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Abstract

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Market Power and Financial Risk in U.S. Payments Systems

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This White Paper argues that there is an unavoidable trade-off between regulations that would reduce risk to the financial system and those that would reduce the market power of the firms that control the interbank payments infrastructure in the United States. Regulatory and economic features of payments systems mean that regulators can (1) entrench bank market power, (2) accept a new source of systemic risk, or (3) expand the financial safety net beyond the bank regulatory perimeter. Recognizing that a private payments system involves a policy trade-off between bank market power and the safety and soundness of the financial system provides support for considering public payments options like the Federal Reserve's "FedNow" or a well-designed central bank digital currency.

Introduction

Payments systems are undergoing dramatic changes that are supposed to make payments faster, cheaper, and safer. Ideally, it would be possible to support innovative payments systems while mitigating the risks that they pose to financial stability. This White Paper argues that the market and regulatory structure of payments systems creates unavoidable trade-offs—the most important of which is a trade-off between financial risk and market power.

A combination of factors drives the trade-off between market power and financial stability. First, payments platforms are characterized by significant economies of scale. A large user base allows the platform to spread infrastructure costs across a broader customer base. Payments systems become more convenient as more people and businesses use them, and they are better able to manage credit and liquidity risk when they control the market.

Second, despite innovations in retail payments systems, most peer-to-peer platforms operate on top of The Clearing House Interbank Payments System (CHIPS) or Fedwire, both of which process interbank payments in the United States.¹ Both CHIPS and Fedwire rely on large financial institutions—CHIPS because it is owned and operated by twenty-four large commercial banks, and Fedwire because it is only eligible to financial institutions that hold an account with a Federal Reserve Bank. If retail payments platforms are required to match customer funds with funds held in depository institutions, they will not offer a meaningful alternative to TCH because users will continue to rely on interbank infrastructure to transfer money between depository institutions. That would entrench TCH's market power.

Third, while it is possible for payments systems to bypass TCH altogether by holding money or assets that are not backed by assets held in insured depository institutions—one of the purposes of stablecoin is to do just that—doing so would allow new payments systems to effectively act as depository institutions. That, in turn, creates a risk of customer runs. Regulators thus face a choice between entrenching TCH and its twenty-four member banks'

¹ The Clearing House (TCH) is a banking association and payments company. TCH operates the Clearing House Interbank Payments System. *See* The Clearing House, About CHIPS, <https://www.theclearinghouse.org/payment-systems/chips>. The Federal Reserve Banks operate the Fedwire Funds Service, which is “a real-time gross settlement system that enables participants to initiate funds transfer that are immediate, final, and irrevocable once processed.” *See* Fedwire Funds Services, Board of Governors of the Federal Reserve System, https://www.federalreserve.gov/paymentsystems/fedfunds_about.htm.

market power and allowing a systemically important shadow banking system to emerge out of innovative payments platforms.

Thus, if regulators encourage competition, they will either support the development of a systemically important shadow banking system, or they will be forced to expand the financial safety net to cover non-financial institutions. And if regulators require that money held in payments systems be backed by deposits held in FDIC-insured banks, they will ensure that TCH remains at the center of American payments.

This trade-off creates a payments trilemma because policymakers have three suboptimal choices: (1) allowing a new payments system to operate outside the interbank payments network without expanding the financial safety net would leave the new system vulnerable to destabilizing runs; (2) eliminating run risk while permitting new payments systems to operate outside of the existing payments infrastructure would expand the financial safety net, since the federal government would effectively be providing insurance to deposits held by non-depository institutions, and it would further erode the separation between banking and commerce in the United States; and (3) eliminating run risk by bringing new payments systems within the existing bank regulatory perimeter would result in those new payments systems being built on top of existing interbank payments infrastructure. That, in turn, could entrench market power in the financial services industry, deter innovation, and leave individuals vulnerable to market power abuses.

The existence of this trilemma suggests that additional government intervention is needed to ensure that future payments systems realize their promise of offering cheap, fast, and safe alternatives to current payments infrastructure. Recognizing that there is a trade-off between regulations that reduce market power and those that reduce systemic risk provides additional support for a public payments option and a central bank digital currency to compete with private interbank payments systems.

Part I describes existing payments systems. Part II outlines the problems with the current system. Part III argues that the market structure of payments systems creates a trade-off between financial risk and market power. Part IV offers policy proposals that would support the development of safe and efficient payments systems.

I. Payments Systems

A payments system refers to “[a] set of instruments, banking procedures and, typically, interbank funds transfer systems that ensure the circulation of money” (BIS). People use a variety of tools, including cash, checks, credit cards, electronic payments networks, and cryptocurrencies to transfer money to purchase goods and services.

