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This volume, titled “**Advancing Financial Regulation and Supervision**” focuses on the ongoing evolution of financial regulation and supervision as authorities respond to geopolitical developments, technological innovation, and the pursuit of more effective and proportionate oversight. The articles are organized to cover key themes such as cross-border supervision and geopolitical risk, the regulation of emerging technologies and payments, and the advancement of smarter, outcomes-based supervisory practice, reflecting the comprehensive approach needed to support well-functioning, resilient, and inclusive financial markets.



1.3
Academic Article

Banking and the Geopolitics of Payments

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Author's Bio



Jörg Bibow is a professor of economics at Skidmore College. As a monetary macroeconomist, his main research areas are international finance and European integration, as well as international trade and development and the history of economic thought. A particular research focus is central banking and financial systems and the effects of monetary policy on economic performance. This work builds on his earlier research on the monetary thought of John Maynard Keynes. Prior to joining Skidmore College in 2006, Bibow held teaching positions at the University of Cambridge (UK), University of Hamburg (Germany), and Franklin University (Switzerland).

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Abstract

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For the past 100 years or more, payments have been primarily associated with banking, and banking as we know it today features a bundling of (at least) three main lines of business: lending, deposit-taking, and payment services. In the past 15 years or so banks have come under severe competition as providers of payment services – payments may appear to become untethered from banking. Moreover, following many decades of progressing globalization marked by a move towards smoother interconnectivity of national payment systems under US dollar supremacy, payments have become subject to geostrategic competition.

This paper sets out to explore the potential consequences of the apparent “unbundling” of the traditional connections in banking, highlighting the challenges facing central bankers and financial regulators/supervisors as the evolution of money, banking and payments has entered the realm of geopolitics.

Keywords: banking, money, payments, financial intermediation, bank regulation, national security

Jel Codes: B22, E12, E42, E58, F50, G21

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Banking and the Geopolitics of Payments

Introduction

For the past 100 years or more, payments have been mostly associated with banking. Banking as we know it today, being the result of many centuries of evolution, features a bundling of (at least) three main lines of business: lending, deposit-taking, and payment services. In the traditional “bundled” banking model that typifies today’s two-tiered monetary system of bank money, money is primarily issued by profit-seeking private banks as part of their lending business, but is ultimately anchored by a national central bank equipped with a public mandate that is also issuing a shrinking residual of public (paper) money. The public-private partnership of issuance of bank money observed around the world with manifold national idiosyncrasies—particularly its associated centralized ledger-based payments technological infrastructure—had not seen much fundamental change over the past century. In the past 15 years or so banks have come under severe competition as providers of payment services.

In fact, since the Global Financial Crisis of 2007–9, banks and bank money have come under a multi-pronged attack. With banks both weakened by the crisis and restrained by post-crisis re-regulation, new players and new products have entered the market for payments, traditionally occupied by banks alone. New technologies and a zero-interest monetary policy backdrop helped to stir up the new-found competition. As a result, after being rather dormant for a century, money and payments are changing super rapidly today. One important issue for policymakers is whether “banking on payments” might become outmoded, and payments untethered from banking. Another critical development for policymakers is that payments have become the subject of geopolitics. Following an era of progressing globalization under the US dollar as the supreme global currency, the world today not only features tendencies of fracturing and block-building but also competing geopolitical ambitions in the payments sphere. These developments create new challenges for policymakers, including financial regulators/supervisors.

The analysis proceeds as follows. Section 2 revisits some conspicuous dichotomies present in theories of money and banking, highlighting the critical role of innovation and evolutionary change in financial structures when seen from the vintage point of a Minskyan symbiosis of Schumpeter’s and Keynes’ theories of banking. Ongoing changes observed in money and payments might potentially affect the provision of finance and liquidity to the economy – potentialities that policymakers must be alert to; as underscored by a selective review of the microeconomic banking literature in Section 3. Section 4 then discusses the never-ending challenges of regulating banking and finance generally, while Section 5 zooms in on payments, focusing on China, the EU, and the United States as key players in the evolution of global payments in the era of geostrategic competition. Section 6 concludes.

