social distancing during the COVID-19 crisis, by reducing the need for households to physically go to the bank to interact with or deliver documentation to loan officers.

III. RISKS INHERENT IN THE EXPANSION OF DIGITAL FINANCIAL SERVICES DURING THE COVID-19 CRISIS

A rapid shift toward DFS, which might be incentivized during the current pandemic, could initially worsen income and gender inequality, and exacerbate the rural–urban and young–old divide.³⁸ Women in developing countries are 23 percent less likely to access the internet via mobile phones than men.³⁹ Moreover, rural populations are 40 percent less likely to use mobile internet than urban populations, with both rural-urban and gender gaps concentrated in South Asia and sub-Saharan Africa.⁴⁰ In some countries, access to digital

³² Banks could also obtain insight from account holders' payment history (e.g., debit card usage) for their decisions on credit provision, but often face regulatory constraints on the use of payments data in credit provision.

³³ Agur (2012), Huang and others (2020).

³⁴ Chen and others (2019), Huang and others (2020).

³⁵ Lin, Li, and Zheng (2017).

³⁶ Moritz and Block (2016).

³⁷ This is not to suggest that P2P platforms are immune to strain from the COVID-19 crisis (see, e.g., linked articles in [Financial Times](#) and [Forbes](#)). Indeed, large parts of the [fintech space](#) are under strain. In addition, P2P and P2B platforms are not risk free and can serve as a channel for the propagation of shocks. Platforms may face severe funds withdrawals if loan quality deteriorates. In the case of nonperforming loans, the costs would be borne directly by households rather than financial institutions, which may lack capital buffers.

³⁸ It is widely acknowledged that DFS help inclusion in the long term (Sahay and others 2020). However, ramping up during a crisis is a different issue and could initially exacerbate existing divides (e.g., generational and gender gaps). Concerns related to the ramping up are more about short-term effects and in this regard careful planning and implementation of DFS initiatives are crucial ([IMF 2020a,b](#)).

³⁹ GSMA (2019a).

⁴⁰ GSMA (2019b).

financial services can be challenging for the poor or the elderly. Moreover, transitions can be particularly difficult for such parts of the population. For instance, the decision of the Indian government in 2016 to suddenly stop accepting certain legal tender bills, known as demonetization, was followed by a large-scale push for the adoption of digital payments. Surveys have revealed that poorer and less technologically adept parts of the Indian population were disproportionately negatively affected by this shock.⁴¹ Efforts to quickly ramp up the use of digital financial services during the COVID-19 crisis could encounter similar short-term adjustment problems and mitigation measures might be needed.⁴²

The susceptibility of digital financial services to cyberattacks, digital fraud, and even runs could become more prevalent. This could be the case particularly if efforts to rapidly scale up digital payments during the COVID-19 crisis cannot be matched by equally paced improvements in cybersecurity.⁴³ Even where a digital payment infrastructure is in place, quickly scaling up the services it provides could lead to operational risks, including system capacity constraints and the unavailability of critical staff, particularly if staff are affected by quarantines or illness. In addition, digital financial services based on social media apps could be more prone to panics, particularly product runs during the pandemic. This could be triggered by messaging, including fake news, disseminated on the social media.⁴⁴

There could be tensions between quickly easing access to mobile payments, which several countries have done in response to the COVID-19 crisis, and maintaining adequate know-your-customer (KYC) procedures and AML compliance. The importance of these tensions depends on the manner in which the improvement in access is achieved. For example, as part of its cash transfer program, Ghana has decided to temporarily recognize the identity checks performed by mobile operators. Egypt and Senegal have similarly eased KYC requirements.⁴⁵ Instead, as discussed before, several countries have opted to focus their push to increase the attractiveness of mobile payments during the COVID-19 crisis on the reduction of mobile transfer fees. Such an approach avoids immediate compliance concerns, unless the increased demand for new accounts places significant strains on the existing KYC process. A high cost to mobile transfers can not only depress the intensity of use by existing users but can also be a constraint to opening accounts and choosing to participate in the payment network. The crisis has highlighted the need for many countries to adapt their regulatory and policy frameworks with regard to the provision of payments and financial services by nonbanks, especially on KYC and AML/CFT issues, questions related to taxation or data privacy, as well as requirements on interoperability in the realm of digital financial services.⁴⁶ Moreover, authorities and regulators should have sufficient understanding of operations and risks posed by DFS for cost-benefit analyses of their DFS-related policies and regulations.