The U.S. payments infrastructure is a leviathan. In 2019, the Federal Reserve published a study on the aggregate trends in non-cash payments in the United States. The number of core non-cash payments—that is, the number of payments conducted by debit card, credit card, automatic clearing house (ACH), and check payments—topped 174 billion in 2018, an increase of 30 billion from 2015. The dollar value of these payments reached \$97 trillion in 2018, an increase of approximately \$10 trillion from 2015 (2019 Payments Study). Most of these payments transactions are carried out through established payments services between banks—that is, interbank payments services such as the ACH network or wire-transfer systems.

This Part provides a general overview of the U.S. payments infrastructure. It begins with a discussion of well-known retail payments and wholesale payments before pivoting toward a newcomer and potential disruptor: stablecoins.

a. Retail Payments

Retail payments refer to payments made by consumers and between businesses to purchase goods and services and are typically low in value but high in volume. Retail payments can be made with cash or through some other means. In the United States, cash consists of coin, which is issued by the U.S. Department of the Treasury, and Federal Reserve notes, which are issued by the Federal Reserve. Non-cash retail payments are conducted by check, credit cards, debit cards, prepaid cards, or ACH.

ACH is an electronic payments network that tells financial institutions whether to debit or credit an account. Examples of ACH transactions include employers depositing money into their employees’ bank accounts, businesses paying suppliers for products, individuals moving money from one bank account to another, and monthly mortgage payments.

There is one unifying theme across all the non-cash retail payments options: They all depend on the existing system of financial institutions. According to the President’s Working Group on Financial Markets, “the traditional retail non-cash payments systems . . . all rely on financial institutions for one or more parts of this process, and each financial institution maintains its own ledger of transactions that is compared to ledgers held at other institutions and intermediaries” (President’s Working Group on Financial Markets). The reliance on existing financial institutions has supported financial stability but has also impeded innovation and entrenched high transactions costs that fall on consumers. Thus, it should come as no surprise that non-bank payments companies like Stripe, Venmo, and Plaid have proliferated in the retail payments space over the past decade.

b. Wholesale Payments

Wholesale payments are made between businesses or governments and typically involve very large dollar amounts. Wholesale payments are used to settle transactions between banks and other large financial institutions and include large-scale securities transactions, real estate deals, interbank transactions, and foreign exchange transactions.

The two dominant methods of conducting wholesale payments are for financial institutions to use Fedwire, which is a public system that services thousands of depository institutions; or to use the Clearing House Interbank Payments System (CHIPS), which is a private system that services approximately fifty of the largest banks in the world. The average Fedwire transfer is around \$4 million or \$5 million (Fedwire Funds Service – Monthly Statistics), and the average CHIPS transfer is just over \$3 million (OFX).

Fedwire is operated by the Federal Reserve Banks. It allows any depository institution with an account at the Federal Reserve to transfer funds from its account to another depository institution that has an account with the Federal Reserve. Each transfer is final and irrevocable when made because Fedwire is a real-time gross settlement system.

In addition to having access to instantaneous transfer of funds, Fedwire allows banks to incur daylight overdrafts, which are bank withdrawals for more money than the bank has in its Federal Reserve Account. Thus, the Federal Reserve Banks provide the intraday credit needed to handle the dollar volumes processed on Fedwire by allowing depository

institutions to initiate Fedwire transfers that may exceed, at a given moment, the balance in their reserve or clearing accounts.

CHIPS, by contrast, is operated by TCH, which is owned by twenty-four of the world's largest commercial banks. The approximately fifty direct participants in CHIPS have their transfers summed and netted against each other to determine a net credit or net debit position for each participant. In contrast to Fedwire, CHIPS creates interbank credit exposures among the system's participants and does not allow for daylight overdraft.

c. Stablecoins and Other Closed Payments Systems

Stablecoins have emerged as a potential disruptor to the global payments system. Stablecoins are a digital asset that is designed to maintain a stable value relative to a national currency (e.g., relative to the U.S. dollar) or other reference assets. Stablecoins facilitate the transfer of coins between or among users by having issuers and other participants record the transfer either on the wallet provider (for transactions between users of the same wallet provider) or on the distributed ledger (for transactions involving users of different wallets). Unlike the retail and wholesale payments systems discussed above, stablecoins do not rely on existing financial institutions.

Stablecoins are not currently used widely for retail or wholesale payments. Instead, they are used to trade fiat cryptocurrencies like Bitcoin and Ethereum, enabling traders to more easily buy and sell cryptocurrencies on an exchange. Investors also use stablecoins to obtain higher returns. Although stablecoins do not themselves provide a direct return—in fact, stablecoins are designed not to deviate from par—owners of stablecoins can pledge them in decentralized finance (DeFi) platforms. Thus, stablecoins allow users to use funds to support lending activities that resemble traditional banking products. Doing so can generate interest well above five percent. Perhaps as a result of these trading and investing use cases, or perhaps because of popular demand for payments providers that operate outside the mainstream financial system, the market for stablecoins has grown rapidly. In the middle of 2020, the market capitalization of stablecoins was approximately \$20 billion. In January 2022, that figure stood at over \$165 billion (CoinMarketCap).

