NO. 9–2021 AUGUST 2021
FEDERAL RESERVE BANK OF ATLANTA'S *POLICY HUB*

Digital Currency, Digital Payments, and the 'Last Mile' to the Unbanked

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Summary:

Digital forms of payment are either not accessible or highly costly for unbanked consumers. This is because these forms of payment must be "funded" by some source of money, such as cash or a bank account. That creates the "last-mile" problem for the unbanked. This article examines various solutions for the funding problem that have been proposed in the literature, by regulators, and in bills submitted to Congress.

Key finding:

1. Without providing a solution to the "last-mile funding" problem, unbanked consumers cannot benefit from digital payment innovations and new forms of digital currency and will therefore continue to be deprived from online commerce and even some in-person services that no longer accept cash.

Center affiliation: Center for Financial Innovation and Stability

JEL classification: G28, G59, O33, O35, O38

Key words: payments inclusion, financial inclusion, unbanked, digital currency, digital payments, central bank digital currency

https://doi.org/10.29338/ph2021-09

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Acknowledgments: The author thanks Toni Braun, Nikolay Gospodinov, and Tom Heintjes for most valuable comments and suggestions on an earlier draft. The views expressed here are the author's and not necessarily those of the Federal Reserve Bank of Atlanta or the Federal Reserve System. Any remaining errors are the author's responsibility.

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Introduction

Digital dollar, digital euro, central bank digital currency, crypto currency, and mobile phone payment apps are in the news very frequently. They are very different but share two common properties: 1) they are digital as opposed to physical cash (coins and notes), and 2) individuals with no bank accounts might not have access to these payment methods or might have to pay high fees to use them. Without access, consumers may be deprived from making online purchases and using some in-person services that do not accept cash, such as cashless stores, parking garages, cashless highway tolls, and cash-free vending machines.

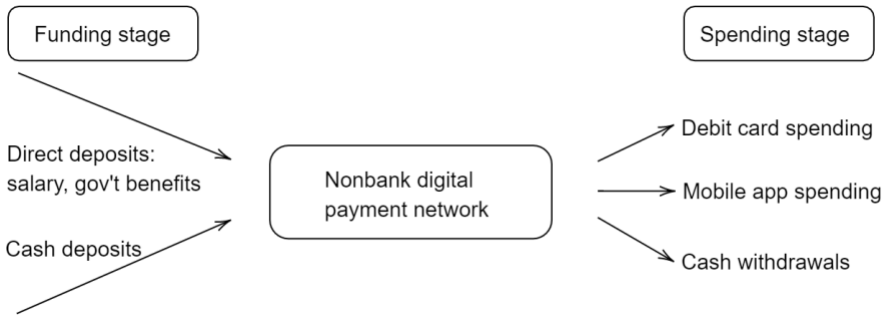
This article focuses on the second aspect in the above list. I first analyze the reason why unbanked consumers lack access to digital payment methods, which is often referred to as the problem of the "last mile" or the problem of "funding." Second, I provide an overview of various proposals about how to connect the unbanked to digital payment networks.

This article focuses mainly on the United States. However, the problem of funding that financially excluded households face prevails in many other countries. The global aspect of the problem of funding has been analyzed in a 74-page report on payments inclusion by the Bank for International Settlements. BIS (2016) argues that "Most of these electronic payment services are based on an account which acts as the funding source for the corresponding payment or payments being made, and to which the funds from payments received are credited." The report continues, "The features that meet the needs of the more traditional bank client base may not meet the needs of individuals and businesses that currently do not have a transaction account. This is because many of the individuals and businesses currently excluded from this service tend to have lower and more variable incomes, live in financially isolated communities and/or are ill at ease with technology."

The Problem of 'Funding'

Figure 1, while illustrating the problem of funding, also shows the flows of funding and spending that must be built into any digital payment network. For a nonbank payment network to be accessible to all types of consumer, it must include noncostly channels to deposit and withdraw cash, in addition to some forms of payment cards and mobile apps that are needed to pay for goods and services.

Figure 1: Digital Payment Networks: Funding and Spending Flows



The problem of funding does not arise for households who have a bank account because they can move money in and out of their bank account to fund other means of payment, such as credit cards, debit cards, and mobile apps (Venmo, PayPal, Cash App, and others). In particular, households with a bank account can convert cash to fund their digital payments via depositing cash and electronic transfers into their bank account. The reverse is also true. Households who receive electronic payments can use their bank account to withdraw cash or to fund other means of digital payments.

