



Promoting
Safer Payments
Innovation

Shifting the Focus: Digital Payments and the Path to Financial Inclusion

2020 • No. 20-1

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Abstract

Payments innovations offer convenience, but they also raise concerns about how they may further exclude a population already marginally attached to the economy. Research shows that upward mobility has eroded over several decades. Americans born at the lower end of the income scale are increasingly unlikely to climb that scale. But how do we ensure that our economy includes everyone? Policy has often focused on those consumers who have no relationship with a banking institution, or the *unbanked*, and on those who have a bank account but use alternative financial services, or the *underbanked*. We argue that today, instead of focusing on helping these people become banked to increase financial inclusion, a more effective approach could be giving cash users access to digital payment vehicles that don't depend on traditional bank accounts.

This paper looks specifically at the portion of the population who rely on cash as their primary means of conducting transactions. We lay out financial exclusion issues unique to the United States and suggest where discussions and decisions need to be directed, and we offer policymakers a new approach to financial inclusion that focuses on options available to those whose reliance on cash puts them at even more risk of being excluded from the financial system.

JEL classifications: G5, I3, O33, O35, O38

Key words: financial economics, innovation, innovation policy, social enterprise, social innovation, technology, well-being

This version: September 30, 2020

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The authors thank Dave Altig, executive vice president and director of research; Mary Kepler, senior vice president and chief risk and compliance officer; Cheryl Venable, executive vice president and manager of the Federal Reserve System's Retail Payments Office; Michael Johnson, executive vice president; Shalini Patel, director, Regional Economic Information Network; Patrick Pontius, CED principal adviser; and Sameera Fazili, CED engagement director, all of the Federal Reserve Bank of Atlanta.

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1. Introduction

Payments innovations offer unprecedented convenience. But these innovations also raise concerns about the safety of our payments and our personal data. They also raise concerns about how they may further exclude a population that is already marginally attached to the economy. To better understand and address those concerns, the Atlanta Fed last year adopted the promotion of safer payments innovation as a top strategic priority.

Alongside fostering safer payments innovation, we also prioritize efforts to enhance economic mobility and resilience, particularly for minority and low- and moderate-income families and individuals. Research shows that upward mobility has eroded over several decades. Americans born at the lower end of the income scale are increasingly unlikely to climb that scale. What is more, these challenges are worse in the Southeast, the home of the Atlanta Fed. We are simply leaving too many of our fellow citizens on the sidelines of prosperity, and that limits the economic potential of the entire region in numerous ways.

Safer payments and economic mobility and resilience may appear to be unrelated, but we don't consider these initiatives in isolation. In fact, we are pursuing a research agenda that views payments innovation through an economic mobility and resilience lens. This paper describes one component of that agenda.

Over the past decades, technology-driven innovation has transformed payments. While once dominated by in-person cash transactions and paper checks, payment transactions are now more often executed remotely and digitally, through innovations that offer speed and efficiency. As with most technologies, the implications of fintech adoption are varied. Digital payment services can offer financial inclusion, but they can also inhibit it.

The United States has made progress in expanding access to the financial system for many through efforts like financial literacy programs. However, plenty of consumers still lack sufficient means to make efficient and cost-effective payments. Those people who rely primarily on cash to transact, either by choice (they don't trust technology or know how to use it) or circumstance (they don't have a bank account, smartphone, computer, or internet access), will face challenges as the economy becomes increasingly digitized. How people send and receive payments can have implications for their overall financial health.

This problem becomes more acute when we look at it with an economic mobility and resilience perspective. For example, the share of low-income consumers who lack a credit or debit card is much higher than the share of the overall population without these cards. This divergence highlights the exclusion from digital commerce that is a particular problem for low- and very low-income families, the very ones we are most concerned about when we think about economic mobility and resilience.

We are certainly not the first to write about digital payments and financial inclusion. Scholars and experts worldwide have brought awareness to this topic. There is also a long history of policy efforts to address financial inclusion. In recent decades, policy has often focused specifically on those consumers who have no relationship with a banking institution, or the *unbanked*, and on those who have a bank account but use alternative financial services, or the *underbanked*. These alternative services include payday loan companies and nonbank institutions that cash checks and write and send money orders and international remittances. In this paper, we refer to these two groups as the *underbanked*. We argue that today, instead of focusing on helping the underbanked become banked to increase financial inclusion, a more effective approach could be giving cash users access to digital payment vehicles that don't depend on traditional bank accounts.

This paper lays out financial exclusion issues unique to the United States and suggests where discussions and decisions need to be directed here. We offer policymakers a new approach to financial inclusion that, instead of focusing on banking the unbanked, focuses on options available to those who are less attached to the financial system.

We briefly review the changes that have occurred in payments over the past few decades. We then focus on one of the potential risks associated with these payments innovations—specifically, that these innovations could exclude segments of the population who rely on cash as their primary means of conducting transactions, which we have found can, for these excluded families, increase the cost of these transactions. We size this population and look at some of the costs that this exclusion could impose on them.

We close by highlighting three possible approaches to addressing the cash-user problem, discussing the challenges and opportunities of each, and highlighting questions for further exploration. Lastly, we offer a path forward.

2. Recent developments in payments: The rise of the digital payments economy

With the introduction of the modern payment card in 1950, a digital payments economy emerged that has increasingly favored the use of electronic tools, systems, and devices that generate, store, or process data for the purpose of conducting transactions without the need for cash or checks. Moreover, while initial digital tools were associated with in-person transactions, over the past 20 years, digital innovations have accelerated the use of remote and automatic payments transactions that do not require the physical presence of participants and often happen behind the scenes. (See the appendix, “A Payments Primer.”)

The evidence that this digital payment economy is emerging as a dominant force, in terms of both tools and modes of transaction, is irrefutable. Consider that:

- Check payments have declined at a rate of 7 percent a year over most of the past two decades.¹
- Card payments have grown at an accelerated rate of 8.9 percent per year by number and 8.6 percent per year by value.²
- In 2018, debit cards surpassed cash as the most popular in-person payment type.³
- In 2018, at \$3.29 trillion, the value of remote (online) card payments nearly equaled the value of in-person general-purpose card payments.

Driving the growth of this digital payments economy are the benefits it offers, including availability of information, convenience, and efficiency—and these days, the ability to socially distance. Consumers have more flexibility in how they pay. For example, they can scan a QR code to purchase coffee, get

¹ From 2000 to 2012, check payments fell by 7.2 percent per year. Then after a slow-down in the decline from 2012 to 2015, when check payments fell at a rate of 4.4 percent per year, the rate returned to its previous 7.2 percent per year from 2015 to 2018. Over the 18 years of the Federal Reserve Payments Study, checks have fallen to nearly one-third of the original total number of checks written: from about 42 billion in 2000 to 14.5 billion by 2018, which equates to a year-over-year 5.8 percent decline by number and a 2.4 percent decline by value, according to the Atlanta Fed’s [2018 Check Sample Survey report](#) (July 30, 2020).

² This growth took place from 2015 to 2018, compared with 6.8 percent per year by number and 5.9 percent per year by value from 2012 to 2015.

³ Claire Greene and Joanna Stavins, [2018 Diary of Consumer Payments Choice](#), Federal Reserve Bank of Atlanta Research Data Report (December 2019).

their irises scanned to buy textbooks, or pay for goods by tapping a mobile device that stores the details for all their payment cards. Invisible payments are the culmination of efficiency, taking place without any physical exchange of payment instrument or details at the time of purchase. Invisible payments can take place when consumers order grocery deliveries or use a ride-sharing app. Methods of payment will only get smarter and more efficient as technology continues to advance.