Stablecoins currently create a number of financial risks. For instance, they are subject to “bank run risk.” Holders of stablecoins are able to redeem their stablecoins one for one (i.e., one coin for one U.S. dollar) despite the fact that stablecoin issuers are not required to maintain one-for-one backing. In other words, stablecoin issuers are engaged in unregulated fractional reserve banking. In addition, stablecoins pose illicit finance concerns and risks to financial integrity, including concerns related to compliance with rules governing anti-money laundering and countering the financing of terrorism.

Nevertheless, some remain hawkish about the potential benefits of stablecoins. According to the President’s Working Group on Financial Markets, “[p]roponents believe stablecoins could become widely used by households and businesses as a means of payments. If well-designed and appropriately regulated, stablecoins could support faster, more efficient, and more inclusive payments options. Moreover, the transition to broader use of stablecoins as a means of payments could occur rapidly due to network effects of relationships between stablecoins and existing user bases or platforms” (President’s Working Group). According to its proponents, a well-regulated stablecoin—that is, one without run risk—would increase competition among payments providers and facilitate more efficient cross-border payments (Quarles).

It is worth noting that, while peer-to-peer retail payments systems such as Venmo and PayPal rely on the existing bank payments infrastructure, they can simultaneously act as closed systems like stablecoin. When a payment is executed with funds that are held on the payments platform and not in the user’s bank account, then the retail payments provider does not draw on the interbank payments system to execute that transaction. If more and more people and businesses store money in retail payments systems, then those platforms will be able to offer a closed payments platform that operates outside the interbank payments system. As explained in the next Part, however, those systems, like stablecoins, would thereby become a source of financial risk because they would be operating as depository institutions.

II. Problems with U.S Payments

Some transactions do not involve a financial intermediary. For example, payments made with cash are fast—sellers immediately receive cash at the point of sale—and the value

of a dollar can be expected to remain relatively stable over time. However, because it is risky and inconvenient to hold a large amount of cash, people and businesses often prefer electronic platforms to exchange money for goods and services. This Part explains why these payments systems remain expensive and inconvenient.

a. Payments and Financial Inclusion

Payments systems burden people who already struggle to participate in the mainstream financial system. More than seven million American households—or over five percent of U.S. households—lack access to a bank account (FDIC).

Checks and electronic payments can take days to settle. These delays are costly for people who live paycheck to paycheck, but they benefit the financial institutions that own and operate electronic payments infrastructure. Consider the relationship between payments delays and overdraft fees. The Consumer Financial Protection Bureau estimated that in 2019, banks made \$15.47 billion in revenue from overdraft fees, and that three banks—JP Morgan Chase, Bank of America, and Wells Fargo—accounted for more than forty-four percent of overdraft fees (Nagypál). These three banks are all members of TCH, so the slow interbank payments system boosts their profits at the expense of poor Americans.

Payments delays also cause poor Americans to rely on other expensive financial services. For example, people who do not have access to a bank account or who are reluctant to pay overdraft fees often turn to payday lenders, who charge very high interest rates, or cash checks, which often includes a transaction fee of more than three percent. Research from the Federal Reserve Bank of St. Louis shows that twelve million Americans use payday loans annually, and the interest charged on those loans can exceed 300 percent (Bennett). Thus, while technological advances have made retail payments more convenient for many Americans, those benefits have not helped the millions of unbanked and underbanked households who frequently turn to payday lenders or incur overdraft fees partly as a result of payments delays.

b. Cross-Border Transactions

Existing payments infrastructure also amounts to a tax on international commerce. According to the Bank for International Settlements, cross-border payments are “slower, costlier and more opaque than domestic payments” (Bank of International Settlements, Cross-Border). Despite these inefficiencies, cross-border transactions are extremely lucrative for large banks, with a McKinsey study estimating that international payments revenues total \$200 billion a year (McKinsey).

Cross-border payments are typically settled through correspondent accounts that banks maintain with each other. The correspondent bank, which is the bank requesting money, communicates with the respondent bank, which is the bank that transfers money to the correspondent bank on behalf of a purchaser. Banks maintain large networks of correspondent banking relationships, and settling cross-border transactions often involves four or more correspondent relationships. This “hub-and-spoke” method is costly, as taxes and fees are levied each time the remittance crosses a jurisdiction. For instance, in 2021, the average cost of sending a remittance from the United States to other countries was approximately 5.4 percent of the notional value of the transaction (Board of Governors).

The slow pace of innovation in cross-border payments is a result of a few different factors, including technological limitations, the market power of the firms that benefit from the current system, and regulations on money laundering and terrorist financing. Here, too, scale economies have led to a concentrated industry. According to Dong He, the Deputy Director of the Monetary and Capital Markets Department at the IMF:

Existing intermediaries benefit from high barriers to entry; each segment of the payments chain remains highly concentrated. In many cases, barriers stem from high fixed and sunk costs required to interface with users, comply with regulation, build trust in services, and operate large back-offices in the case of correspondent banks. In addition, size matters for these institutions to manage liquidity and counterparty risk. Finally, network externalities are prevalent in messaging—and also in settlement, where netting bilateral positions lowers costs, and access to multiple counterparties facilitates transactions (He).

