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Digital Currencies, Stablecoins, and the Evolving Payments Landscape

Remarks by

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Technology is driving rapid change in the way we make payments and in the concept of “money.”<sup>1</sup> There is a long history of technological advances challenging the prevailing notions of money, from the trading of coins to the use of paper currency, to the electronic debiting and crediting of funds on the accounts of banks. Today, efforts by global stablecoin networks such as Facebook’s Libra to establish the next chapter in the story of money are raising threshold questions about legal and regulatory safeguards, financial stability, and monetary policy. Because of its potential global reach, Facebook’s Libra imparts urgency to the debate over what form money can take, who or what can issue it, and how payments can be recorded and settled.<sup>2</sup>

### **Reassessing Money**

Money has traditionally served three functions.<sup>3</sup> Money facilitates payments as a medium of exchange, serves as a store of value that can be relied on for future use, and simplifies transactions by providing a common unit of account to compare the value of goods and services.

A decade ago, Bitcoin was heralded as a new kind of digital money that would address frictions in payments as well as serve as a unit of account and store of value without the need for centralized governance. Bitcoin’s emergence created an entirely new payment instrument and asset class exchanged over a set of payment rails supported by distributed ledger technology. Distributed ledger technology may allow for a shared, tamper-resistant ledger that can be updated by anyone with sufficient computing power, in contrast to traditional recordkeeping systems built on a single ledger managed by a trusted central entity.<sup>4</sup> But Bitcoin and some other

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<sup>1</sup> I am grateful to Paul Wong and Jean Flemming of the Federal Reserve Board for assistance in preparing this text. These remarks represent my own views, which do not necessarily represent those of the Federal Reserve Board or the Federal Open Market Committee.

<sup>2</sup> See <https://libra.org/en-US/>.

<sup>3</sup> In many jurisdictions, the term *money* is defined narrowly by the law as only sovereign currency.

<sup>4</sup> See, e.g., Lael Brainard, “Distributed Ledger Technology: Implications for Payments, Clearing, and Settlement” (speech delivered at the Institute of International Finance Annual Meeting Panel on Blockchain, Washington, October 7, 2016), <https://www.federalreserve.gov/newsevents/speech/brainard20161007a.htm>; “The Use of

early iterations of cryptocurrencies have exhibited extreme volatility, limited throughput capacity, unpredictable transaction costs, limited or no governance, and limited transparency, which have limited their utility as a means of payment and unit of account.<sup>5</sup>

Stablecoins were designed specifically to overcome the substantial volatility exhibited by first-generation cryptocurrencies, which limits their reach in payments and their utility as a unit of account. As the name implies, stablecoins aim to maintain stable value by tying the digital currency to an asset or basket of assets, such as commercial bank deposits or government-issued bonds. Stablecoins also differ from the initial set of cryptocurrencies in that they may be issued by a central entity and rely on third-party institutions for some aspects.

Just as any currency's value as a medium of exchange increases with the size of the network using it, so too the power of a stablecoin payment system will depend on its ability to achieve widespread adoption, due to the associated network externalities. In light of the 2.7 billion active monthly users on Facebook's platforms, the Libra stablecoin project stands out for the speed with which its network could reach global scale in a payment system.<sup>6</sup>

To assess the efforts by stablecoin issuers to provide the three functions of money, it is useful first to consider existing arrangements for the issuance, regulation, and transfer of money. Central bank money and commercial bank money are the foundations of the modern financial system. Central bank money is composed of physical cash and money held in deposits at a

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Distributed Ledger Technologies in Payment, Clearing, and Settlement" (speech delivered at the Institute of International Finance Blockchain Roundtable, Washington, April 14, 2016), <https://www.federalreserve.gov/newsevents/speech/brainard20160414a.htm>; and Committee on Payments and Market Infrastructures (CPMI), *Distributed Ledger Technology in Payment, Clearing, and Settlement*, February 2017, <https://www.bis.org/cpmi/publ/d157.pdf>.