Both bank and nonbank payment service providers are now offering a variety of consumer-facing products that offer new ways for their customers to exchange money. Businesses that previously did not have the means or budget to accept electronic payments because of hardware costs, processing fees, or contract terms can offer more options to their customers through flexible fintech innovations. Governments are also taking advantage of the speed and efficiency that technological innovations have created in the way they pay their employees and provide benefits to people and businesses.

The benefits of digital payments notwithstanding, this new landscape also brings risks, including but not limited to privacy, resiliency, fraud, regulation and compliance, and the heart of this paper, accessibility:

- **Privacy:** Innovation has led to a proliferation of data. Specifically, it has made personal information much more available. This raises questions about who has access to consumer data and how firms can use it. As technology changes the way consumers initiate payments, policymakers are wanting to ensure that consumers understand their liability, especially when it comes to consumer errors that lead to fraudulent payments.
- **Resiliency:** More nodes connecting to the payments system provide more opportunities for cyberattacks and hackers who seek to either hamper a system's ability to operate or access consumer accounts to commit fraud. Operational resiliency and protection of consumer funds are also a key focus for policymakers.
- **Fraud:** Another unwelcome aspect of payment innovation is that fraud migrates to every new technology or process. Fraud takes the path of least resilience. Fraud mitigation tactics have over the years been strengthened on legacy systems, but we haven't yet learned what all the vulnerabilities of new payment options are. What we know is that criminals are quick to adapt and quick to find the vulnerabilities in new payments mechanisms.
- **Regulation and compliance:** Payments operate in a complex regulatory and legal environment. Relevant rules and regulations should keep pace with rapid technological advancements and new nonbank entrants to payments.
- **Accessibility:** Payments innovation may benefit some consumers but exclude others. Advancements in retail payments may help certain previously excluded groups access the financial system, but where new options leverage bank accounts or require internet or mobile phones, consumers who rely on cash or don't have internet could be left behind.

3. Digital payments innovation can be exclusive

An increasingly dominant digital payments world could exclude certain segments of the population and even leave them worse off. People who use cash as their primary payment vehicle are a particular concern.

Demand for cash is still strong. As of August 2020, U.S. currency in circulation was \$2.0 trillion worldwide, a 14.8 percent increase over 2019. In addition, we have evidence that many demographic

groups prefer cash. Surveys have consistently shown that lower-income consumers use cash more frequently than do consumers with higher incomes who use credit cards more often. The unbanked also are heavier users of cash. On the other hand, millennials use cash relatively less frequently than others, and this may in the long run lead to fewer businesses accepting cash.⁴

However, just because someone uses cash as a primary payment vehicle does not mean that this person cannot access the digital payments economy. Rather, it’s those who have no credit or debit cards and no bank accounts who are unable to participate in the digital payment economy. How many such consumers are there in the United States?

Table 1 shows the percentages of U.S. adult (18 and older) consumers who have (1) both credit and debit cards, (2) no credit card but at least one debit card, (3) no debit card but at least one credit card, and (4) neither a credit nor debit card. The data show that only 4.77 percent of consumers have no card, which suggests that the vast majority of consumers are positioned to use and benefit from the digital payments economy.⁵

Table 1: Distribution of consumers by possession of credit and debit cards

Category	Share
Both credit and debit card	67.65
Debit card, no credit card	13.82
Credit card, no debit card	13.76
No card	4.77
Total	100
Number of respondents	3437

Source: Shy (2020) and SCPC/DCPC (2017-2018-2019)⁶

Table 2 disaggregates these data by showing how card usage varies across consumers grouped by their household income. Several trends are clear. First, more than 78 percent of consumers in every income category have some kind of card. Second, the prevalence of card ownership and usage increases with income. Third, the share of consumers in the three lowest income categories who lack a credit or debit card is much higher than the 4.77 percent average for the entire population. Thus, it is a particular problem for low- and very low-income families, the ones we are most concerned about when we think about economic mobility and resilience.

⁴ Claire Greene, [2018 Survey of Consumer Payment Choice](#), Federal Reserve Bank of Atlanta Research Data Report 19-02.

⁵ This estimate is somewhat lower than the FDIC’s recent estimate that 6.5 percent of households do not have a bank account, partly because the FDIC report defines adults as people age 16 and older, whereas the data presented in this paper describe people 18 and older.

⁶ Oz Shy, [“Low-Income Consumers and Payment Choice,”](#) Federal Reserve Bank of Atlanta Working Paper no. 2020-3, February 2020; [The Survey and Diary of Consumer Payment Choice](#) (SCPC/DCPC, 2017-2018-2019).

Table 2: Shares of consumers, grouped by card possession and banked status, by household income (percent)

	Yearly household income (thousands USD)									
	0 to 10	10 to 20	20 to 30	30 to 40	40 to 60	60 to 80	80 to 120	120 to 180	180+	All
Any card	78.86	85.66	92.28	94.92	96.45	97.94	99.46	98.97	100.00	95.23
No card	21.14	14.34	7.72	5.08	3.55	2.06	0.54	1.03	0.00	4.77
Total	100	100	100	100	100	100	100	100	100	100
No card/banked	2.44	3.28	1.40	0.85	0.37	0.00	0.27	0.00	0.00	0.73
No card/unbanked	18.70	11.07	6.32	4.24	3.18	2.06	0.27	1.03	0.00	4.04
Unbanked share of no card ⁷	88.46	77.14	81.82	75.12	89.47	100.00	50.00	100.00	NA	84.76
Number of survey respondents	246	244	285	354	535	485	745	387	156	3437
Population share	7.49	6.08	7.72	10.43	15.09	14.68	22.77	11.20	4.55	100.00

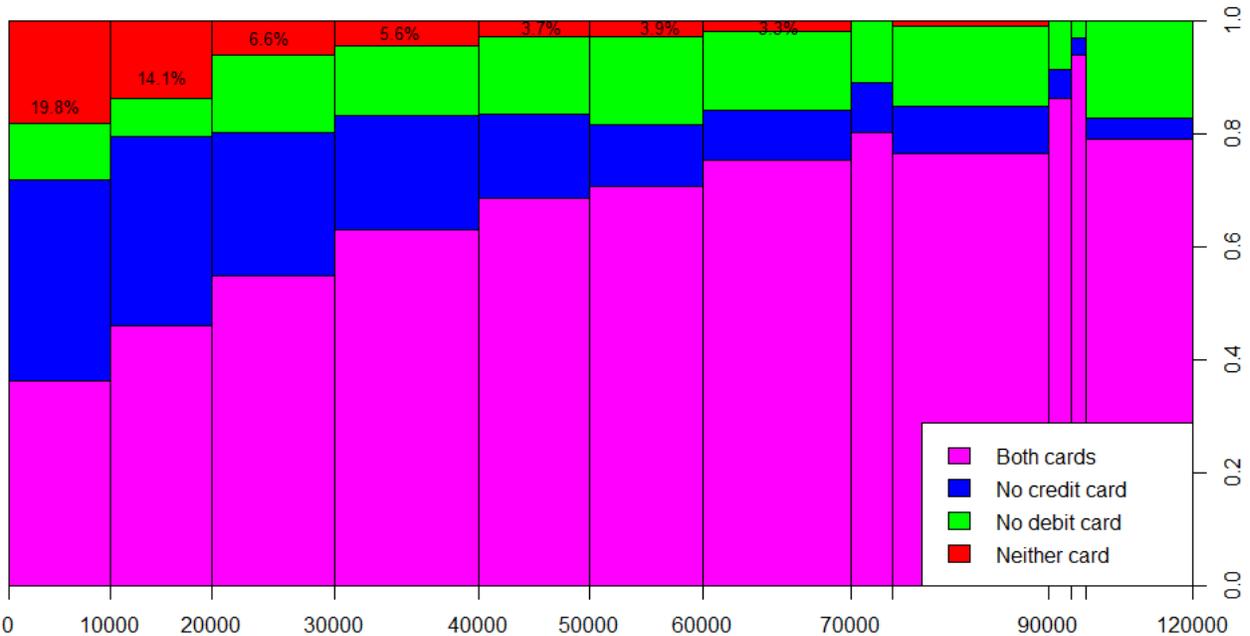
Note: Population shares are estimated using weights to fit the U.S. adult (18 and older) population.