The problem of funding has recently gained attention with the announcements made by several central banks of their intention to explore and perhaps issue central bank digital currency (CBDC).[1] CBDC are denominated in the same unit as the national currency such as the U.S. dollar, Canadian dollar, euro, or Chinese yuan. However, because they are issued by central banks, the liability to redeem value is the responsibility of central banks and not commercial banks that store money for their account holders. At this stage it is not clear whether and how unbanked households would be able to access CBDC in order to fund their payments, but this issue will need to be addressed by policymakers.[2]

A recent paper by researchers at the Federal Reserve Bank of Atlanta (Bostic et al. 2020), suggests that 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 do not necessarily depend on traditional bank accounts.

How Kenya and the Bahamas Solved the (Last Mile) Funding Problem

Founded in Kenya in 2007 and introduced by the mobile phone service providers Safaricom and Vodafone, M-Pesa provides a unique payment and money transfer service via mobile phones. In a country with a mostly unbanked population, the real innovation was that M-Pesa was designed right from the start to solve the funding problem. M-Pesa tackled the funding problem by contracting with small kiosks that were spread out throughout Kenya including remote villages. In these kiosks, M-Pesa users can exchange cash for mobile money and the other way around. M-Pesa customers can deposit and withdraw cash from a large network of agents that includes airtime resellers and retail outlets acting as banking agents.

Because it is classified as a money transmitter, M-Pesa is not a deposit-taking institution such as a bank. Thus, money transfers could be made outside the banking sector. The success of M-Pesa was not on the technology side. When it started, payments were made via simple SMS messages on simple mobile phones (as opposed to smart phones that connect to the internet). It was built to solve the last-mile funding problem to address the fact that in 2006, prior to the launch of M-Pesa, only 18.5 percent of Kenyans used formal financial services (Van Hove and Dubus 2019).

More recently and on a different continent, the Bahamas, with a large number of unbanked inhabitants and tourists, introduced its central bank digital currency to provide unbanked individuals with easy access. Also known as Sand Dollar and B$, it provides nondiscriminatory access to a digital payment system without regard for age, immigration, or residency status. Banked or unbanked individuals can fund their mobile app (e-wallet) or a payment card at authorized financial institutions up to $500 with no identification and $8,000 with proper identification.

[1] See also a press release dated May 20, 2021.

[2] The Clearing House's Real Time Payment network (RTP) and the planned FedNow network provide account-to-account money transfers and therefore currently do not meet the needs of unbanked consumers.

It should be mentioned that consumers in some countries can use their prepaid transport cards to pay for other goods and services. The Octopus card is commonly used in Hong Kong as a cash replacement. The card can be funded by physical cash or a bank account and operates offline and online. The success of this card can be attributed to the its use in public transport. A similar card is Suica in Japan. However, it is hard to imagine how transport cards in the United States could serve as ubiquitous forms of digital payments for all in-person and online payments.

Possible Solutions for the Last-Mile Funding Problem

For digital currency and digital payment methods to be accessible to unbanked consumers, the last-mile funding obstacle must be addressed early in the planning stage. The purpose of this essay is not to suggest any particular solution. Instead, I now describe several policy options that have been discussed in the literature and by lawmakers for how to facilitate unbanked households' access to digital payment services. I first list the options and then discuss each option in more detail.

- *Option 1*: Take no action. Wait and see if the number of unbanked drops over time.
- *Option 2*: Take no action but mandate that all brick-and-mortar retailers and public utility companies accept cash in person.
- *Option 3*: Establish free and (possibly) interest-bearing accounts for all residents with the central bank (where post offices and commercial banks could serve as agents).
- *Option 4*: Reenlist the national post office as a provider of basic banking services.

Option 1 was questioned by Bostic et al. (2020), who concluded that a more effective approach could be giving cash users access to digital payment vehicles that do not necessarily depend on traditional bank accounts. According to FDIC (2020), the rate of unbanked households declined from 6.5 percent in 2017 to 5.4 percent in 2019. It remains to be seen whether this trend will persist.

Option 2 refers to states and municipalities that prohibit brick-and-mortar retailers from refusing to be paid with cash. States such as New Jersey, Massachusetts, and Rhode Island have laws in place that prohibit businesses from banning cash. San Francisco and Philadelphia have also passed similar laws. (Some lines of business, such as parking garages, are granted exceptions.)