Building and maintaining infrastructure to support cross-border payments involves high fixed costs that make it difficult for new firms to enter the market. In addition, large correspondent banks benefit from network effects. If every bank relies on a single

correspondent bank to settle cross-border transactions in a country, then they avoid additional transactions fees that occur when two banks rely on separate correspondent banks in a particular country. And just as domestic payments delays benefit the institutions that control infrastructure by causing people to incur overdraft fees, so too does the current system benefit the large financial institutions that process high volumes of cross-border payments by allowing those institutions to charge high fees.

c. Systemic Risk

Payments systems are also a source of financial risk, and this risk is increasing as new payments systems emerge as FinTech innovations outside of the traditional banking channels. A disruption to a major electronic payments system could have devastating economic consequences. If CHIPS stopped operating, even just temporarily, the real economy would suffer, since it would be much more difficult to transfer funds to buy and sell goods and services.

Payments systems are exposed to two main sources of risk. The first is technological. The U.S payments system could shut down because the systems that ensure payments clear and settle faced a technological disruption. This could occur either because of an ordinary technological failure or because of a hacking attack. The mainstream payments system is currently better equipped to deal with a technological disruption than cryptocurrency platforms, in part because financial supervisors and regulators evaluate the measures that financial institutions take to protect themselves from hackers. In theory, these standards could be extended to stablecoins and other payments providers.

Note, though, that such standards would create barriers to entry by increasing the costs these providers face. The importance of payments to the global economy means that such standards are almost certainly good policy, but the downside is that they would likely provide some protection to incumbents and, to the extent that new entrants emerge, would increase the likelihood that a small number of platforms capture the entire market.

The second risk is economic. Payments systems are vulnerable to runs. Runs occur when many depositors withdraw money from a bank simultaneously—often because they fear that the institution will become insolvent and thus not able to pay them if they withdraw

money in the future. Because banks are engaged in fractional reserve banking—they retain only a small percentage of deposits and lend the rest to borrowers—they cannot honor withdrawal requests if too many depositors try to withdraw their funds at the same time.

The United States protects consumers from run risk through a robust regulatory scheme. Banks are prohibited from participating in certain risky or speculative investments. They are required to meet capital requirements to ensure they can withstand losses. They must meet capital and liquidity requirements to make sure that they are able to honor withdrawal requests and bear losses. They have access to the Federal Reserve’s discount window so that they remain resilient to liquidity shortfalls. If, despite these prudential regulatory protections, a bank still fails, depositors are protected by FDIC insurance up to \$250,000 per individual account.

The proliferation of new payments systems creates a new source of run risk. Payments systems often store money on behalf of users. This is the explicit purpose of stablecoins like Tether, and retail payments providers create run risk when customers store funds in their accounts. Like depository institutions, stablecoins and retail payments systems are subject to run risk if they do not keep all user funds on hand, since they will be unable to meet their obligations if a large number of users try to withdraw money at the same time. Even if stablecoins and retail payments providers match customer funds one-for-one, users may still incur a loss because users are generally treated as unsecured creditors.

d. Market Power

The issues described above are compounded by the fact that a small number of financial institutions control interbank payments. As discussed in Part III.A, slow payments cause many poor Americans to incur overdraft fees, which benefits existing financial institutions at the expense of poor Americans. Slow payments are also a large source of profit for the financial institutions that facilitate cross-border payments and that own and operate the U.S. interbank payments infrastructure.

Concentration in cross-border payments results from a combination of factors, including the liquidity and scale benefits in cross-border payments, the regulatory barriers

that make it difficult for new entrants to compete for cross-border payments, and potentially also anticompetitive conduct.

Both domestically and internationally, the financial institutions that own and operate interbank payments systems have limited incentives to innovate because a real-time payments system would erode the profits they make as a result of payments delays. Thus, while it is unclear if the slow pace of innovation in domestic and cross-border payments is a deliberate exercise of market power, the result of scale economies and network effects, or a combination of the two; it is clear that the current problems that plague interbank payments system ultimately benefit the entities that own and operate that infrastructure.

III. The Trade-off Between Market Power and Systemic Risk

In theory, the emergence of FinTech payments providers and cryptocurrencies could solve many of the problems discussed in the previous Part. The problem is that these payments either sit on top of the existing bank infrastructure, in which case they do not offer an alternative to the wholesale payments system, or they hold funds outside of existing bank networks (i.e., outside of the bank regulatory perimeter), in which case they create a new source of financial risk. That leads to a trade-off between market power and financial stability.

a. Scale in Payments Systems: Convenience and Cost

Both retail and wholesale payments systems are characterized by large scale economies. At the retail level, it is simply more convenient when a payments system has a large user base. For instance, if every store accepts payments by Visa, more customers will be inclined to adopt Visa and use it pay for goods or services. Similarly, if more people download Venmo onto their smart phones, more people would be willing to use it.