Source: Shy (2020) and SCPC/DCPC (2017-2018-2019)

Chart 1 provides a visual presentation of table 2. For the sake of clarity, the chart focuses on 87 percent of the respondents whose household income does not exceed \$120,000. The width of each column shows the relative size of survey respondents within each income group.

⁷ Here is an example of how this row was computed: $88.46\% = 100 (18.70)/(18.70 + 2.44)$ (for the first column). Similarly, $77.14\% = 100 (11.07)/(11.07 + 3.28)$ (for the second column), and so on.

Chart 1: Consumer possession of credit and debit cards by consumer, grouped by household income



Note: For the sake of clarity, households with incomes greater than \$120,000 are excluded.

Source: Shy (2020) and SCPC/DCPC (2017-2018-2019)

It is important to determine whether these consumers who lack both a debit and credit card have a bank account, as a bank account can provide access to digital payments. Table 2 offers a picture of how consumers are distributed in terms of whether they possess any card and whether they are banked or unbanked. Overall, we observe that 4 percent of consumers, or approximately 5.14 million households (out of 128.6), have neither card nor bank account.⁸ We see again that the share of consumers who have no card and are unbanked is highest among people with the lowest incomes. We also see that nearly 88 percent of those with no card are also unbanked. Interestingly, this share is fairly consistent across most income categories.

On balance, though the share of consumers locked out of the digital payments economy is relatively small, the concentration among those with the lowest incomes means that this problem is most significant among those with the lowest levels of economic resilience. These families have limited financial resources, and they generally live paycheck to paycheck and have little, if any, savings. They are therefore not able to easily weather life changes that result in increased expenditures.

4. Why exclusion matters

The exclusions triggered by the ongoing shift towards the digital payments economy can increase costs in multiple, and sizable, ways. Because digital payment tools have become so readily available, more businesses and other organizations are excluding cash. Many governments, for example, have deployed

⁸ Interestingly, 0.73 percent of consumers have a bank account but no card. This is a bit surprising, as one might expect these consumers to have access to a debit card. Further research on this question is warranted.

an increasing number of no-cash parking meters, highway toll readers, and mass transit fare machines in recent years, and other governments are considering them. Several years ago, some private business owners adopted policies that prohibit cash in certain situations—for example, when purchasing food or drink on plane flights—or have just stopped accepting cash at all in brick-and-mortar stores. Those who favor these changes point to such advantages as eliminating the costs of handling and managing cash and the security risks of robbery and employee theft.

More recently, the advent of the coronavirus pandemic has led to an upsurge in digital payments owing to another benefit of not using cash: minimal need for contact between the customer and the service provider. This added benefit has accelerated the already significant trend towards e-commerce. The U.S. Census Bureau recently estimated that retail e-commerce sales for second-quarter 2020 amounted to \$211.5 billion, an increase of 31.8 percent from the first quarter and an increase of 44.4 percent from second-quarter 2019 while total retail sales decreased 3.4 percent during that time. Moreover, e-commerce sales in second-quarter 2020 accounted for 15.1 percent of total sales.⁹ As businesses position themselves for more online and remote shopping there will likely be further reductions in the number of brick-and-mortar stores.

While these developments may not pose problems for the large percentage of the population that can easily access the digital payments economy, the costs can be significant for those lacking such access. In many instances, consumers who rely heavily or exclusively on cash have to seek substitutes for a service that may now be unavailable to them. In general, it is reasonable to assume that consumers generally gravitate to the lowest-cost means to acquiring goods and services. This implies that the need to transition to a substitute source for a good or service due to cash refusal will be costly for these consumers. For example, in the case of e-commerce, if a retailer increases its reliance on digital payments and reduces its store footprint, a cash-user consumer may be forced to incur additional time and money costs getting to the nearest physical store.¹⁰

In some cases, the workaround is so prohibitively expensive for these families that it is not feasible. Consider the example of workers who commute by bus. If the bus system goes cashless, and there is not a convenient location to add cash as needed to an account, these commuters have to look at different modes of transportation. This could mean coordinating with others to establish a carpool, purchasing a car, or relying more heavily on taxis and rideshares—and all these alternatives are more expensive than riding the bus. Alternatively, these consumers could move to a location where they don't need the bus. Or they could give up working altogether. Again, the cash-user commuter is forced to bear significant costs.

The presence of these increased costs is one reason why this issue is relevant for those interested in enhancing economic resilience and mobility. These costs can have spillover effects, with potentially negative consequences for a range of amenities, such as affordable housing and health care.¹¹

There are also other potential opportunity costs for the cash-based consumer who cannot access digital payments. Many mobile payments apps offer the user the tools to better manage their finances. For

⁹ U.S. Census Bureau, U.S. Department of Commerce, "[Quarterly Retail E-commerce Sales 2nd Quarter 2020](#)" (press release), August 18, 2020.

¹⁰ Meanwhile, stores without an online presence may be forced to raise prices or find a new business model to remain competitive. Some may even go out of business.

¹¹ For example, housing affordability could be threatened if a family chose to move closer to the work locations of its members and the new neighborhood had more expensive housing.

example, some apps allow the user to contribute to a savings account every time they make a digital purchase. Others offer budgeting services, helping the consumer pay off multiple debts in the order that will save them the most money. A consumer who can predict cash flow and keep current on bills and debits is a consumer who is more economically resilient.¹²

5. A role for policy

The preceding section makes clear that for many people there could be significant costs associated with the rise of a digital payments economy that moves transactions away from cash. This possibility suggests that policy could play a role in ensuring that this trend does not substantially increase the barriers that keep families from achieving economic resilience and having a reasonable shot at economic mobility.

To be fair, policymakers have long recognized that families excluded from financial and payment services are disadvantaged, because those who are excluded may be hindered from positioning themselves to have better economic mobility and resilience. For at least 25 years, financial inclusion policy has emphasized the benefits of being banked. Those who participate in the banking system have access to a menu of products and services, including payments, credit, and savings, and being banked can clearly make families and businesses better off.

But the challenges of being unbanked are not the same as the challenges of being primarily cash-based in conducting payments, and so solving the unbanked problem might not be the only route to solving the problems we have centered on here. If there are alternative ways to solve cash-based exclusion, there may be good reasons to position this problem under the rubric of financial inclusion as distinct from the underbanked problem, especially if it's possible that these alternative solutions require smaller changes than what it would take to achieve (near) universal access to banking services. This section lays out this argument more fully.

5.1 Financial inclusion: Why focus on the underbanked

Fully banked customers look to their banks to provide at least three critical services.