02

Dichotomies in Monetary and Banking Theories, and a Minskyan Symbiosis of Schumpeter and Keynes on Banking Evolution

Classical and Neoclassical economists have always wrestled to make sense of money.² (Goodhart 2005). The most sophisticated (Arrow-Debreu) version of neoclassical economics cannot find any room for money at all (the “Hahn problem”). In general, neoclassical economists have charted an ambivalent course on money. On the one hand, money is acknowledged as an important device in facilitating exchange in market economies lacking the Walrasian auctioneer. On the other hand, there is an overarching urge afflicting all neoclassical investigation to somehow look through the “veil of money” and treat economic activities *as if* they were determined by “real” things only. In short, a “dichotomy” is presumed to exist between the real and monetary spheres of the economy. Money somehow matters as a means of exchange but not otherwise. Given commercial habits and the exchange technology in place, (the quantity of) money allegedly only determines the price level but does not shape anything “real.”

The pedigree of money neutrality compulsion describes conventional monetary theory until today. An equilibrium determined by real forces alone provides the benchmark for all conventional macroeconomic theorizing. Money enters the analysis only as an afterthought. The standard approach is to add money as a “friction” of one kind or another that might affect, at least temporarily, the course of the real economy in certain ways. There are variations

2 Charles A.E. Goodhart, “What is the essence of money?” in Cambridge Journal of Economics [2005] 29(5): 817–25

on how money (and/or other aspects of the financial system) seemingly matter(s) to the economy briefly disturbed and pushed away from its real long-run equilibrium.

Both Joseph Schumpeter and John Maynard Keynes judged the conventional approach to monetary theory as misguided. Schumpeter argued that evolution was the essence of capitalism and that conventional equilibrium thinking was ill-equipped to come to grips with the phenomenon supposedly under study by economists. Keynes argued that, rather than being merely an afterthought, “money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behavior of money between the first state and the last”.³ In short, the postulated dichotomy between the real and monetary spheres of the economy also marks a dichotomy in monetary thought between the neoclassical mainstream on one side and Schumpeter and Keynes on the other.

Schumpeter and Keynes departed from mainstream thinking about money in another important way. Classical and neoclassical economists have traditionally approached money itself as a real thing, a commodity like gold, or some numeraire good. The phenomenon of banking, once again, is more of an afterthought in their thinking about money, a factor adding instability to the real thing. By contrast, Schumpeter and Keynes associated money not with any commodity, but with banking, and saw banking as a fundamental force in economic performance and evolution. Schumpeter and Keynes treated money as bank money, a financial instrument created by banks that *also* facilitates exchange as a means of payments.

Moreover, Schumpeter and Keynes conceived of banking in a way diametrically opposed to the conventional conception. Schumpeter himself identified yet another dichotomy in monetary theory by contrasting, what he called, the [mainstream] “monetary theory of credit” with the alternative “credit theory of money”.⁴ He associated his own monetary theory and that of Keynes with the latter.

The essential point is that, by the time Schumpeter and Keynes were theorizing about money and banking and certainly no less today, banks created money (i.e., immediate purchasing power denominated in the national⁵ unit of account) by lending and investing. In short and in reality, loans make deposits. By contrast, mainstream textbooks even today still tell stories whereby bank deposits make loans. In other words, Schumpeter and Keynes’s credit theories of money are diametrically opposed to monetary theories of credit, with the latter featuring the standard mainstream depiction of banks as special financial intermediaries collecting deposits (“loanable funds”) first, which are then made available as loans to borrowers.⁶

3 John Maynard Keynes, “A monetary theory of production” first published in 1933, reprinted in Donald Moggridge (ed) *Collected Writings of John Maynard Keynes*, vol. XIII - *The General Theory and After, Part I*, (Macmillan 1973)

4 Joseph A. Schumpeter, *History of Economic Analysis* (first published 1954, Routledge 1997). The reader of chapter 6 of Schumpeter’s opus will not miss that the substance of what I stated here largely echoes Schumpeter’s assessment of “real” versus “monetary analysis” of 80 years ago.

5 We ignore here the phenomenon of banks creating purchasing power denominated in foreign currency. See for instance Robert McCauley, “Internationalising the Australian dollar” in Chang Shu and Wensheng Peng (eds), *Currency internationalization: international experiences and implications for the renminbi* (Palgrave Macmillan 2010)

6 Jakab and Kumhof (2015) critique the conventional loanable funds theoretical banking tradition by presenting a new generation of DSGE models featuring a “financing through money creation” (FMC) conception of banking. Their contribution had little impact though. Zoltan Jakab and Michael Kumhof, “Banks are not intermediaries of loanable funds – and why this matters” (Bank of England Working Paper no. 519, 2015) <https://www.bankofengland.co.uk/working-paper/2015/banks-are-not-intermediaries-of-loanable-funds-and-why-this-matters> accessed 26 July 2026