<sup>5</sup> See, e.g., Lael Brainard, "Cryptocurrencies, Digital Currencies, and Distributed Ledger Technologies: What Are We Learning?" (speech delivered at the Decoding Digital Currency Conference sponsored by the Federal Reserve Bank of San Francisco, San Francisco, May 15, 2018), <https://www.federalreserve.gov/newsevents/speech/brainard20180515a.htm>.

<sup>6</sup> Statistics (October 15, 2019), retrieved from <https://newsroom.fb.com/company-info/>.

central bank. Central bank money is important for payment systems because it represents a safe settlement asset, allowing users to exchange central bank liabilities with confidence in their acceptance and reliability. In addition, central banks can play a critical role as providers of liquidity by lending central bank money at moments of stress.

Commercial bank money refers to money held in deposits at commercial banks. It is widely used in part because people are confident that they can convert it on demand to the liability of another commercial bank or the central bank, such as physical cash. This confidence comes in no small part because bank deposits are insured, and commercial banks are subject to supervision, regulation, and deposit insurance requirements.<sup>7</sup> Consumers and businesses also use this money in transactions because of its convenience and availability, which in turn expand with the size of the network using this money.

Nonbank private money or assets can also facilitate transactions among a network of users. In some cases, such as airline miles, such assets may have value only within the network. In other cases, the issuer of an asset within a network may guarantee convertibility to a sovereign currency. Consumers trust that the company issuing such money will be able to honor these liabilities. Many U.S. consumers have experience with nonbank private money in the form of gift cards, loyalty points, and virtual gaming currencies. Although many of these are relatively limited in scale and purpose, some nonbank money networks are sizeable. Starbucks reported

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<sup>7</sup> Committee on Payment and Settlement Systems, *The Role of Central Bank Money in Payment Systems* (Basel: Bank for International Settlements, August 2003), <https://www.bis.org/cpmi/publ/d55.pdf>.

that it had \$1.6 billion in stored value card liabilities as of September 2018—more than the deposits held at many depository institutions.<sup>8</sup>

As the scale and scope of such private networks grow, so too do the convenience and benefit of transacting within the network in a self-reinforcing dynamic, called network externalities. These network benefits may be augmented by the active use of network data for a host of purposes, from allocating and pricing credit to sharing reviews to prioritizing information that is pushed to users. In China, consumers and businesses participate in two mobile networks, Alipay and WeChatPay, which by some accounts handled more than \$37 trillion in mobile payments last year.<sup>9</sup> These networks operate within China based on the renminbi as the unit of account, and balances are transferable in and out of bank or credit card accounts.

### **Stablecoins with Global Scale and Scope**

Stablecoins may resemble private nonbank liabilities depending on their design and claim structure. Stablecoins aspire to achieve the functions of traditional money without relying on confidence in an issuer—such as a central bank—to stand behind the money. Indeed, for some potential stablecoins, a close assessment suggests users may have no rights with respect to the underlying assets or the system overall.

We have seen the growth of massive payments networks on existing digital platforms, such as Alibaba and WeChat, and the issuance of stablecoins on a smaller scale, such as Tether, Gemini, and Paxos. What sets Facebook’s Libra apart is the combination of an active-user network representing more than a third of the global population with the issuance of a private

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<sup>8</sup> Starbucks, *Fiscal 2018 Annual Report*, [https://s22.q4cdn.com/869488222/files/doc\\_financials/annual/2018/2018-Annual-Report.pdf](https://s22.q4cdn.com/869488222/files/doc_financials/annual/2018/2018-Annual-Report.pdf).

<sup>9</sup> Frank Tang and Doug Palmer, “U.S.-China Trade War Deal Could Be Too Late for the Likes of Mastercard, American Express and Visa,” *South China Morning Post*, April 2, 2019.

digital currency opaquely tied to a basket of sovereign currencies.<sup>10</sup> It should be no surprise that Facebook's Libra is attracting a high level of scrutiny from lawmakers and authorities.<sup>11</sup>

Libra, and indeed any stablecoin project with global scale and scope, must address a core set of legal and regulatory challenges before it can facilitate a first payment. I will emphasize a few issues in particular.