- **Bank deposit accounts serve as a store of value.** This benefit is important for consumers who would otherwise need to make other provisions for the safe storage of their savings and wealth. Further, even apart from the fact that these funds are located in institutions with strong security, deposits in banking institutions are insured, so that even if the banking institution experiences significant hardship, depositor funds are preserved. Therefore, consumers with bank accounts can live with greater peace of mind and security because they do not need to worry so much about losing their hard-earned savings through crime or an accident like a house fire.
- **Bank retail lending facilities offer a relatively low-cost method for consumers and businesses to get financing.** Families and businesses often need to purchase goods—appliances, cars, homes, business equipment—that cost more than they can afford with their current income and savings. Banking institutions, through their credit services, allow them to pledge future income and cash flow to cover those extra costs, thereby facilitating purchases and investments that can expand opportunities and improve quality of life. Both banked and underbanked customers can

¹² There are even digital payment accounts that help the user search for employment.

apply for loans from nonbank providers, but fully banked customers need to use nonbank lenders only if they are lower cost than their bank or if they provide other offsetting benefits such as greater convenience. The underbanked customers often have to turn to nonbank lenders that generally offer higher-cost products.¹³

- **Banks offer a variety of methods for customers to make payments.** Banked consumers typically have access to a wide array of electronic payment options that their financial institutions provide. Sometimes, just having a bank account or a credit card means they can frequent a wide arrange of businesses and use various payment methods to purchase goods and services. These options may sometimes even offer discounts and rewards.

To summarize, the benefits of being attached to the banking system are real and can significantly contribute to increased economic mobility and resilience. Because the underbanked cannot capitalize on the full menu of benefits that banking provides, they are less economically mobile and resilient than they could be. This is why policymakers have tended to focus on reducing the number of underbanked households and increasing the number of families and businesses that are fully banked so they can turn to banks for both asset and liability services.¹⁴

5.2 Exploring multiple pathways to a solution

It is clear that solving the underbanked problem could contribute to resolving the cash-user problem. Unfortunately, solving the underbanked problem has proven to be difficult. Although finding a solution has been a focus for more than 25 years, a significant number of Americans continue to lack access to the full menu of bank services and benefits.

One reason is straightforward. Many families simply do not earn enough after meeting their expenses to have savings. Given that many bank accounts require some minimum balance to avoid fees, having an account may not be practical.

Another reason relates to the low, and often volatile, incomes of the underbanked, which implies a greater need for small-dollar loans to smooth their spending. Such loans come with a high rate of interest to compensate the lender for the higher risk of credit losses. The underbanked have often either avoided these high-cost loans, which means they don't build a strong credit history, or taken the loans and defaulted on them, resulting in bad credit ratings.

A third factor is the character of U.S. transaction accounts, which have historically combined all three benefits of banking (safe store of value, credit, and payments) into a single product. Importantly, the historic paper-based check system of payments necessarily involved the extension of credit for the time between when the payee received a payment and when the payee obtained the specified funds. This credit period introduced risks to the bank.

¹³ Underbanked customers can apply for loans through traditional lenders or banks. However, without a previous relationship or a proven transaction history to help them establish creditworthiness, they may get loans with unfavorable prices and terms so the bank can account for unknown relationship risks.

¹⁴ At least any nonbank firm the underbanked use should provide these services at costs no higher than a bank. Note that, in theory, asset-based services to retail customers need not be provided by the same financial firm that provides liability-based services. Indeed, many higher-income consumers have a checking account with one bank, a credit card with a different bank, a car loan from a third provider, and home mortgage with a fourth lender.

To protect themselves against the risk of loss, banks have typically delayed account holders' access to deposits until they were sure they had received the funds. This delay created hardship for households living "paycheck to paycheck," as they often had immediate needs that were difficult to manage when banks delayed the availability of funds. Moreover, this delay, combined with the unavoidable delays in recording checks written by the account holder, meant that the account balance the bank reported was not always an accurate measure of the funds available to the account holder.¹⁵ The unreliability of reported balances often led to checks being written on funds that were not actually available for spending, which in turn led to large and unpredictable fees being levied on the account holder. Potential exposure to these fees represents another disincentive for low- and moderate-income families to use banking services. Many of those relying on cash payments do so to avoid such fees.

What all this means ultimately is that an absolute solution to the underbanked problem might be a long way off.

This tough reality begs the question: might there be another solution? We believe this is a question that is at least worthy of some deeper exploration. In the next section, we offer some examples of efforts that promise to bridge the growing divide between the digital payments economy and consumers who rely on cash for their transactions. In these examples, we see hope that we may be approaching a time when the growth of the digital payments economy is not synonymous with financial exclusion for some of our most vulnerable citizens.

6. Shift the focus, shift the solutions

A 2017 World Bank study noted that not all financial products are equally effective in reaching development goals, with evidence suggesting that the biggest impacts come from savings accounts and digital payments.¹⁶ Digital payments are generally faster, cheaper, safer, and more convenient than cash, and provide an important door to other financial services. We can make even more progress toward an inclusive payments economy if we shift the focus from simply getting more people banked to making sure they have access to an evolving payments system, helping consumers reach greater levels of financial education, economic mobility, and resilience.

We present below three approaches that could be implemented to help safeguard cash-based consumers from getting left behind during this period of rapid digitalization. The first approach is about ensuring a parallel environment that preserves the use of cash. The second acknowledges that while the preservation of cash is necessary, the United States could simultaneously focus on innovation as a means to address the barriers preventing consumers from accessing digital payment options. The third looks at transitioning to a completely cashless society, to the extent that all consumers' needs could be met without a significant, lingering dependence on cash.

We don't recommend any one approach but explore the challenges and benefits of each while identifying questions for further exploration. Our aim is to initiate a conversation with interested stakeholders and highlight potential opportunities for future collaboration. In reality, a holistic, multi-

¹⁵ Similar confusion about funds availability has been caused by other payment instruments such as cards and ACH.

¹⁶ Asli Demirguc-Kunt, Leora Klapper, and Dorothe Singer, "[Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence](#)," Policy Research Working Paper, World Bank Group (April 2017).

pronged approach tailored to the unique needs of our economy and society will likely be most effective at achieving any comprehensive and sustained measure of success.

6.1 Preserving cash

One approach to ensuring that the payments system remains accessible to everyone is to maintain the infrastructure needed for a cash economy and to mandate cash acceptance. This path envisages that the future state of payments is one that supports the use of cash indefinitely. There are immediate benefits to such an approach. As we have discussed, cash remains in high demand and this allows consumers to continue to use it as a widely accepted means of payment. However, facilitating the continued use of cash can also hurt consumers who may not otherwise be motivated to go digital, all else being equal. We may be perpetuating the use of a less efficient payment method, with both businesses and consumers suffering in the end. We discuss the possible benefits and consequences stemming from the preservation of cash and pose a few unanswered questions.

Cash payments are immediate and real time, and provide for final settlement. Cash can be used anonymously and is available to everyone regardless of social status, creditworthiness, or demographic group. Cash payments are made independent of telecommunications, power grids, or mobile devices, which is why cash is in such heavy demand during disasters and contingency situations. Cash is widely used: about 80 percent of Americans carry some amount of cash.¹⁷ In fact, 50 percent of all U.S. in-person transactions for less than \$10 are made with cash. People trust cash.