Option 3 reflects bill S.3571, proposed legislation introduced in the U.S. Senate in March 2020. This bill requires Federal Reserve member banks to provide digital pass-through accounts (for example, digital dollar wallets) to residents and citizens, as well as to businesses domiciled in the United States. Among other things, these accounts must provide specified banking services to eligible persons who elect to deposit funds into these accounts. The proposed bill also requires that these accounts may not charge fees or have balance requirements and must provide a specified interest rate. Note that this proposal applies both to digital dollar and CBDC. As this article discusses earlier, this solution has already been applied in the Bahamas with respect to its CBDC.

Option 4 has been proposed in the literature several times over the years, and several bills have been submitted (the latest one, S.4614, in 2020). National post office systems are highly accessible because they already have large numbers of retail facilities. In particular, post offices maintain a presence in remote places that banks do not always find profitable to operate. The U.S. Postal Service

(USPS) manages 31,330 retail offices across the country. This option was also analyzed in the academic literature, see for example Baradaran (2018) and more recently Friedline et al. (2021) and references therein. The postal banking proposal has recently regained attention when in 2020 the U.S. government had to mail paper checks to nearly 20 million people as stimulus money during the COVID-19 pandemic. Notably, the post office option need not necessarily present any competition to the commercial banks if its services are restricted to deposit taking and payment services and not providing loans. The main goal of this proposal is to provide basic banking services and not full-fledged banking.

Why Existing Solutions Are Insufficient

Some private sector solutions for unbanked consumers' funding problem already exist. Greene and Shy (2015) analyze general purpose reloadable (GPR) prepaid cards that allow consumers to deposit and withdraw cash into and from their card account. Whereas these cards can be used everywhere debit cards are accepted, cash deposits may be limited to participating retailers or via ATMs that charge fees for each deposit.

Some GPR prepaid cards provide certain services similar to those a bank would provide to customers holding a checking account. Services provided can include:

- *Withdrawing from an ATM*. Many prepaid cards allow a cardholder to withdraw cash from an ATM. (Some cards provide free-of-charge ATM access via national ATM chains like MoneyPass and AllPoint.)
- *Making deposits.* Some cards offer reloadability via direct deposit of wages, salary, or government benefits, using cash or a check, or via a direct transfer from a bank account.
- *Making payments.* When using a card with a major network logo (such as Visa, Mastercard, Discover, or American Express), cardholders can use GPR prepaid cards to make purchases and payments anywhere major credit and debit cards are accepted. Some GPR prepaid cards enable owners to automate recurring payments and to pay bills via the card's online account.

The reader of this article might also wonder whether a difference exists between existing GPR prepaid and the list of proposed solutions already discussed in this article. Indeed, conceptually they seem very similar because they also allow unbanked consumers to reload (or fund) their prepaid cards via ATMs or in participating stores. However, it turns out that prepaid cards could be costly to consumers, which may explain the high use of cash by unbanked consumers. A paper by the Federal Reserve Bank of Kansas City, Hayashi and Cuddy (2014), analyzes the fees charged to users of prepaid cards. They find that average users of prepaid card spend about $14 each month to reload their prepaid cards. Hayashi, Hanson, and Maniff (2015) find that checking accounts are more costly than GPR cards for consumers who regularly or occasionally overdraw their accounts. In contrast, checking accounts are less costly than GPR cards for consumers who do not need overdraft capability and short-term credit.

Unbanked and Underbanked in the U.S.

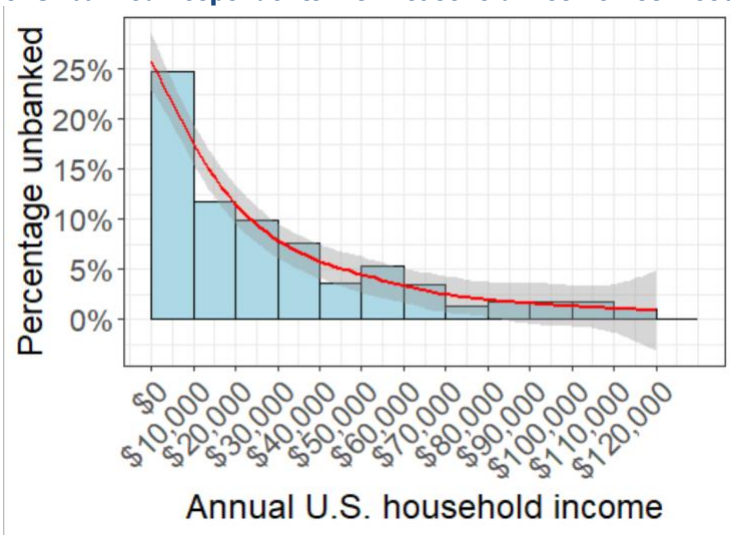
A substantial academic and nonacademic literature focuses on unbanked households. Surveying this literature is beyond the scope of this article. The older literature includes Caskey and Peterson (1994), who find that the percentage of unbanked households with income below $84,000 in 1991 prices increased from 9.5 percent in 1977 to 13.5 percent in 1987. Their research shows that changes in the socioeconomic characteristics of the population explains the increase in the percentage of unbanked.