How exactly do banks matter in Schumpeter's and Keynes's monetary thought then? Schumpeter's own credit theory of money features banks as "ephors" (gatekeepers), determining which potential "innovations" do or do not get finance and hence are made to happen, or not, in the evolution of capitalism.⁷ In other words, Schumpeter highlights the micro role of banks and considers banks' credit creation as the vital monetary complement to innovation. Keynes, on the other hand, offers a macro perspective on bank credit while also underscoring the importance of "liquidity"—with bank deposits featuring as "liquidity par excellence" in his "liquidity preference theory"—as a vital element facilitating capitalistic production under uncertainty.⁸

Schumpeter's and Keynes's emphases are complementary, and Keynes himself suggests a synthesis in his discussion of investment in capital goods from a macroeconomic perspective, noting that the pace "at which the innovating entrepreneurs will be able to carry their projects into execution at a cost in interest which is not deterrent to them, will depend on the degree of complaisance of those responsible for the banking system" (Keynes 1930, 85-86). Moreover, both monetary thinkers portray bankers as active players rather than as passive channels of depositors' funds or automatic multipliers of central bank reserves; they are players equipped with agency that can be applied for better or worse, but which is inherently essential for economic performance.

Conventional monetary analysis underplays the relevance of money and systematically misrepresents banking, solely focusing on the medium of exchange function of money.

From this perspective the observed changes in money and payments unfolding today can only matter as an *efficiency booster to the economy*. By contrast, Schumpeter and Keynes, sharing a real-world conception of banking at the heart of their credit theories of money, emphasize money as a real factor in shaping capitalistic evolution. The potentiality emerges here that *the apparent unbundling of "banking on payments" might have consequences for the evolution of financial structures and the economy* well beyond any potential efficiency gains in payments itself.

Providing a symbiosis of the monetary thoughts of Schumpeter and Keynes, Hyman Minsky proposes an evolutionary theory of banking and finance that develops hypotheses both regarding medium-term cyclical as well as longer-term structural developments.⁹ The cyclical part is captured by Minsky's famous "financial instability hypothesis" according to which "stability breeds instability." Even more relevant for the analysis here is Minsky's theorizing and analysis of the longer-term evolution of financial instruments, practices, and structures. Banking is central to his analysis, but the nature of banking—and the ways in which banks and near-banks create liquidity—continues to evolve. Policymakers must be alert to this evolution. From the perspective of a Minskyan symbiosis of Schumpeter and Keynes, the issue at hand has both a micro dimension (allocation [Schumpeter]), as well as a macro dimension (stability [Keynes]). Until today, regulated banks, as providers of bank credit and liquidity and as actors in financial markets, remain an essential core element of the financial system. But banking and finance

7 Joseph A. Schumpeter, *The Theory of Economic Development* (first published 1912, Harvard University Press 1959)

8 John M. Keynes, *A Treatise on Money* (first published 1930, reprinted in *The Collected Writings of John Maynard Keynes*, Vols 5 and 6, Macmillan 1971); Keynes, *The General Theory of Employment, Interest and Money* (first published 1936, reprinted in *The Collected Writings of John Maynard Keynes*, Vol. 7, Macmillan 1973); Jörg Bibow, *Keynes on Monetary Policy, Finance and Uncertainty: Liquidity Preference Theory and the Global Financial Crisis* (Routledge 2009)

9 See Hyman P. Minsky, *John Maynard Keynes* (Columbia University Press 1975); Minsky, "Money and crisis in Schumpeter and Keynes" in Hans-Jürgen Wagener and Jan Drukker (eds) *The Economic Law of Motion of Modern Society* (Cambridge University Press 1986); Minsky, "Schumpeter and finance" in Salvatore Riasco, Alessandro Roncaglia and Michele Salvati (eds.), *Markets and Institutions in Economic Development* (Macmillan 1993).

continue to evolve, and one recent and conspicuous aspect of this evolution concerns the formerly exclusive role of bank deposits in payment systems.

03

Microeconomic Theories of Banking

This section selectively reviews microeconomic theorizing about banking, approaches that investigate what banks do, what kind of risks they take on in the process, and why and how banks can get themselves—and the financial system and wider economy—quite easily into serious trouble.

3.1 Money in a Theory of Finance: Are Banks Special?

Gurley and Shaw's influential treatise titled "Money in a Theory of Finance" provides an excellent starting point.¹⁰ Their central point is the conception of financial intermediaries as entities that "go in between" two parties that could also interact directly, but choose to do so indirectly.