A large-scale move to digital financial services could create concerns about a “surveillance state.” This could happen if for example the government has access to the payments data.⁴⁷ If data access is instead restricted to companies, concerns about privacy, as well as data monopolies, could arise. While issues related to government or private company use of payment data are always relevant, there is a risk that the checks and balances provided by either democratic oversight or business regulation could be short-circuited during crisis episodes.

⁴¹ [Krishnan and others \(2019\)](#). This study focuses on the initial impact of the demonetization, not its long-term impact on the Indian economy, for which, see recent [IMF Staff Reports on India](#).

⁴² For example, the young–old divide can be addressed by relying on multigenerational households, which are typical in parts of Asia and Africa. Communicational campaigns can also foster collaboration between young and old (e.g., [Argentina, Peru](#)).

⁴³ Evidence is already emerging that cybersecurity risk has risen considerably during the COVID-19 pandemic ([Crisanto and Prenio 2020](#)).

⁴⁴ [Amer and others \(2020\)](#).

⁴⁵ [GSMA \(2020\)](#).

⁴⁶ See <https://www.cgap.org/topics/collections/regulation-inclusive-digital-finance> and <https://www.cgap.org/blog/series/interoperability-and-digital-financial-services>

⁴⁷ [Amer and others \(2020\)](#).

IV. TAKEAWAYS

Digital financial services can conveniently and affordably connect entrepreneurs with banks, employees, suppliers, and new markets. They can facilitate peer-to-peer transactions (including remittances). And they can allow governments to reach households and firms in a timely fashion. All of these take on added value during the response to the COVID-19 crisis, as governments seek ways to disburse funds to those in need quickly and effectively, and many households and firms aim to rapidly access online payments and financing. At the same time, digital financial services allow for social distancing, which is of particular value during the pandemic. More generally, digital financial services can promote financial inclusion in remote or poor areas where the physical presence of financial institutions is absent.

However, attempting to quickly scale up digital financial services in the short timeframe during which a crisis response needs to be formulated, is not merely challenging but potentially also risky. The risks to stability and integrity, including from operational constraints, cyberattacks, fraud, money-laundering, data, and privacy issues that are always present, may worsen if the use of digital financial services is scaled up in times of crisis.⁴⁸ Implementing a scaling up of DFS during a crisis involves greater risk if proper safeguards and regulations are not in place. Moreover, when there are pre-existing significant gender gaps, rural–urban or young–old divides in the use of digital financial services, ramping up digital financial services risks exacerbating inequalities. The same is true if access to a large informal sector cannot be assured or when financial literacy is a significant constraint.

Looking forward, bank credit intermediation may be difficult in the recovery phase of the crisis. Many governments have introduced measures to encourage banks to provide lending by giving them incentives, including guarantee schemes or regulatory adjustments.⁴⁹ Even if nonbank lending could also be affected by the crisis, there could nonetheless be opportunities for digital nonbank financial services to provide the support needed where banks and other traditional financial intermediaries are unable to meet the needs of households and firms. Provided risks are properly addressed, digital innovations in payment systems and other financial services have the potential to create value for all users during times of crisis and beyond.

REFERENCES

- Agur, I. 2012. “Credit Rationing When Banks Are Funding Constrained.” *North American Journal of Economics and Finance* 23 (2): 220–27. <https://www.sciencedirect.com/science/article/abs/pii/S1062940812000034>
- Alper, E., and M. Miktus. 2019. “Digital Connectivity in Sub-Saharan Africa: A Comparative Perspective.” <https://www.imf.org/en/Publications/WP/Issues/2019/09/27/Digital-Connectivity-in-sub-Saharan-Africa-A-Comparative-Perspective-48692>
- Arner, D. W., J. N. Barberis, J. Walker, R. P. Buckley, A. M. Dahdal, D. and A. Zetsche. 2020. “Digital Finance & the COVID-19 Crisis.” University of Hong Kong Faculty of Law Research Paper No. 2020/017. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3558889
- Auer, R., G. Comelli, and J. Frost. 2020. “COVID-19, Cash, and the Future of Payments.” *BIS Bulletin* No. 3. <https://www.bis.org/publ/bisbull03.pdf>
- Bangura, J. A. 2016. “Saving Money, Saving Lives: A Case Study on the Benefits of Digitizing Payments to Ebola Response Workers in Sierra Leone.” <https://www.betterthancash.org/tools-research/case->