Even in Sweden, a country recognized for its “cashlessness,” there is a movement to preserve the cash economy infrastructure.¹⁸ Despite leading the world in lowering cash use, new legislation,¹⁹ effective January 2021, will secure access to cash and payment services throughout the country. Banks with operations in Sweden and with deposits of over SEK 70 billion will be required to support the circulation of cash. This is being done to address the aging population’s preference for cash and migrants’ and rural communities’ lack of access to digital payments, and as a contingency tool to ensure that consumers can access cash in case of natural disasters, power outages, and cyberattacks.²⁰ The caveat, or legal loophole,²¹ is that consumers and businesses can still agree to transact by whatever terms they want, and thus business don’t actually have to accept cash. In the United Kingdom, the Treasury has also committed to the future of cash and plans to introduce legislation to protect access to cash for those who need it.²²

¹⁷ Claire Greene and Joanna Stavins, [2019 Diary of Consumer Payment Choice](#), Federal Reserve Bank of Atlanta Research Data Report (July 2020).

¹⁸ Capgemini and BNP Paribas, [World Payments Report 2018](#).

¹⁹ In November 2019, the Swedish parliament passed legislation called Obligation for Certain Credit Institutions to Provide Cash Services.

²⁰ Morgan Meaker, [“Sweden’s Cashless Society Isn’t All It’s Cracked Up to Be,”](#) *Digital Society with Vontobel*, April 6, 2020.

²¹ The Sveriges Riksbank Act states that cash is a legal tender that must be accepted everywhere. Still, under the rule “Freedom of Contract,” a business and its customers can agree to other transaction terms, thus giving businesses the right to refuse cash payments. The rule excludes health care transactions.

²² Guillaume Lepecq, [“After Sweden, the UK Will Protect the Future of Cash by Legislation,”](#) *Cash Essentials*, March 16, 2020.

Plenty of U.S. businesses already have signs up saying “We don’t accept cash.” Some merchants and consumers simply prefer to transact electronically and see it as being safer (think social distancing and theft) and more cost-effective. Other examples of transactions that are now fully electronic include things like parking meters, mass transit fare purchases, and vending machines, as we mentioned above.

Currently, no federal law in the United States mandates cash acceptance. However, some states have introduced or enacted legislative action to ban businesses from refusing to accept cash. Massachusetts has had such a ban since 1978 and was recently joined by New Jersey and the cities of San Francisco, Philadelphia, Washington DC, and New York. Several other states have seen similar bills introduced. At the federal level, the Payment Choice Act, which has received bipartisan sponsorship, was introduced to the Senate on July 1, 2020.²³

But there are costs to relying on cash, and there are risks as well. For example, the provision of in-person financial services is expensive, especially when we compare the fixed cost of providing these services to the low dollar value of transactions made in cash by low-income people. Studies show that the use of cash imposes costs on individuals, businesses, and the government, most of which are borne by society because of the lost tax revenues from the underreporting of earnings and transactions. For individuals, cash use imposes a regressive tax that hits the underbanked the hardest: they pay four times more in fees to access their cash than those with bank accounts and \$4 more a month on average because they are likelier to use such services as payday lending, buy-here-pay-here auto loans, and check cashing. Businesses must pay for the storage, security, and accounting of paper money. And the government loses about \$400 billion to \$600 billion a year in underreported taxes.²⁴

In addition, creating laws to prohibit cashless commerce may create a perception that digital payments are not safe or lack benefits to consumers. Further, if digital payments provide an on-ramp to more sophisticated financial products and services, are we really addressing the underlying needs of vulnerable populations over the long term, or are we just fostering greater economic inequality?

And from a progress standpoint, will mandating merchants to accept cash divert resources that could otherwise be used to promote innovation and ultimately put U.S. businesses at a competitive disadvantage?

Should we take steps now to preserve the use of cash for those who do not use digital payments, so they are not excluded from participating in the financial system? Today, it may be that you just can’t use cash to buy a latte or a smoothie, but if you can’t pay to take the bus to work or buy groceries, what are the economic and societal implications? And who is affected the most? If the answer is that we should, in fact, do something to preserve cash as a means of payment, what is the best way to accomplish this?

6.2 Bridging the gap

Another approach to promoting inclusive payments is to preserve the use of cash temporarily while at the same time promoting access to and use of innovative payments mechanisms for cash-based users. These payments tools could be used to support a transition to digital payments while still meeting the needs of cash-based users. To get there, we may first need to understand which specific benefits offered

²³ David Lott, “[The Cash Battle Escalates](#),” *Take On Payments* (blog), March 9, 2020.

²⁴ Bhaskar Chakravorti, “[The Hidden Costs of Cash](#),” *Harvard Business Review*, June 26, 2014.

by digital payments provide sufficient incentive to get cash-based consumers to change their behavior. We may also need to identify the challenges inhibiting their desire and ability to transition to digital.

We previously discussed how cash is still a payment mechanism many people in the United States rely on and preserving cash use has benefits—for example, cash payments require no intermediary and the transaction itself is instantaneous. We also previously discussed how cash use has its costs.

So beyond the cost savings digital payments offer, what other benefits do they have that outweigh the flexibility, anonymity, and finality that cash offers? Financial applications could be designed to include these inherent qualities of cash to tip the scale for cash users.

A focused strategy can help cash-based users where they need it most by addressing the barriers preventing them from accessing digital payment options and providing a bridge in the interim. The market has already developed some innovations that bridge the digital divide,²⁵ but a lot more can be done to encourage additional innovation and to create some standardization to promote interoperability and trust.

6.2.1 Cash-in/cash-out networks

Cash-in/cash-out (CICO) networks are interoperable systems that enable consumers to convert their physical cash into digital money (and vice versa).²⁶ Section 2 discusses how the lack of an underlying account can block consumers from accessing digital payments. A CICO network provides a bridge for a population that might be otherwise left behind. Locating CICO networks in convenient locations and offering low usage fees would give more cash-based consumers access.

A traditional example of a CICO network is an ATM, which consumers use to deposit cash into and pull cash from a bank checking account. However, other options allow consumers to make deposits, and even bill payments, in locations like retail check-out lines or connected kiosks. With a CICO network, a consumer can also move cash into an alternative transaction account, like a prepaid account, mass transit account, or mobile wallet.

In response to the recent pandemic, three countries, including Kenya, declared their CICO network agents essential businesses so they could remain open during lockdown phases. Kenya was already widely cited as a case study for its accomplishments in increasing financial inclusion. Notably, its path to financial inclusion has included a nationwide CICO network and mobile money accounts. Kenya offers the largest mobile money network in the world, M-Pesa, which allows customers to transfer money through cellphone text messages without requiring a bank account. The service has expanded into other countries, connecting cash-based consumers and informal businesses to the formal economy. There are now more than 160,000 CICO M-Pesa agents (that is, corner shops that are licensed providers) in Kenya alone, up from 450 agents in 2007 and 40,000 in April 2016.²⁷

The United States has its own CICO networks aside from ATMs, many of them product specific. Today's consumers can cash-fund a general-purpose prepaid account, an electric utility bill prepaid account, or a child-support-payment account in the check-out line of a variety of stores. Even some mobile wallets,

²⁵ "Digital divide" describes the gap between populations that have access to modern information and communication technology and those that have no or limited access.

²⁶ Daniel Radcliffe and Rodger Voorhies, "[A Digital Pathway to Financial Inclusion](#)," December 11, 2012.

²⁷ Centre for Public Impact, "[Mobile Currency in Kenya: The M-Pesa](#)," Case Study, March 21, 2016.

which also store funds, accept cash funding at brick-and-mortar retail locations. Then there are more specific programs, such as for mass transit and parking meters that take cash to fund digital transaction accounts. While many use cases exist, we are far from achieving the interoperability and ubiquity that ATM networks offer. To be sure, the success of M-Pesa in Kenya and in other African nations was based on the instance of one dominant mobile money provider that could deliver a far-reaching, ubiquitous CICO network.