Financial intermediaries—positioned between ultimate borrowers and ultimate lenders—have financial instruments on both sides of their balance sheet, their assets providing financing in some form to certain parties and their liabilities providing specific forms of wealth holding to other parties. The characteristics of their financial assets and liabilities differ in important ways, differences that seem to constitute the attractiveness, from the perspective of the two parties that could also deal with each other directly, to employ the go-between entity instead. Of course, financial intermediaries exist in this business to make profit, that is, profit from finance and money by going in between.

Gurley and Shaw's approach helps to identify both what financial intermediaries "produce" and what kind of risks they are taking on in that capacity. For instance, if a financial intermediary's assets have longer maturities than liabilities, they may be said to engage in "maturity transformation," taking on interest rate risk in the process (i.e., insuring the holder of its liabilities against such risks), or, if the financial intermediary's assets bear credit risk while certain liabilities are promised not to, the intermediary may be said to engage in "credit risk transformation." If a financial intermediary issues financial instruments that are promised to have a certain monetary value under all circumstances ("money"), we may speak of "liquidity production" and identify this kind of intermediary as a "bank", that is, an entity issuing a presumed perfectly safe and liquid financial instrument that can also be used for making payments, whilst holding a portfolio of risky assets.¹¹

In his essay "Commercial banks as creator of 'money'," James Tobin elaborates on what was by then dubbed the

10 John G. Gurley and Edward S. Shaw, *Money in a Theory of Finance* (Brookings Institution 1960)

11 Anil K. Kashyap, Raghuram G. Rajan, Jeremy C. and Stein, "Banks as liquidity providers: an explanation for the coexistence of lending and deposit-taking" in *Journal of Finance* [2002] 57: 33–73. Of course, "liquidity" production may also be conceived more broadly. See for instance John M. Keynes 1930, 1936; Gary Gorton and George Pennacchi, "Financial intermediaries and liquidity creation" in *Journal of Finance* [1990] 45: 49–71; Rudy Bougelli, "A note on 'rethinking liquidity creation: Banks, shadow banks and the elasticity of finance'" in *Journal of Post Keynesian Economics* [2018] 41(4): 648–53.; Daniela Gabor, "Critical macro-finance: A theoretical lens" in *Finance and Society* [2020] 6(1): 45–55

“new view” of banking and financial intermediation, namely that the differences between commercial banks and other financial intermediaries were a matter of degree rather than kind. Tobin defines the “new view” as stating that “the essential function of financial intermediaries, including commercial banks, is to simultaneously satisfy the portfolio preferences of two types of individuals or firms”.¹²

Notably, Tobin rejects both conventional views that have banks as either lending out deposits or multiplying reserves provided by the central bank. Instead, he approvingly refers to “a long line of financial heretics [who] have been right in speaking of ‘fountain pen money,’ money created by the stroke of the bank president’s pen when he approves a loan and credits the proceeds to the borrower’s checking account” (Tobin 1963, 1); which puts him in one camp with Schumpeter and Keynes. But at the same time, Tobin rebuffs the idea that commercial banks possess a “widow’s cruse,” emphasizing that *profit-seeking* banks (and other financial intermediaries alike) face constraints on their balance sheet expansion dependent on prevailing yields on the financial instruments they take on as their assets, on the one hand, by issuing their liabilities, on the other:

There is at any moment a natural economic limit to the scale of the commercial banking industry. Given the wealth and the asset preferences of the community, the demand for bank deposits can increase only if the yields of other assets fall. The fall in these yields is bound to restrict the profitable lending and investment opportunities available to banks themselves. (Tobin 1963, 9)

What is not spelt out by Tobin here is the central bank’s role in providing a key benchmark and anchor to asset yields in general, determined by the financial system with banks as a chief player.

Regarding the principal concern here—payments—Tobin acknowledges that the “means-of-payment characteristic of demand deposits is indeed a feature differentiating bank liabilities from those of other intermediaries” (Tobin 1963, 7), but he does not see this feature as granting banks exceptional powers. Banks can pay for the assets they buy by “writing up” their deposit liabilities, thereby directly creating new purchasing power. But unless nonbanks wish to hold correspondingly more deposit liabilities, this might only be for a “fleeting moment” until banks sell additional (supposedly higher-yielding) non-deposit (or non-payment-deposit) liabilities instead. This possibility has to be part of banks’ profit calculus at the time of purchasing any assets or making loans.