⁴⁸ For more on discussion on the opportunities and risks inherent in digital financial services, see [BIS \(2019\)](#), [CGAP \(2015\)](#), [G20 \(2016\)](#), [Klapper and Singer \(2016\)](#), [Loukoianova and others \(2018\)](#), [RFF \(2017\)](#), and for a review of the literature on the impact of financial inclusion in general, see [Martinez Peria and Shin \(2020\)](#).

⁴⁹ <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>.

[studies/saving-money-saving-lives-a-case-study-on-the-benefits-of-digitizing-payments-to-ebola-response-workers-in-sierra-leone](#)

- Bank for International Settlements (BIS). 2019. "Welfare Implications of Digital Financial Innovation." <https://www.bis.org/speeches/sp191120.htm>
- Bazarbash, M. 2019. "FinTech in Financial Inclusion: Machine Learning Applications in Assessing Credit Risk." IMF Working Paper 19/109. <https://www.imf.org/en/Publications/WP/Issues/2019/05/17/FinTech-in-Financial-Inclusion-Machine-Learning-Applications-in-Assessing-Credit-Risk-46883>
- Better Than Cash Alliance. 2016. "Building from a Strong Foundation: A Path Forward for Digitizing Sub-National Government Payments in Peru." <https://www.betterthancash.org/tools-research/case-studies/country-diagnostic-peru>
- Better Than Cash Alliance. 2017. "Digitizing Wage Payments in Bangladesh's Garment Production Sector." <https://www.betterthancash.org/tools-research/case-studies/digitizing-wage-payments-in-bangladeshs-garment-production-sector>
- Better Than Cash Alliance. 2019. "The State of Digital Payments in the Philippines." <https://www.betterthancash.org/tools-research/case-studies/country-diagnostic-the-philippines-2019-edition>
- Cangiano, M., A. Gelb, and R. Goodwin-Groen. 2019. "Public Financial Management and the Digitalization of Payments." <https://www.cgdev.org/sites/default/files/public-financial-management-and-digitalization-payments.pdf>
- Chen, T., Y. Huang, C. Lin, and Z. Sheng. 2019. "Finance and Firm Volatility." http://web.nbs.ntu.edu.sg/general/NTUFinanceConference2019/downloadpapers/paperfolder/FC2019/D1_FinanceandFirmVolatility.pdf
- Consultative Group to Assist the Poor (CGAP). 2014. "Electronic G2P Payments: Evidence from Four Lower Income Countries." <https://www.cgap.org/sites/default/files/Focus-Note-Electronic-G2P-Payments-April-2014.pdf>
- Consultative Group to Assist the Poor (CGAP). 2015. "Digital Financial Inclusion: Implications for Customers, Regulators, Supervisors, and Standard-Setting Bodies." <https://www.cgap.org/sites/default/files/Brief-Digital-Financial-Inclusion-Feb-2015.pdf>
- Consultative Group to Assist the Poor (CGAP). 2018. "Basic Regulatory Enablers for Digital Financial Services." <https://www.cgap.org/research/publication/basic-regulatory-enablers-digital-financial-services>
- Crisanto, J. C., and J. Prenio. 2020. "Financial Crime in Times of Covid-19 — AML and Cyber Resilience Measures." <https://www.bis.org/fsi/fsibriefs7.pdf>
- D'Silva, D., Z. Filková, F. Packer, and S. Tiwari. 2019. "The Design of Digital Financial Infrastructure: Lessons from India." BIS Papers No. 106. <https://www.bis.org/publ/bppdf/bispap106.pdf>
- Davidovic, S., E. Loukoianova, C. Sullivan, and H. Tourpe. 2019. "Strategy for Fintech Applications in the Pacific Island Countries." APD Departmental Paper, International Monetary Fund. <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2019/08/21/Strategy-for-Fintech-Applications-in-the-Pacific-Island-Countries-46862>
- Dumas, T., A. Frisetti, and H. W. Radice. 2017. "Harnessing Digital Technology for Cash Transfer Programming in the Ebola Response: Lessons Learned from USAID/Office of Food for Peace Partners' West Africa Ebola