FDIC (2020) provides the most recent statistics on unbanked households. In 2019, 5.4 percent of U.S. households were unbanked, which represents approximately 7.1 million households. Unbanked rates were higher among lower-income households, less-educated households, Black households, American Indian or Alaska Native households, working-age disabled, and households with volatile income. Among the unbanked, 29 percent stated that they don't have enough money to meet the minimum balance requirement (48.9 percent cited this as a reason), while 16.1 percent expressed a distrust of banks (36.3 percent cited it as a reason). 7.3 percent stated that bank account fees are too high as their main reason (34.2 percent cited it as a reason). And 1.6 percent stated that fees are too unpredictable as their main reason for not having a bank account (31.3 percent cited it as a reason).

These statistics are important: because credit and debit cards must be funded by bank accounts, unbanked consumers lack access to both types of cards. Shy (2021) analyzes the effects of being unbanked on the composition of consumers' choice of payment methods. Whereas unbanked consumers paid 85.7 percent in cash and 14.3 percent using prepaid cards, consumers with bank accounts who possessed both debit and credit cards made 36.1 percent of their payments with cash, 1.6 percent with paper checks, 27.3 percent with credit cards, 32.8 percent with debit cards, and 2.2 percent with prepaid cards.

Shy (2020) analyzes the correlation between possession of debit and credit cards and household income. Figure 2 displays the percentage of diary survey respondents who are unbanked as a function of their annual household income.

Figure 2: Percentage of Unbanked Respondents with Household Income Not Exceeding $120,000



Note: The red curve displays a computed smooth local regression (loess). The shaded areas are the corresponding 95-percent confidence intervals.
Source: Diary of Consumer Payment Choice, 2017–19

Figure 2 shows a sharp decline in the percentage of unbanked individuals as their annual household income increases. The percentage of unbanked drops from 25 percent in the lowest income group to below 10 percent for annual household incomes above $20,000 and below 7 percent roughly above $30,000. For individuals with household income above $80,000, the percentage of unbanked is not statistically significantly different from zero.

Finally, the statistics on financial inclusion often includes households who are classified as *underbanked*. Underbanked households are hard to define because they have a bank account. However, they tend to use financial services outside the banking sector for a wide variety of reasons that are analyzed in FDIC (2018) and Greene and Cole (2017).

Conclusion and Discussion

This article provided an overview of various solutions to the funding problem that have been proposed in the literature, by regulators, and in bills submitted to Congress. Without providing practical solutions for the last-mile funding problem, the introduction of digital currency and new digital payment methods might not support unbanked households who wish to substitute cash payments for digital payments. Access to some source of funding is essential for solving the last-mile problem of unbanked households.

Banked and unbanked consumers alike still heavily use cash. According to Kim, Kumar, and O'Brien (2020), in 2019, consumers used cash for 26 percent of all payments and 47 percent of payments under $10. Whereas banked consumers use cash mostly for low-value transactions, unbanked use cash for both small- and large-value transactions. Cash has many distinct features that distinguish it from digital payments. One important feature is that cash "clears at par," which basically means that buyers and sellers do not pay upfront fees for cash payments. This feature might partly explain why cash is still popular and suggests that a search for digital solutions for the unbanked could need to consider the burden of fees on both consumers and merchants.

Currently, cash is the only means of payment that represents a direct obligation by the central bank to cash holders. All other forms of money could be viewed as obligations by nongovernmental financial institutions. Central bank digital currency—much discussed in the press these days—might provide a second means of payment that represents a direct obligation of the central bank. The remaining question is how and whether unbanked consumers would be able to gain access to this new form of money, if introduced. Whether it is CBDC or other forms of digital money, the purpose of this article is to introduce the reader to the last-mile funding problem. Without providing a solution to this problem, unbanked consumers will continue to be shut out of online commerce and even some in-person services that no longer accept cash.

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