By contrast, other financial intermediaries generally cannot directly create the new purchasing power needed to purchase and pay for their target assets. Hence, the nonbank financial intermediary has to first acquire the bank deposits serving that purpose. But, again, Tobin explains, this may only be for a “fleeting moment” until the asset swap on the nonbank financial intermediary’s balance sheet is completed.

The commonness feature is that financial intermediaries issue their liabilities by buying assets. One might even imagine situations here like a nonfinancial corporation’s financial officer issuing commercial paper acquired by a money market fund, with the nonfinancial corporation holding MMF shares issued by said money market fund as a precautionary reserve. Payments may still involve bank deposits and settlement central bank deposits, but only for “fleeting moments.” *Also, the faster the payment system, the more fleeting these moments will be.* The alternative option would be for a bank providing an overdraft facility to the nonfinancial corporation, at a fee. Liquidity statistics would look different. Different choices might be more or less attractive under varying circumstances. And different

12 James Tobin, “Commercial banks as creators of money” in *Cowles Foundation Discussion Paper* no 388 (1963)

financial structures may offer different degrees of elasticity, especially under varying circumstances.

The broader issue is that banks may not only be lending directly to nonfinancial corporations and households as their ultimate borrowers, but indirectly, namely by lending to other financial players. Similarly, they may be borrowing from ultimate lenders indirectly by borrowing from other financial intermediaries. What is true for banks is also true for other financial intermediaries, thus potentially forming whole *chains of financial intermediation*, which may be either transparently reflected in statistics or quite opaque, but with banks remaining at the core of an increasingly complex financial structure; as second degree liquidity closest to the ultimate system liquidity provided by the central bank.

The “new view” of the 1960s still offers an insightful depiction of the phenomenon of financial intermediation. Financial innovations in financing and liquidity creation also show up as extended chains of financial intermediation. Focusing on the apparent “unbundling” of banking through payment innovations: *how do these innovations affect the position of the banks at the core of an increasingly complex financial structure featuring chains of financial intermediation?*

3.2 Imperfect Information and Relationship Banking

As one reason for the role of financial intermediaries in transforming the characteristics of financial instruments available, Tobin (1963, 5) identifies “expertise in negotiating, accounting, appraising, and collecting.” An extensive literature on “asymmetric information” in credit and insurance markets, championed by Joe Stiglitz, has emerged since the 1970s.¹³ The asymmetric information paradigm only covers specific informational challenges that are examples of the realities of uncertainty and evolution emphasized by Keynes and Schumpeter¹⁴; which are generally assumed away in conventional modelling exercises of a perfect-information world criticized by Stiglitz.

The general result in this literature is that markets may not see clearing through prices but through quantity “rationing” instead as this—together with other contractual stipulations—might create superior incentives that ameliorate the informational challenges. Applied to financial intermediation, the general insight is that banks (or other financial intermediaries) develop special expertise in “screening” and “monitoring” risks delegated to them.

Apart from the specific cases of asymmetric information featured in the literature, a more general approach to informational challenges highlights *relationship-building* between banks and their customers as important.¹⁵ This literature emphasizes that certain types of borrowers may be “bank-dependent” as they lack alternative sources of finance. Banks gain important informational advantages from their longer-standing relationships with clients, specifically from handling their payments.¹⁶

13 See for instance Joseph E. Stiglitz and Andrew Weiss, “Credit rationing in markets with imperfect information” in *American Economic Review* [1981] 71(3): 393-410

14 Sheila C. Dow, “Knowledge, information and credit creation” in: Roy Rotheim (ed) *New Keynesian Economics / Post Keynesian Alternative* (Routledge 1998)

15 Mitchell Berlin and Loretta J. Mester, “Deposits and relationship lending” in *The Review of Financial Studies* [1999] 12(3): 579-607

16 Kumar Rishabh, “Beyond the bureau: interoperable payment data for loan screening and monitoring” in *SSRN Working Paper* [2025], https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4782597 accessed 26 July 2026

This literature thus alerts us to the question of how the apparent “unbundling” of banking, through newfound competition from nonbank payment service providers, might undermine the banks’ traditional informational advantages, and what the wider repercussions of “open banking” might be regarding the provision of financing and liquidity for the economy.