In addition to making large systems more convenient, these network effects allow large payments systems to offer cheaper services than smaller ones. As more people use a particular form of payments, the payments provider is able to spread its own costs across a larger user base, which allows it to charge customers less and improve its services. Credit cards, for example, can be thought of as elaborate communication networks that facilitate

payments between financial institutions. The infrastructure costs of developing the system are high, but once the system has been developed, it is relatively inexpensive to add additional customers. Large credit card networks can therefore spread infrastructure costs across a large user base. That makes it less expensive to develop one or a small number of such systems, since multiple systems perform similar functions, and there may not be a need to build redundant infrastructures. The same network effects characterize interbank payments systems.

b. Scale in Payments Systems: Safety

Payments systems face a number of different risks—including credit risk, liquidity risk, operational risk, and settlement. Large platforms are better able to manage all these risks, and they are better able to manage the costs of complying with regulations designed to mitigate risk to the financial system.

Credit risk is the risk that a counterparty, whether a participant or other entity, will be unable to meet its financial obligations when they come due. For example, Venmo faces credit risk if the user of its product cannot pay when the time comes. The larger the payments system becomes, the more it can diversify away idiosyncratic credit risk. Simply consider the idiosyncratic credit risk if Visa transacts with five customers versus fifty thousand customers. (The credit risk is much higher with a portfolio of only five customers.)

Operational risk is the risk that deficiencies in information systems or internal processes, human errors, management failures, or disruptions from external events will result in the breakdown of services. A concrete example is a cybersecurity failure in which the electronic platform is taken offline for a few minutes or hours. This type of operational failure would disrupt the ability of users to make payments. A platform with more users and deeper pockets is able to recover more quickly after such an operational failure and invest more resources into preventing one in the first place.

Settlement risk is the risk that settlement will not take place as expected. Suppose, for example, that two parties have agreed to a transaction in which one party sells a good in exchange for \$50. If settlement does not occur, then the seller either does not receive the \$50 or receives it later than expected. Well-designed and well-operated payments systems ensure

that transactions settle reliably. With significant scale, a payments platform could better withstand a few settlement hiccups.

Settlement risk is closely related to liquidity risk, and payments systems' scale economies allow large systems to better manage liquidity. Many payments platforms, including CHIPS, use deferred net settlement, which means that settlement occurs at the end of a predetermined set of time—often at the end of the day. Deferred net settlement increases market liquidity, since the amount financial institutions must pay out at the end of the day is reduced—or netted—by the amount owed to that firm. Deferred net settlement is more efficient at scale. If financial institutions had to rely on two or more payments systems, they would have to make funds available to both, and transactions that settled on one platform would not be netted against transactions settled on the other, meaning firms would have to make hold funds available for payments. Regulatory compliance costs may further inhibit competition.

c. Competition Outside the Regulatory Perimeter

As a result of the scale economies described above, a payments provider that wants to compete directly with TCH while operating within the bank regulatory is at a severe disadvantage. The scale economies that currently make CHIPS and Fedwire highly efficient also allow them to provide cheaper services than a would-be competitor. In addition, a new payments system that wanted to operate within the bank regulatory perimeter would have to comply with the prudential regulations that are designed to protect the safety and soundness of the financial system. Finally, if a new payments platform managed to get off the ground, it is very likely that it would itself soon gain market power, because it would also benefit from the scale economies and network effects that currently make it difficult for new entrants to compete with CHIPS.

The firms that control interbank payments infrastructure have limited incentives to innovate to reduce costs or settlement times. Innovations often come from disruptive new competitors, or from monopolists that innovate to stave off competition. The firms that own and operate existing payments infrastructure enjoy significant financial benefits from the

current system, and scale economies make it difficult for competitors to take their market share.

The current payments system may allow incumbent financial institutions to exercise market power in other ways. As discussed, payments go through the large banks that are members of the Federal Reserve system or TCH. Small banks thus rely on large banks to execute payments. Large banks may make money on the float—the time between a deposit being made in the recipient’s account and deducted from the sender’s account. It is difficult to get information on how banks use funds during the float, but it is possible that large banks put these funds to productive use—perhaps by lending in repo or other overnight investment markets. The existence of payments delays allows large banks to take advantage of the float. If large commercial banks take advantage of this in overnight investment markets, then payments delays benefit the large firms that own and operate interbank payments systems at the expense of their smaller rivals.