First, compliance with know-your-customer rules and regulations are essential to ensure stablecoins are not used for illegal activities and illicit finance. Libra's business model is inherently cross-border, and, as such, each participant in the system deemed to be a financial institution would need to ensure compliance with each national jurisdictions' anti-money-laundering laws. Libra's intended global reach would likely necessitate a consistent global anti-money-laundering framework in order to reduce the risk of illicit transactions.

Second, issuers of stablecoins designed to facilitate consumer payments must clearly demonstrate how consumer protections would be assured. Consumers will need to be educated on how their rights differ with respect to digital wallets compared to bank accounts. In the United States, as elsewhere, statutory and regulatory protections have been implemented with respect to bank accounts so that consumers can reasonably expect their deposits to be insured up to a limit; fraudulent transactions to be the liability of the bank; transfers to be available within specified periods; and clear, standardized disclosures about account fees and interest payments. Not only is it not clear whether comparable protections will be in place with Libra, or what recourse consumers will have, but it is not even clear how much price risk consumers will face

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<sup>10</sup> Based on staff calculations using statistics from Statistics (October 15, 2019), retrieved from <https://newsroom.fb.com/company-info/>, and U.S. and World Population Clock (October 15, 2019), retrieved from <https://www.census.gov/popclock/>.

<sup>11</sup> See Benoît Coeuré, "Digital Challenges to the International Monetary and Financial System," (speech at the Future of the International Monetary System at the Banque Centrale du Luxembourg-Toulouse School of Economics, Luxembourg, September 17, 2019), <https://www.ecb.europa.eu/press/key/date/2019/html/ecb.sp190917~9b63e0ea23.en.html>.

since they do not appear to have rights to the stablecoin's underlying assets. Consumers need to be cautioned that stablecoins are likely to be starkly different from sovereign-issued currency in legal terms. It will be important to get clarity on what legal entity can be held responsible for the security of personally identifiable information and transaction data and how personal data will be stored, accessed, and used. The large number of cyber breaches in the last few years highlight the importance of these issues.

Third, it will be necessary to define the financial activities that the various players in the Libra ecosystem are conducting in order for jurisdictions to assess whether existing regulatory and enforcement mechanisms are adequate. As the legal domicile of the Libra Association, Switzerland is of particular interest. Swiss authorities have established three new categories to facilitate their approach of regulating by function: "payment tokens" are cryptocurrencies that are meant for use in payments or value transfers; "utility tokens" are blockchain-based applications; and "asset tokens" are cryptoassets that are analogous to equities, bonds, and derivatives.<sup>12</sup> To the extent that some innovations do not fit neatly within a single category, these classifications may not be mutually exclusive.

In the United States, regulators are closely examining the specific functions of particular stablecoins and cryptocurrencies more broadly to determine whether and where they fit in the existing regulatory structure and whether additional authorities or guidance is necessary. U.S. market regulators have authorities for products judged to be securities or commodity futures under relevant law. At the state level, the New York State Department of Financial Services has

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<sup>12</sup> See Swiss Financial Market Supervisory Authority, "Guidelines for Enquiries Regarding the Regulatory Framework for Initial Coin Offerings (ICOs)," February 16, 2018, <https://www.finma.ch/en/~media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/wegleitung-ico.pdf?la=en>.

established a BitLicense for entities associated with virtual currencies.<sup>13</sup> The Federal Reserve and the other federal banking agencies have supervisory authority over banks, including, in many cases, the ability to regulate and examine companies that provide services to banks. Neither the Federal Reserve nor any other regulator has plenary authority over payment systems operating in the United States. Although the Financial Stability Oversight Council does have the authority to designate systemically important nonbank financial companies; financial market utilities; or payment, clearing, and settlement activities based on the facts of the specific situation, it is not clear at this time whether any cryptocurrency issuer would meet the statutory requirements for designation.