We mentioned ATMs as a traditional CICO example. When the technology first appeared, its use was restricted to the specific banks or credit union providers that offered them. They were sometimes cross-connected in limited networks. Today, any bank customer can use any ATM, usually for a fee if the ATM is out of the customer's network. A single CICO network has worked in Kenya because of the popularity and ubiquity of M-Pesa. Perhaps the United States can learn from the Kenyan example while adapting lessons learned from the ATM innovations in the United States.

6.2.2 Public banking

Advocates for a nationwide public banking option believe there should be a single institution that offers everyone access to a basic transactional account. This public bank would specialize in financial services addressing the unique needs of excluded and vulnerable populations. Through such a bank, these consumers would not have to rely on costly, predatory services that create undue burdens and perpetuate a cycle of financial exclusion or inequality. They might even be encouraged to change their payment behavior.

A public banking utility could be designed in several ways. A single organization, possibly a federal or state government agency, could administer the program. Alternatively, a network of providers such as fintechs, banks, credit unions, or post offices could operate it.

A public banking option would promote the use of digital payments by allowing consumers to receive money digitally through direct deposits of wages, pensions, government benefits, or other income payments. With digital payments, consumers can avoid the costly, time-consuming steps required to digitize physical cash. These consumers could then use digital payment mechanisms to pay their bills and buy goods and otherwise become engaged in the financial system more broadly as doors open to other digital financial services.

Postal banking, currently offered in 51 countries outside of the United States, is one option that has been considered. A postal bank uses its network of post offices to offer affordable financial services, including transaction accounts, savings accounts, and small lending. It could also offer ATMs, check cashing and bill payment services, digital money transfers, and subsidized credit. Where postal banking has existed, the government typically has the majority stake, or at least some share.

Proponents of postal banking argue that post offices can meet the needs of many because of its economies of scale and lower overhead costs. The United States once had a postal banking system, which operated from 1910 to 1966. After years of discussion, the system gained the support it needed following the economic crisis of 1907. Ultimately, opponents in the banking system helped to close the U.S. postal bank.

The Japan Post Bank, one of the largest in the world, aims to be the most accessible and trustworthy bank in Japan. When the bank opened in 1885, it offered savings accounts and money orders. The

Japanese government fully owned the bank until 2007, when it was privatized. Over 140 years in business, the bank has increased its services, which now range from insurance to mobile payments. Today, 24,000 post offices provide services to 120 million deposit accounts. To put those numbers into perspective, Japan has only 20,000 elementary schools and 3,000 major city banks.²⁸ But despite its expansive reach and innovative services, the Japan Post Bank has received criticism, in particular with respect to potential conflicts of interest arising from its lending activities.

Another public banking option could provide only basic transaction accounts to consumers, who would use them to make and receive digital payments. A federal or state government agency, fintechs, banks, credit unions, or some other designated licensed agent could administer such a program. As with other public utilities, anyone could open a transaction account. When the U.S. Treasury mandated the electronic distribution of all federal government benefits, adoption success was attributed to the provision of an account for those who did not already have one. The Direct Express account can receive direct deposits by way of ACH. It is structured like a general-purpose prepaid account and functions like a checking account. A Direct Express account holder also has a debit card and access to a mobile app.

Policymakers must answer a number of questions when considering whether to offer a public banking option. Who would manage the program and service the customers? What information would be necessary to open an account—for example, what would the data identification requirements be? Would the accounts qualify for FDIC insurance? Would they be self-financing or subsidized? Would account providers be limited to only taking deposits or could they also offer lending services? Finally, which consumer protections would apply?

These are just two options for public banking that can be explored. If policymakers encourage and support continued innovation in payments, other potential solutions might also emerge.

6.3 A cashless future

The third path we present involves exploring the risks and challenges associated with moving toward a completely cashless economy.²⁹ Such an economy would require developing and implementing appropriate policies and strategies to ensure that the payment system is accessible to everyone. It would also mean creating adequate infrastructure and ensuring that the regulatory environment promotes innovation while ensuring the reliability and safety of the payments system.

In this section, we discuss some nuances of going cashless related to innovations that could pave the way, like digital currencies and instant payments. We also explore how ensuring access to mobile and broadband (or finding an innovative workaround) is a prerequisite.

6.3.1 Mobile and broadband access

A necessary first step to going cashless likely involves solving the digital divide. When cash-based or vulnerable consumers gain access to mainstream technology, they move one step closer to accessing an expanded array of banking and payment services that can help improve their overall financial lives.

²⁸ [Annual Report 2019](#), Japan Post Bank, 2019.

²⁹ A completely cashless future raises a variety of issues that are outside the scope of this paper including: (a) the loss of privacy and (b) the seigniorage losses as USD cash holdings outside the United States are converted to electronic (possibly interest-bearing) USD deposits, or are switched out of USD into some other currency.

This section discusses the implications of advancing ownership of mobile phones³⁰ and broadband technology as means to improve digital payments inclusion.

In the United States, 4 percent of adults don't own a mobile phone, and 19 percent don't own a smartphone. That lack of ownership rises to 5 percent without a cellphone and 29 percent without a smartphone among rural households or among those earning less than \$30,000.³¹

While mobile and internet access are not mutually exclusive, many more Americans lack internet access in their homes than lack a smartphone. The rollout of 5G may address this issue for those who will be able to access 5G but there are those, particularly in rural areas with no high-speed internet and that may not be served by 5G, for whom this will continue to be an issue. Research published in February 2020 by BroadbandNow shows that 42 million Americans do not have access to high-speed internet, especially those in rural areas.³² A Pew study shows that 25 percent of adults don't have broadband internet at home. For households with less than \$30,000 in income, that number jumps to 44 percent without broadband access. Compared to low-income households, rural communities, at 37 percent, fared only slightly better.³³

Owning a mobile phone or having access to the internet can provide more efficient and flexible payment options. Both technologies address the physical gap between consumers and good-quality digital payment services, which may also address the barrier of owning transaction accounts with banks or fintechs—a requirement, at least in the United States today, for sending and receiving digital payments.

The digital divide is not a new problem and it certainly is not just about digital payments. National strategies around the world that make use of already widespread mobile adoption are having success at advancing financial inclusion.³⁴ How can the payments industry support efforts to expand access to broadband and mobile ownership or to innovate a workaround so that the divide doesn't remain yet another barrier to accessing digital payment options?

6.3.2 *Faster payments (also known as instant payments)*

A *faster payment* is defined as one for which the transmission of the payment message and the availability of “final” funds to the payee occur in real time or near-real time on or as near to a 24-hour and seven-day (24/7) basis as possible. Currently, 55 jurisdictions have faster payment systems, and this number is projected to rise to 65 in the near future.³⁵ Faster payments may be central or industry bank-driven or a combination of the two.³⁶ In 2017, the Clearing House in the United States launched a real-time payments platform known as RTP, and in 2019, the Federal Reserve announced it would develop a

³⁰ Smartphone technology has given rise to payment apps that facilitate person-to-person remittances and mobile wallets for storing mobile money for retail transactions. But even simple text-based mobile phones can allow the use of mobile money accounts.

³¹ Pew Research Center, “[Mobile Fact Sheet](#),” June 12, 2019.

³² John Busby, Julia Tanberk, and BroadbandNow Team, “[FCC Reports Broadband Unavailable to 21.3 Million Americans, BroadbandNow Study Indicates 42 Million Do Not Have Access](#),” BroadbandNow Research, February 2020.