Thus, competition in payments is likely to come from firms that operate outside the bank regulatory perimeter. Such firms are engaged in legal arbitrage. They aim to compete with incumbent banks while avoiding the capital requirements, leverage requirements, and liquidity requirements that maintain the safety and soundness of the financial system. Given the enormous network effects described above, the most viable competitor to the interbank system is a company that has already managed to establish a large network. This could be a retail payments provider such as Venmo or PayPal that has already established a large user base. If one of these platforms offered benefits such as discounted services to users who did not withdraw funds, it could offer a meaningful alternative to TCH.

Alternatively, a social media company such as Facebook that already has a large user base might be able to take advantage of its existing network to pivot into the payments space. Indeed, social media companies already have very large networks, and those networks often cross international borders. By creating a cryptocurrency that could be used to execute payments, a social media company could bypass the interbank system, and it could quickly attain the scale needed to offer cheap and convenient services. That appears to be precisely what Facebook tried to do in establishing Libra and Diem. Finally, a stablecoin may emerge as a viable competitor to TCH if it quickly acquires a large network, allows users to store funds, and is adopted by individuals and businesses.

d. Risks to Financial Stability from New Entrants

Thus, the emergence of this type of competition creates regulatory challenges because new payments providers can only offer a viable alternative to the existing interbank system if they do not sit on top of TCH. Doing so, however, means that they either sit outside the bank regulatory perimeter, or that regulators would have to expand the regulatory perimeter to include these new entrants. That, in turn, creates financial stability concerns.

The traditional U.S. payments system has operated for over a century without causing a systemic meltdown. The stability of payments systems is largely a result of the regulatory environment banks live within. When people and businesses pay for goods with cash, checks, or ACH, they know that the institutions that clear and settle payments are subject to capital requirements that ensure they are able to bear losses. Those institutions have access to the discount window and thus will not be forced to sell assets in a fire sale if they encounter liquidity issues. And, if a bank does fail, users will still have access to their funds because the institutions that sit at the heart of the American payments system are all FDIC insured.

Traditional commercial banks take deposits, issue loans, and facilitate payments. A new payments system creates financial risk if it offers the first two of those services—if it holds deposits and extends loans—because it may not be able to honor withdrawal requests. Even if it just accepts deposits and does not issue loans, it could still be vulnerable to run risk if it invests customer funds in financial assets that decline in value.

A new electronic payments system would likely provide all—or at least some of—these services, and it would do so while operating outside of the bank regulatory perimeter. In the early 2010s, FinTech companies like PayPal, Venmo, and Square began offering services and products aimed at improving customers' retail payments experiences. Notably, while the largest payments FinTech companies started off with the mission of improving payments, they have augmented their platforms and expanded into adjacent banking areas, such as extending credit and offering interest on cash held.

Stablecoins raise the same risks. Stablecoin issuers may have originally been designed to improve payments, but they are fundamentally banks that engage in maturity transformation. They take deposits, make loans, and facilitate payments. For each dollar (or

fiat currency) deposited with the stablecoin issuer, they receive that number of stablecoins in exchange. Supposedly, depositors can redeem coins at par and at will for cash, just like demand deposits and money market funds. The stablecoin issuers take the deposits and invest them in short-term debt like commercial paper.

Policymakers and market analysts—and even stablecoin issuers themselves—understand that stablecoin issuers can create the same regulatory challenges as traditional banks. If stablecoins are not perceived to be safe because coin holders have suspicions about the backing, then they may be inclined to run on the issuers. In July 2021, the stablecoin industry experienced its first run on the stablecoin Iron Finance. In its post mortem, the stablecoin issuer wrote:

We never thought it would happen, but it just did. We just experienced the world’s first large-scale crypto bank run. . .

What we just experienced is the worst thing that could happen to the protocol, a historical bank run in the modern high-tech crypto space. Remember that Iron.Finance is a partially collateralized stablecoin, which is similar to the fractional reserve banking of the modern world. When people panic and run over to the bank to withdraw their money in a short period, the bank may and will collapse (Iron Finance).

Modern banking law solved the risks associated with fractional reserve banking, and these new FinTech entrants have thus essentially rebuilt “banking” outside of the regulatory perimeter (Gorton). In a recent white paper on the future of money, the Federal Reserve observed that “if the growth of nonbank payments services were to cause a large-scale shift of money from commercial banks to nonbanks, the resulting lack of equivalent protections that come with commercial bank money could introduce run risk or other instabilities to the financial system” (Federal Reserve White Paper).

Of course, one could argue that alternative payments systems should be prohibited from holding balances on behalf of customers. This would eliminate run risk created by these platforms, because payments providers would not hold customer funds, but it does not avoid the trade-off between bank market power and systemic risk. It instead would force the system to rely on the existing bank infrastructure. By forcing payments systems to refrain from engaging in the business of banking, regulators would ensure that payments platforms

transfer funds to financial institutions that operate within the bank regulatory perimeter, thus avoiding the arbitrage problem by ensuring that those financial institutions continue to control payments infrastructure.

e. The Payments Trilemma

The tension described above gives rise to a payments trilemma, because regulators have three suboptimal options to pick from. They can (1) entrench bank market power, (2) accept a new source of systemic risk, or (3) expand the financial safety net beyond the bank regulatory perimeter.