Stablecoins, and cryptocurrencies more generally, challenge the long-held premise that payments must be recorded in a central ledger managed by a single entity. In fact, banks were established to perform this central ledger function. Distributed ledger technology allows for the direct peer-to-peer transfer of assets, potentially eliminating the need to transact through intermediaries. While distributed ledger technology could offer advantages by enhancing operational resilience, increasing transparency, and simplifying recordkeeping, the public and immutable nature of the transactions ledger also introduces risks, such as data privacy concerns and legal complexity.

Global stablecoin networks also may pose challenges to bank business models. In the extreme, widespread migration to one or more global stablecoin networks could disintermediate the role of banks in payments. If consumers and businesses reduce their deposits at commercial banks in favor of stablecoins held in digital wallets, this could shrink banks' sources of stable funding, as well as their visibility into transactions data, and thereby hinder banks' ability to

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<sup>13</sup> See [https://www.dfs.ny.gov/apps\\_and\\_licensing/virtual\\_currency\\_businesses](https://www.dfs.ny.gov/apps_and_licensing/virtual_currency_businesses).



provide credit to businesses and households. That said, many banks are likely to adapt by offering alternative methods of peer-to-peer settlement and by incorporating stablecoins into their business models, whether by partnering with fintech firms who issue stablecoins or by issuing their own, as some are already doing.<sup>14</sup>

Moreover, widespread adoption of stablecoins could have implications for the role of central banks and monetary policy. Payments are the economy's circulatory system. Large-scale migration into a new stablecoin network for purposes of payments may prove to be the leading edge of a broader migration. If a large share of domestic households and businesses come to rely on a global stablecoin not only as a means of payment but also as a store of value, this could shrink demand for physical cash and affect the size of the central bank's balance sheet. The central bank's approach to implementing monetary policy may be complicated to the extent that banks' participation in short-term funding markets is affected.

These effects are likely to be more significant for small, open economies or those with weak monetary institutions, where the migration away from the sovereign currency to a global stablecoin could weaken the scope for independent monetary policy through a process that is the digital analogue of dollarization.<sup>15</sup> Large-scale stablecoin use could also affect larger, advanced economies with extensive connections to the global financial system, including by increasing market volatility and by transmitting shocks across borders.

Finally, there are likely to be financial stability risks for a stablecoin network with global reach. If not managed effectively, liquidity, credit, market, or operational risks—alone or in

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<sup>14</sup> See, e.g., <https://www.jpmorgan.com/global/news/digital-coin-payments> and <https://newsroom.wf.com/press-release/innovation-and-technology/wells-fargo-pilot-internal-settlement-service-using>.

<sup>15</sup> See, e.g., Christine Lagarde, "Central Banking and Fintech—A Brave New World?" (speech delivered at the Bank of England conference, London, September 29, 2017), <https://www.imf.org/en/News/Articles/2017/09/28/sp092917-central-banking-and-fintech-a-brave-new-world>.

combination—could trigger a loss of confidence and a classic run. A global stablecoin network raises complicated issues associated with many legally independent but interdependent operations, and the lack of clarity about the management of reserves and the rights and responsibilities of various market participants in the network. The potential for risks and spillovers could be amplified by potential ambiguity surrounding the ability of official authorities to provide oversight and backstop liquidity and to collaborate across borders.

### **Central Bank Digital Currencies**

Even before the advent of stablecoins, the rapid migration of payments to digital systems prompted interest in the issuance of central bank digital currencies. In some jurisdictions, there has already been a pronounced migration from cash to digital payments, which naturally prompts monetary authorities to explore moving to digital issuance of their own.

The potential for global stablecoin systems has intensified the interest in central bank digital currencies. Proponents argue that central bank digital currencies would be a safer alternative to privately issued stablecoins because they would be a direct liability of the central bank.<sup>16</sup> For instance, Markus Brunnermeier, Harold James, and Jean-Pierre Landau provide important arguments.<sup>17</sup>

Of course, the Federal Reserve and other central banks already provide money digitally in the form of central bank deposits in traditional reserve or settlement accounts. However, in the current context, central bank digital currency typically refers to a new type of central bank liability that could be held directly by households and businesses without the involvement of a