³³ Pew Research Center, “[Internet/Broadband Fact Sheet: Who has home broadband](#),” Internet & Technology, June 12, 2019.

³⁴ Robin J. Lewis, John Villasenor, and Darrell M. West, [The 2017 Brookings Financial and Digital Inclusion Project Report: Building a Secure and Inclusive Global Financial Ecosystem](#), Brookings, August 2017.

³⁵ Morten Linnemann Bech and Jenny Hancock, “[Innovations in Payments](#),” *BIS Quarterly Review*, March 2020.

³⁶ Committee on Payment and Settlement Systems, Bank for International Settlements, [Fast Payments: Enhancing the Speed and Availability of Retail Payments](#), November 2016.

round-the-clock real-time payment and settlement service—called the FedNowSM Service—to support faster payments.

Faster payments could encourage some cash users to transition to digital payments sooner given some of the features it offers, including the ability to better manage finances. For example, faster payments can facilitate time-sensitive payments like just-in-time bill payments or ubiquitous person-to-person payment methods that do not require both the payer and recipient to set up an account with a particular provider to send and receive a payment. Innovations using faster-payment systems could allow users to exchange payments without the payer necessarily knowing the recipient's account details, a feature that could persuade cash-based consumers to change behavior.³⁷

Faster payments could promote greater financial inclusion if new solutions reach customers who are not well-served by today's mainstream payment options. Vulnerable consumers might particularly benefit from faster, safe payment products with features such as quicker access to funds and timely payment notifications to facilitate easier cash-flow management.³⁸

On the other hand, some observers point out that for faster payments to meet the needs of the financially underserved, they must perform as a (close) substitute for cash. That means these payments have to be as widely accepted, affordable, and easy to use. They must also be usable for purposes beyond person-to-person payments. Others note that the immediate availability of funds also makes them more susceptible to fraud.³⁹ As we continue to build out and develop faster payments systems in the United States, we need to consider the needs of all end users and explore various risk-mitigation strategies to address concerns around security and fraud.

6.3.3 Central bank digital currency

Central bank digital currency (CBDC) is a generic term for a third version of currency that is a direct liability of the central bank.⁴⁰ General-purpose or retail CBDC, much like physical currency, would be widely available to individuals, businesses, and others to make digital payments. A well-designed general-purpose CBDC has the potential to achieve a number of policy objectives for payments, including safety, reliability, efficiency, and universal access.

Central banks around the world are exploring potential use cases, a range of design options, and the overall risks and benefits of CBDC. The Federal Reserve announced that it, too, is assessing the opportunities and challenges of, as well as the use cases for, a digital currency as a complement to cash and other payments options.⁴¹ In addition to looking at technical and design choices, the Fed is conducting economic research and policy analysis to better understand the implications of a CBDC. There are a number of open policy and operational questions to consider related to resiliency, fraud, privacy, security, disintermediation, and financial stability, among others. However, research on CBDCs is still in the early stages, and design decisions may be determined by the motivations for creating a

³⁷ Faster Payments Task Force, "[Benefits of Faster Payments.](#)"

³⁸ Faster Payments Task Force, "[Benefits of Faster Payments.](#)"

³⁹ Committee on Payments and Market Infrastructures, World Bank Group, [Payment Aspects of Financial Inclusion in the Fintech Era](#), April 2020.

⁴⁰ Traditionally, central bank money takes two forms: physical currency widely available for use by individuals, businesses and others, and reserves held by eligible financial institutions at the central bank.

⁴¹ Lael Brainard, "[An Update on Digital Currencies.](#)" Federal Reserve Board of Governors speech, August 13, 2020.

CBDC, which could include addressing the decreasing use of cash, cross-border transactions, and financial inclusion and accessibility.

In terms of inclusion, CBDCs can be designed to ensure access to a trustworthy means for paying and storing value, and to replicate certain cash-like attributes so that individuals and businesses have universal access to a basic and flexible means of payment.⁴² How to best design and implement a fit-for-purpose CBDC while addressing the associated policy and operational challenges is a complicated issue that will take time to resolve. There may also be some lessons to draw from other payments innovations like e-money and check electrification as central banks continue to explore the policy implications of issuing a CBDC.

6.3.4 Lessons learned from going cashless

Meanwhile, when exploring the implications of moving towards a cashless society, there will certainly be lessons learned from those that have gone before us. While Sweden is a unique case study, we can still learn from their experience. For example, the country's central bank, Riksbank, published a report⁴³ showing that the proportion of those who paid for their most recent purchase in cash decreased from 39 percent in 2010 to 13 percent in 2018. But, the report also noted some challenges from the move to "cashlessness" involving security and access: "even if digital payments are simple and convenient, the development places new demands on security" and "access to payment services has deteriorated for certain groups." While our economy and society may not be as predisposed to a move to cashless, we can, and certainly should, begin to explore the implications of doing so.

7. Conclusion

The Atlanta Fed recognizes the need to address the growing divide between the digital payments economy and consumers who still rely largely on cash for their transactions. Even before the COVID-19 pandemic, policymakers were considering the implications of the rapid digitization taking place in our country and across the globe. As the use of digital payments has accelerated, it has become increasingly important to understand what actions we can take to ensure access to the payments system for all.

The Atlanta Fed's two high-priority initiatives aimed at addressing these issues include work to promote safer payments innovation and efforts to advance economic mobility and resilience. These two initiatives are interconnected. Digital payments innovation provides benefits to consumers, including convenience, cost savings, security, and efficiency. While sending and receiving payments is a necessity for every consumer, the mechanism by which consumers actually send or receive those payments influences their overall financial lives. This means a growing technical or digital payments gap can result in a growing economic gap.

This paper discusses various options that could address this disparity, including preserving the use of physical cash, addressing the digital divide for excluded individuals, and moving toward a completely cashless society. But the future state of inclusion is not necessarily a single destination. We need to take

⁴² Committee on Payments and Market Infrastructures, World Bank Group, [Payment Aspects of Financial Inclusion in the Fintech Era](#), April 2020.

⁴³ Sveriges Riksbank, [Swedish Payments Are Secure and Efficient](#), November 6, 2019.

a holistic approach that considers all risks and benefits and includes input from stakeholders across multiple disciplines.

Collaboration between the public and private sectors is critical in guiding stakeholders during this time of rapid change. To further explore the questions that this paper highlights, we are planning to create a Special Committee on Payments Inclusion that will consist of leaders in innovation, payments, and financial inclusion who bring unique knowledge and skills that complement the expertise at the Atlanta Fed. The Special Committee on Payments Inclusion will commission research to be conducted by its members, explore emerging issues in payments and inclusion, collect and analyze data to better understand trends in the evolving payments ecosystem, and make recommendations to the industry.

This committee, and the Atlanta Fed, aim to play a pivotal role in supporting safe and inclusive payments innovation and advancing economic mobility and resilience in the Sixth District and beyond. Together, we will work to ensure that all individuals have ubiquitous access to safe, efficient, and inclusive payments.

Appendix: Payments Basics

A payment is an exchange of value between two parties. A payment system is a set of instruments, procedures and rules for the transfer of funds between or among participants. The system also includes organizations operating the value exchange. Today, a variety of payment systems support economies across the globe.

Retail payments typically relate to the purchase of goods and services by consumers and businesses. The instruments used to make these payments can be paper based, primarily cash and checks, or electronic, such as credit, debit, and prepaid cards. Payments can be initiated in person at the point of sale (POS), online, or on a mobile phone. Digital or electronic payments typically refer to payments in which the payer and payee use an electronic medium to exchange value.