The first option would occur if regulators mandated that financial institutions continue to operate payments infrastructure. The institutions that run the existing interbank systems have weak incentives to invest in improving the current system. As discussed, the current system is a large source of profit for the banks that run it, and the high barriers to entry and network effects that characterize the existing system make it difficult for a group of financial institutions to challenge TCH.

In fact, regulators will entrench the market power of the firms that own and operate TCH even if they encourage the proliferation of retail payments. Because these systems sit on top of the existing infrastructure, they do not offer a genuine alternative to the existing interbank system. For example, one way to reduce the risk of runs caused by FinTech retail payments providers would be to require that they process payments in real time. However, if retail payments providers kept funds in user accounts, then they would effectively act as depository institutions on behalf of their customers, and those funds would be vulnerable to runs. To fully eliminate run risk in retail payments systems, regulators would therefore have to require (a) real time settlement and (b) that payments system immediately transfer funds to a bank account that operates inside the regulatory perimeter. That, in turn, would result in funds being stored within the financial system, and the payment from the payments provider to the financial institution would involve a transfer between financial institutions. In other words, to eliminate run risk, regulators would have to force retail payments providers to rely on the very interbank payments system that those providers are trying to displace.

Thus, absent a public option, payments markets will be competitive only if regulators allow firms to store money—effectively allowing them to act as depository institutions. This second option would allow new entrants to disrupt the existing ecosystem, which could lead to a more convenient system with fewer settlement lags and greater access for the unbanked and underbanked. But because these new entrants are likely to develop only if they avoid the bank regulatory perimeter, they would introduce a new source of systemic risk. The failure of one such firm—from operational risk or liquidity risk, for example—could lead to contagion within the financial system and spread into the broader economy.

The third option is to allow regulators to bail out a payments system that operates outside the bank regulator perimeter and would therefore break down the separation between banking and commerce. Extending the financial safety net to cover such firms would create a number of economic distortions. The possibility that a firm would be bailed out in a crisis amounts to a subsidy because creditors would charge lower interest rates if they think they would be repaid even if the firm fails. That would reduce competition in commercial markets. In addition, if the firm failed, regulators would face enormous pressure to extend the financial safety net to cover the failing firm by guaranteeing their liabilities or granting them access to a lender of last resort. In other words, the federal government could find itself guaranteeing the debt of Facebook or Apple in order to prevent a financial crisis.

IV. Regulating Payments in Light of the Trilemma

Recognizing that a private payments system produces a trade-off between the market power of the firms that control the payments infrastructure and the safety and soundness of the financial system lends support for an improved regulatory approach and public options.

The existence of this trilemma suggests that the market is unlikely to lead to a cheap, safe, and efficient payments system, and that the government should intervene directly. There are three possible ways to do this: (a) well-regulated stablecoins; (b) central bank digital currencies; and (c) an improved interbank settlement platform that is maintained by the central bank. These three options are not mutually exclusive. The second and third options, if used in conjunction, would likely improve the efficiency of the U.S. payments system without increasing the market power of private firms or sacrificing financial stability.

a. Well-Regulated Stablecoins

Congress and financial regulators could transform stablecoins, which are currently a type of private money, into public money by (1) bringing stablecoin issuers within the bank regulatory perimeter, or (2) requiring stablecoins to be backed one-for-one by safe assets like short-term Treasuries.

There are, however, reasons to think this approach would not lead to a better payments system. First, apart from concerns about safety and soundness, stablecoins may also raise investor protection, market integrity, and illicit finance concerns. These concerns are unrelated to the payments trilemma but could nevertheless result in significant social harms.

Second, and directly related to the trilemma, allowing stablecoins to proliferate—whether with or without run risk—would likely lead to a mixing of banking and commerce. This is the concern, described in the previous subpart, that commercial firms would develop stablecoins, which could leave the government responsible for bailing out firms that participate in non-bank commercial activities in the event that the issuer experienced financial distress.

Third, and also related to our trilemma, developing well-regulated stablecoins would not mitigate the market power of private firms. Stablecoins are likely to exhibit many of the scale economies that have led to concentration in the interbank payments market. Moreover, the stablecoin market is already highly concentrated. In mid-January 2022, the five largest stablecoins—namely, Tether, USD Coin, Binance USD, TerraUSD, and Dai—accounted for well over 90 percent of the stablecoin market (CoinMarketCap). If stablecoins turn out to be successful, concentration will likely increase, which could lead to higher costs and other market power abuses in the future (President’s Working Group).