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<sup>16</sup> See, e.g., Martin Sandbu, “How Facebook’s Libra Fuelled Push for Central Bank-Run Digital Currencies,” *Financial Times*, September 23, 2019, <https://www.ft.com/content/746808a0-d9f6-11e9-8f9b-77216e1f17>; and Dave Michaels and Paul Vigna, “The Coming Currency War: Digital Money vs. the Dollar,” *The Wall Street Journal*, September 22, 2019, [https://www.wsj.com/articles/the-coming-currency-war-digital-money-vs-the-dollar-11569204540?mod=hp\\_featst\\_pos3](https://www.wsj.com/articles/the-coming-currency-war-digital-money-vs-the-dollar-11569204540?mod=hp_featst_pos3).

<sup>17</sup> See e.g., Markus K. Brunnermeier, Harold James, and Jean-Pierre Landau, “The Digitalization of Money,” Working Paper, August 2019, [https://scholar.princeton.edu/sites/default/files/markus/files/02c\\_digitalmoney.pdf](https://scholar.princeton.edu/sites/default/files/markus/files/02c_digitalmoney.pdf).

commercial bank intermediary. Under this definition, central bank digital currency could be a flexible form of central bank money that could differ from traditional reserves along three dimensions: a much broader set of institutions and individuals could access it, some types of balances might not pay interest, and it might entail greater government visibility into end users' transactions.

In the United States, there are compelling advantages to the current system. First, physical cash in circulation for the U.S. dollar continues to rise, suggesting robust demand.<sup>18</sup> Second, the dollar is an important reserve currency globally, and maintaining public trust in the sovereign currency is paramount. Third, we have a robust banking system that meets the needs of consumers: our banks are many in number, diverse in size, and geographically dispersed. Finally, we have a widely available and expanding variety of digital payment options that build on the existing institutional framework and the applicable safeguards.

Moreover, central bank digital currency for general purpose use—that is, for individual consumer use—would raise profound legal, policy, and operational questions.<sup>19</sup> Let's consider the balance between privacy and illicit activity. If it is designed to be financially transparent and provide safeguards against illicit activity, a central bank digital currency for consumer use could conceivably require the central bank to keep a running record of all payment data using the digital currency—a stark difference from cash, for instance. A system in which individual payments information would be recorded by a government entity would mark a dramatic shift. A

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<sup>18</sup> See [https://www.federalreserve.gov/paymentsystems/coin\\_data.htm](https://www.federalreserve.gov/paymentsystems/coin_data.htm).

<sup>19</sup> See, e.g., CPMI and Markets Committee, *Central Bank Digital Currencies*, March 2018, <https://www.bis.org/cpmi/publ/d174.pdf>.

related question is whether the Federal Reserve has the authority to issue currency in digital form and, if necessary, to establish digital wallets for the public.

There could also be profound monetary policy implications. Some economists have argued that a central bank digital currency could address the problems posed by the zero lower bound by potentially transmitting monetary policy directly to the public. Executing monetary policy in such a manner would effectively imply the elimination of all physical cash and the power to impose a negative rate, or a tax, on households' holdings of digital money. My own strong preference is to address the effective lower bound by using our existing tools vigorously, since I view the cost-benefit assessment of negative rates as unattractive for the current U.S. context.

Financial stability considerations are also important. The ability to convert commercial bank deposits into central bank digital currency with a simple swipe surely has the potential to be a run accelerant. Here, too, the role of banks in providing financial intermediation services could be fundamentally altered.

Finally, there could be operational risks to introducing a central bank digital currency. For starters, this might require the Federal Reserve to develop the operating capacity to access or manage individual accounts, which could number in the hundreds of millions. A myriad of other operational challenges would need to be addressed, including electronic counterfeiting and cyber risks. It is worth noting that the technologies used currently for private-sector digital currencies do not provide the same level of information technology reliability, integrity, and scalability as

central bank systems in use today. Many of these technologies do not provide for clear, predictable, and final settlement, which is a core tenet of payment systems.<sup>20</sup>

That said, some jurisdictions may move in this direction faster than others, based on the particular attributes of their payments and currency systems. At the Federal Reserve, we will continue to analyze the potential benefits and costs of central bank digital currencies and look forward to learning from other central banks.