Responses (2015–2016).” <https://www.alnap.org/help-library/harnessing-digital-technology-for-cash-transfer-programming-in-the-ebola-response>

Erbenová, M., Y. Liu, N. Kyriakos-Saad, A. López-Mejía, G. Gasha, E. Mathias, M. Norat, F. Fernando, Y. Almeida, 2016. “The Withdrawal of Correspondent Banking Relationships: A Case for Policy Action.” IMF Staff Discussion Note 16/06. <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1606.pdf>

Garcia-Mora, A., and M. Rutkowski. 2020. “Remittances in Times of the Coronavirus — Keep them Flowing.” <https://blogs.worldbank.org/psd/remittances-times-coronavirus-keep-them-flowing>

Gentilini, U., M. Almenfi, I. Orton, and P. Dale. 2020. “Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures.” <https://socialprotection.org/discover/publications/social-protection-and-jobs-responses-covid-19-real-time-review-country>

Goodwin-Groen, R. 2020. “Putting Digital Payments to Work in the Time of COVID-19.” <https://www.betterthancash.org/news/blogs-stories/putting-digital-payments-to-work-in-the-time-of-covid-19>

Group of Twenty (G20). 2016. “High-Level Principles for Digital Financial Inclusion.” <https://www.gpfi.org/sites/gpfi/files/documents/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion%20-%20Full%20version-.pdf>

GSMA. 2018. “Enabling Rural Coverage: Regulatory and Policy Recommendations to Foster Mobile Broadband Coverage in Developing Countries.” <https://www.gsma.com/mobilefordevelopment/resources/enabling-rural-coverage-report>

GSMA. 2019a. “The State of Mobile Internet Connectivity.” <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/07/GSMA-State-of-Mobile-Internet-Connectivity-Report-2019.pdf>

GSMA. 2019b. “State of the Industry Report on Mobile Money.” <https://www.gsma.com/sotir/wp-content/uploads/2020/03/GSMA-State-of-the-Industry-Report-on-Mobile-Money-2019-Full-Report.pdf>

GSMA. 2020. “Mobile Money Recommendations to Central Banks in Response to COVID-19.” <https://www.gsma.com/mobilefordevelopment/resources/mobile-money-recommendations-to-central-banks-in-response-to-covid-19>

Gurung, N., and L. Perlman. 2018. “Focus Note: The Role of Digital Financial Services in Humanitarian Crises Responses.” <http://www.citicolumbia.org/wp-content/uploads/2018/10/Humanitarian-Paper-final-for-dfso-citi-publication.pdf>

Huang, Y., C. Lin, P. Wang, and Z. Wu. 2020. “Saving China from the Coronavirus and Economic Meltdown: Experiences and Lessons.” In *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever It Takes*, edited by R. Baldwin and B. Weder di Mauro. Vox EU online book. <https://voxeu.org/article/saving-china-coronavirus-and-economic-meltdown-experiences-and-lessons>

International Monetary Fund (IMF). 2020a. “Digital Solutions for Direct Cash Transfers in Emergencies.” <https://www.imf.org/~media/Files/Publications/covid19-special-notes/en-special-series-on-covid-19-digital-solutions-for-direct-cash-transfers-in-emergencies.ashx?la=en>

International Monetary Fund (IMF). 2020b. “Reaching Households in Emerging and Developing Economies: Citizen ID, Socioeconomic Data, and Digital Delivery.” <https://www.imf.org/~media/Files/Publications/covid19-special-notes/en-special-series-on-covid-19-reaching-households-in-emerging-and-developing-economies.ashx?la=en>