The core U.S. retail payment systems include cash, cards, automated clearinghouse (ACH), and check. Retail payments systems are characterized by high transaction volumes with relatively low average dollar values. In 2018, 174.2 billion *noncash* retail payment transactions were processed, representing a value of \$97 trillion.

“The payments system...is a \$500 billion dollar industry, larger than the airline industry and only modestly smaller than utilities and agriculture.”

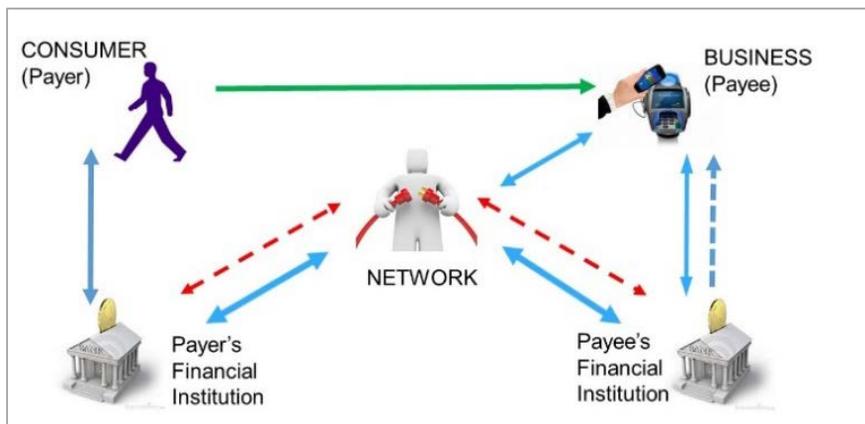
- Rich Oliver and George Warfel Jr.⁴⁴

Payment processing: Clearing and settlement

Except for cash, U.S. payments systems follow a four-corner process model for clearing and settlement (see the figure). Clearing is the process of transmitting, reconciling, and confirming information between the payer’s and payee’s financial institution. Settlement is the final step and represents a discharge of obligation when the transfer of value ownership occurs.

⁴⁴ Rich Oliver and George Warfel Jr., [*The Story of Payments: How the Industrialization of Trust Created the Modern Payments System*](#) (Herndon, VA: Nacha, 2020), 4.

Four-corner payments model example



Note: Solid lines represent the flow of information and dashed lines represent the flow of funds. Although the diagram reflects the general flow of transactions and participants, in many cases, other third parties facilitate one or more of the processing functions. Also, the payer and payee are not always consumer to business as shown.

Source: *Retail Payment Systems Booklet*⁴⁵ (authors rendition)⁴⁶

General categories of payment transactions, in terms of payer and payee:

P2P: Person to person (sometimes referred to as consumer to consumer, as when one friend pays another for their share of a dinner)

C2B: Consumer to business (water bill payment or tax payment)

B2B: Business to business (health insurance company paying a claim to a health practitioner)

B2C: Business to consumer (payroll, pension, or government benefit)

U.S. retail payments networks

Cash

The exchange of cash takes place directly between the payer and payee. The clearing process is instant and settlement is final. Cash use is largely a function of the value of the transaction, with cash most frequently preferred for small-value transactions. Cash is used about half the time for transactions under \$10. Cash is the second-most-used payment instrument for in-person purchases. Also, in times of disasters cash use typically soars. People get their cash mostly through exchanges with family or friends. The next most common source is an ATM. In 2018, there were 5.1 billion ATM withdrawals.

⁴⁵ FFIEC IT Examination Handbook Infobase, *Retail Payment Systems Booklet*, "[Payment Instruments, Clearing, and Settlement.](#)"

⁴⁶ As technology companies expand their payment services and customer base, the four-corner clearing and settlement model will be challenged.

The use of cash is expected to retain some level of appeal because of its convenience, dependability, and anonymity. However, the use of electronic payment vehicles for cash micro payments (transactions under \$5) is expected to continue to grow.

Automated Clearing House (ACH)

An ACH is an electronic network for the exchange of payment instructions among financial institutions, typically on behalf of customers. There are two ACH network operators: the Electronic Payments Network, or EPN, and the Federal Reserve. ACH transactions can be either credits, originated by the payer (the account holder sending funds), or debits, originated by the payee (the account holder receiving funds). They are batch-processed, value-dated electronic funds transfers between originating and receiving financial institutions. Today, independent third parties also generate significant ACH payment activity.

In 2019, the ACH network processed 24.7 billion payments, including direct deposit through ACH of payrolls, dividends, and Social Security and other government benefits. They also include direct payment through ACH for bill payments, including utilities and mortgages, as well as for charitable giving, tuition, subscription services, and P2P and B2B payments. The total value of these payments that year exceeded \$55.8 trillion.

Cards

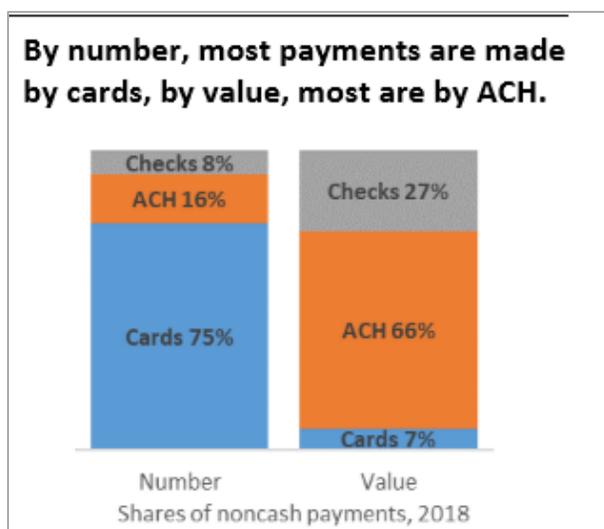
Card payments in the United States are processed by one of the international card payment networks, which include Visa, MasterCard, American Express, and Discover, as well as regional networks that process PIN-based debit cards. These payments are generally settled between the financial institutions on a net basis, many transactions totaled to settle the balance at once, with a one- or two-day lag, often using the ACH network.

Card payments account for 75.3 percent of noncash retail payments by number and 7.3 percent by value. Between 2015 and 2018, card payments grew by 8.9 percent a year by number. Debit cards, including prepaid debit cards, are used twice as often as credit cards, but the value of credit card purchases is 30 percent higher than that of debit card purchases.⁴⁷

Checks

Check processing today is almost entirely electronic, and the clearing and settlement process usually occurs within a day or two. The Federal Reserve, The Clearing House, and other private clearing houses are check system operators. The number of check payments fell 7.2 percent per year from 2015 to 2018, and has declined on average about 7 percent annually over the past two decades.

⁴⁷ [The 2019 Federal Reserve Payments Study](#), Data Tables, Federal Reserve Board of Governors.



Source: 2019 Federal Reserve Payments Study⁴⁸

New payment mechanisms

Today, both banks and nonbank payments service providers offer consumers new ways to initiate payments digitally. Using such options as digital wallets, or e-wallets, and mobile applications, consumers can store and use their bank account or credit card information to make payments. In the United States, these new payment products and services depend on the card networks or the ACH system for settlement.

Upgrades to the speed of clearing and settlement (same-day ACH) and the development of entirely new networks are also among these payments innovations. The RTP[®] network is The Clearing House's real-time payment service for retail payments, and in November 2017, the Federal Reserve began working on a 24/7/365 instant settlement service for retail payments called FedNowSM.

⁴⁸ [The 2019 Federal Reserve Payments Study](#), Data Tables, Federal Reserve Board of Governors.