### **Supporting Payments Innovation**

While prudence cautions against rushing into untested approaches to central bank digital currencies, we are actively investing in our payments infrastructure, so that everyone has access to real-time payments. Every day, U.S. payment and securities settlement systems turn over roughly \$12.5 trillion.<sup>21</sup> The Federal Reserve is committed to working closely with the private sector to promote a safer and more efficient payments system.<sup>22</sup>

This summer, we announced that the Federal Reserve will launch the first new payment service in more than 40 years to help make real-time payments available to everyone.<sup>23</sup> The Federal Reserve will develop the FedNow<sup>SM</sup> Service as a platform for consumers and businesses to send and receive payments immediately and securely 24 hours a day, 7 days a week, 365 days a year. This initiative is intended to provide a neutral platform for new private-sector innovation in faster payment services. In addition to FedNow, we are exploring enhancements to same-day

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<sup>20</sup> Many distributed ledgers in existence today rely on probabilistic settlement, meaning that the more times a transaction is confirmed on the ledger, the less likely it will be revoked, but a non-zero risk of settlement failure persists.

<sup>21</sup> Based on staff estimates.

<sup>22</sup> See, e.g., <https://fedpaymentsimprovement.org/>.

<sup>23</sup> Lael Brainard, “Delivering Fast Payments for All” (speech delivered at the Federal Reserve Bank of Kansas City, Kansas City, Missouri, August 5, 2019), <https://www.federalreserve.gov/newsevents/speech/brainard20190805a.htm>; Lael Brainard, “Supporting Fast Payments for All,” (speech delivered at the Fed Payments Improvement Community Forum, Chicago, October 3, 2018), <https://www.federalreserve.gov/newsevents/speech/brainard20181003a.htm>.

settlement of automated clearinghouse (ACH) transactions and expansion of Fedwire<sup>®</sup> Funds Service and National Settlement System operating hours. We are working with the industry to improve the security of the payments system by, for example, increasing understanding of synthetic identity fraud and identifying a fraud classification approach to improve information sharing.

As the public and private sectors work to reduce payment frictions, one of the most important use cases is for cross-border payments, such as remittances. Intermediation chains for cross-border payments are long, slow, cumbersome, and opaque. Technology enables e-commerce to transcend national borders, but current cross-border payments solutions often represent complicated workarounds rather than seamless end-to-end solutions. Authorities in different jurisdictions recognize the importance of cooperating across borders with each other and the private sector to address the very real cross-border frictions that exist today.

### **Concluding Thoughts**

Our nation has rich and varied experiences to draw on as we assess various proposals for private money, from the period in our history when the colonial states each issued their own currencies to the many decades when the circulation of private commercial banknotes stood in for a national currency. The Federal Reserve was created in part to respond to the inability of many of these banks to make good on their obligations for the banknotes they issued and the panics and runs that ensued. Those experiences will help inform us as we potentially enter another phase in the evolution of money and payments.

Today, consumers and businesses have a variety of payment options, including physical cash, checks, ACH transfers, debit cards and credit cards, and mobile-based payment solutions, to name a few. These tend to have clearly defined legal rights and responsibilities. We will

likely see far-reaching innovation in payments in the coming years, with a plethora of new and emerging options, including stablecoins.

The Federal Reserve remains confident in the power of technology and innovation to transform the financial system and reduce frictions and delays, while preserving consumer protections, data privacy and security, financial stability, and monetary policy transmission and guarding against illicit activity and cyber risks. Given the stakes, global stablecoin networks should be expected to meet a high threshold of legal and regulatory safeguards before launching operations. We are monitoring new technologies closely to ensure that the innovations that arise fit with our operational responsibilities and broader public policy goals, as reflected in the Federal Reserve Act. At the same time, we are upgrading our services to support innovation in new ways. And, we will continue to foster a safe and efficient payments system, including where money in all its myriad forms—present and future—is concerned, as we have for over a century.