To fully eliminate run risk, regulators would have to require that stablecoins be backed by FDIC insurance or by assets that are not subject to run risk. Simply requiring stablecoins to be backed by safe assets would significantly reduce run risk but not eliminate it altogether. But assets that have zero run risk (e.g., central bank reserves) are precisely the assets that are currently settled on the existing interbank infrastructure. In other words, fully eliminating run risk would require stablecoin issuers to layer their platforms on top of the existing

interbank network. That, of course, would defeat the purpose of offering an alternative to that interbank network.

Thus, while developing a regulatory framework that solves the run risk associated with stablecoins could mitigate systemic risk, doing so would not address the market power side of the trade-off. In short, this option falls short of being a sufficient solution to the payments trilemma.

b. Central Bank Digital Currencies

A better approach is to have the Federal Reserve create its own stablecoin. This is often referred to as a central bank digital currency, which is “a digital liability of a central bank that is widely available to the general public” (Board of Governors, Money and Payments). Digital money is hardly novel. Commercial bank accounts have long accounted for money on online systems. The difference is that a central bank digital currency would be a liability of the central bank and not a liability of a commercial bank.

A central bank digital currency could improve the U.S. payments system itself offer a safe and convenient payments system. In addition, if the Federal Reserve created and operationalized a central bank digital currency, it would thereby alleviate the problem associated with the market power of private firms, because it would compete with the existing interbank system. That would create pressure for bank payment platforms to innovate and keep costs low, and it would create such pressure while maintaining the separation of banking and commerce.

However, if the central bank digital currency were not designed properly, it could disintermediate the existing financial institutions and cause greater financial instability. For instance, in times of economic crises, depositors typically run on banks because they perceive those banks to be risky. Having a central bank digital currency as an alternative may exacerbate those bank runs because depositors know that central bank money is safer than money held in private banks. The sudden substitution toward liabilities of the Federal Reserve could further destabilize the banking system during a panic. To counter this potential financial stability issue, the Federal Reserve should pay zero interest on a central bank digital currency, limit the total amount of a central bank digital currency held by a user, or limit the

amount of a central bank digital currency that a user can accumulate over a short time period. Having this well-designed central bank digital currency could balance the trade-off between the market power of private firms and financial instability—and lead to cheaper and faster payments—but doing so would be a nontrivial task.

c. FedNow

The payments trilemma also bolsters the case for FedNow, which seeks to provide real-time, uninterrupted processing of payments. The FedNow system would be maintained by the Federal Reserve Banks and available to all U.S. depository institutions. It would enable individuals and businesses to transmit payments through those depository institution accounts. The FedNow system has the added benefit of not introducing new risks to the stability of financial sector like stablecoins; and it would not lead to the disintermediation of existing financial institutions like certain designs of a central bank digital currency.

In addition to these benefits, FedNow would provide a public option that could solve the trilemma. First, it would not further entrench the largest banks that currently run the private payments rails, since by definition it would offer an alternative to that system, which would be available to all depository institutions with accounts with the Reserve Banks. Second, FedNow would be operated for depository institutions that are within the regulatory perimeter. They are banks. There will be no need to extend the financial safety net beyond the depository institutions to FinTech startup ventures or to BigTech firms like Facebook or Amazon. Third, transactions could be settled using central bank money in Federal Reserve accounts. These constitute the safest type of money and have the least credit risk and liquidity risk. Thus, the financial stability leg of the trilemma is also satisfied.

Nevertheless, FedNow would offer an alternative to the existing interbank payments system which, by exposing TCH to competition, would create pressure for TCH to innovate and lower prices. FedNow would therefore likely improve U.S. payments infrastructure regardless of whether it ultimately offers a cheap and reliable service.

Conclusion

The U.S. payments system is large and opaque. But the system's enduring inefficiencies result from the combination of run risk and scale economies. Payments systems are cheaper, more convenient, and more reliable at scale. It is therefore unsurprising that there are only two dominant methods of conducting interbank payments in the United States. In addition, the need to protect the banking system from run risk has led to a number of regulations. These regulations increase the safety and soundness of the financial system, but they create additional barriers to entry that further limits competition. As a result of these factors, competitors are most likely to emerge from outside the bank regulatory perimeter, who may be able to take advantage of existing networks to quickly develop a payments system of their own. But for these new entities to provide a meaningful alternative to CHIPS and FedWire, they cannot be built on top of the existing interbank payments system.

The result is a regulatory system that incentivizes payments to operate within the bank regulatory perimeter, entrenching the market power of the financial institutions that control interbank payments system, whereas competition from outside of the perimeter introduces new sources of systemic risk. This trade-off has played out in the past decade as new FinTech competitors in the payments sphere have emerged outside of the regulatory perimeter, gained substantial market share, and may already be systemically important themselves.

This trade-off suggests that a policy trilemma is endemic to privately run payments systems, because regulators have to choose between three suboptimal options: (1) entrench bank market power, (2) accept a new source of systemic risk, or (3) expand the financial safety net beyond the bank regulatory perimeter. The existence of this trilemma provides additional support for public payments options like the Federal Reserve's "FedNow" and a well-designed central bank digital currency.

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