- International Monetary Fund (IMF). Forthcoming. “Financial Access COVID-19 Policy Tracker.”
- Jerving, S. 2020. “Cash Transfers Lead the Social Assistance Response to COVID-19.” <https://www.devex.com/news/cash-transfers-lead-the-social-assistance-response-to-covid-19-96949>
- Klapper, L., and D. Singer. 2014. “The Opportunities of Digitizing Payments.” <http://documents.worldbank.org/curated/en/188451468336589650/The-opportunities-of-digitizing-payments>
- Krishnan, N. K., A. Johri, R. Chandrasekaran, J. Pal. 2020. “Cashing Out: Digital Payments and Resilience Post-Demonetization.” In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development*. Article No. 8: 1–16. https://www.researchgate.net/publication/330268551_Cashing_out_digital_payments_and_resilience_post-demonetization
- Lin, X, X. Li, and Z. Zheng. 2017. “Evaluating Borrower’s Default Risk in Peer-to-Peer Lending: Evidence from a Lending Platform in China.” *Applied Economics* 49 (35): 3538–45. <https://www.tandfonline.com/doi/abs/10.1080/00036846.2016.1262526>
- Loukoianova, E., Y. Yang, and staff team. 2018. “Financial Inclusion in Asia-Pacific APD Departmental Paper, International Monetary Fund. <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2018/09/18/Financial-Inclusion-in-Asia-Pacific-46115>
- Martinez Peria, M. S., and M. Y. Shin. 2020. “Financial Inclusion and Human Development.” <https://oxfordre.com/economics/view/10.1093/acrefore/9780190625979.001.0001/acrefore-9780190625979-e-354>
- McKinsey Global Institute. 2016. “Digital Finance for All: Powering Inclusive Growth in Emerging Economies.” <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Employment%20and%20Growth/How%20digital%20finance%20could%20boost%20growth%20in%20emerging%20economies/MGI-Digital-Finance-For-All-Executive-summary-September-2016.ashx>
- Moritz, A., and J. H. Block. 2016. “Crowdfunding: A Literature Review and Research Directions.” In *Crowdfunding in Europe*, edited by D. Brüntje, and O. Gajda. *FGF Studies in Small Business and Entrepreneurship*. Springer. https://link.springer.com/chapter/10.1007/978-3-319-18017-5_3
- Organisation for Economic Co-operation and Development (OECD). 2019. “Enhancing Access and Connectivity to Harness Digital Transformation.” <https://www.oecd.org/going-digital/enhancing-access-digital-transformation.pdf>
- Pazarbasioglu, C., A. Garcia Mora, M. Uttamchandani, H. Natarajan, E. Feyen, and M. Saal. 2020. “Digital Financial Services.” <http://pubdocs.worldbank.org/en/230281588169110691/Digital-Financial-Services.pdf>
- Pillai, R. 2016. “Person-to-Government Payments: Lessons from Tanzania’s Digitization Efforts.” https://btca-prod.s3.amazonaws.com/documents/237/english_attachments/Tanzania-Case-Study.pdf?1515010379
- Responsible Finance Forum (RFF). 2017. “Opportunities and Risks in Digital Financial Services: Protecting Consumer Data and Privacy.” https://responsiblefinanceforum.org/wp-content/uploads/2017/06/RFFVIII-Opportunities_and_Risks_in_Digital_Financial_Services-Protecting_Consumer_Data_and_Privacy.pdf
- Sahay, R., U. Eriksson von Allmen, A. Lahreche, P. Khera, S. Ogawa, M. Bazarbash, K. Beaton, P. Khera, and S. Ogawa. Forthcoming. “The Promise of Fintech: Financial Inclusion in the Post COVID-19 Era.” MCM

Departmental Paper, International Monetary Fund. <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2020/06/29/The-Promise-of-Fintech-Financial-Inclusion-in-the-Post-COVID-19-Era-48623>

Sock, M., J. P. Mvondo, and S. Mensah. 2018. "Digitization of Payments: A Source of Growth and Inclusive Development (Country Diagnostic: Senegal)." <https://www.betterthancash.org/tools-research/case-studies/country-diagnostic-senegal>

World Economic Forum (WEF). 2014. "Delivering Digital Infrastructure: Advancing the Internet Economy." http://www3.weforum.org/docs/WEF_TC_DeliveringDigitalInfrastructure_InternetEconomy_Report_2014.pdf