3.3 Diversification, Liquidity Creation, and the Challenge of Bank Runs

As another rationale for financial intermediation Tobin (1963, p. 5) identifies “the pooling of independent risks, with respect both to loan default and to deposit withdrawal.” Diversification of independent risks is the general case that is central to the theory of finance. But pooling also features in an influential literature on bank runs that started with Diamond and Dybvig’s seminal essay titled “Bank runs, deposit insurance, and liquidity”.¹⁷

The Diamond and Dybvig (DD) model of banking highlights the transformation of illiquid assets into liquid liabilities. It describes how banks’ demand deposit contracts enable risk sharing among depositors with random consumption (and hence withdrawal or payment) needs. The DD-model introduces shifts in depositors’ expectations (or confidence) that can prompt depositors to run on the banks even though they do not have actual liquidity needs. Such self-fulfilling bank runs can cause real damage to the economy as they force DD-banks to recall loans, which, in turn, causes production disruptions.

Credit as a factor that can disrupt production describes some common ground with concurrent research by Ben Bernanke on the “Nonmonetary effects of the financial crisis in the propagation of the Great Depression”.¹⁸ Both branches of this related research on banking—specifically bank credit—represent a critique of the influential monetarist interpretation of the Great Depression due to Friedman and Schwarz, which solely focuses on deposit shrinkage through bank failures.¹⁹ DD promotes deposit insurance by the government as a solution to panic-driven bank runs.

Banking models in the DD tradition highlight that banks are special among lenders in producing “liquidity” as their own funding source, despite the fact that such liquidity production seems to leave them fragile. Diamond and Rajan propose a rationalization of the existence of fragile demand deposits that allows persistent relationship building between lenders and entrepreneurial borrowers to be delegated to bankers.²⁰

DD bank-run models seem to unearth a role for “liquidity” that is otherwise absent from conventional macro models. But these models do not illuminate why the peculiar form of liquidity produced by banks may be especially important in the economy and fundamentally different from the liquidity provided by financial markets. And the payment function of liquidity in the form of bank deposits does not feature prominently. It is only captured implicitly as the threat of quick withdrawal at par—which equally affects money market funds, providing (near)perfect liquidity without instant payment functionality.

17 Douglas W. Diamond and Philip H. Dybvig, “Bank Runs, Deposit Insurance, and Liquidity” in *Journal of Political Economy* [1983] 91(3): 401–19

18 Ben S. Bernanke, “Nonmonetary effects of the financial crisis in the propagation of the Great Depression” in *American Economic Review* [1983] (73)3: 257–76

19 Milton Friedman and Anna J. Schwarz, *A Monetary History of the United States, 1867–1960* (Princeton University Press 1963).

20 Douglas W. Diamond and Raghuram G. Rajan, “Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking” in *Journal of Political Economy* [2001] 109(2): 287–327

Keynes emphasized the importance of liquidity, particularly “liquidity par excellence” issued by the banking system, under conditions of uncertainty. Demand deposits—as “instant-access deposits”—are directly related to the payment system and their “fragility,” from the perspective of the issuing bank, arises from the standing option of moving them away at any time; even if for the banking system, including the central bank, it is not really an issue as long as the challenge is liquidity rather than solvency.²¹ *Uninsured demand deposits are runnable and subject to confidence shocks, and greater speed in payments means greater speed in runs—perhaps even beyond instant-access deposits.*²² Non-payment deposits and various other near-monies are next in line in terms of liquidity. How do the ongoing innovations in money and payments affect (the fragility of) banking and “shadow banking” and the potentiality of disruptions to the economy? In particular, do the shadow banks bank with banks, implying connectedness and contagion risks through chains of intermediation?

3.4 Some Preliminary Conclusions

The evolution of financial structures features rising complexity and lengthening chains of intermediation, with *banks traditionally, and until today, positioned at the core*. Faster payment processes may seem to shrink the differences between banks and other financial intermediaries. But the key issue remains: banks and bank deposits stand higher in the liquidity hierarchy, closest to the central bank as the source of ultimate liquidity. Technological innovations, including payment innovations, are changing the collection and aggregation of information and who has access to it. This can affect banks’ traditional competitive informational advantages derived from payments. In fact, it might potentially improve the efficiency of lending (Schumpeter). But “Open Banking” regulations need to ensure a level playing field in lending.²³ Payments are traditionally associated with instant-access deposits as perfect liquidity produced by banks. The emergence of “shadowy” instant-access products might impact the vulnerability of banks as the traditional providers of liquidity and system elasticity (Bagehot, Keynes).²⁴

21 Ulrich Bindseil and Richard Senner, “Destabilisation of bank deposits across destinations: assessment and policy implications” in *ECB Working Paper No. 2887* (2024), <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2887~845e136b3b.en.pdf> accessed 26 July 2026

22 The design of the underlying payments infrastructure shapes the banks’ intra-day and overnight liquidity needs and the extent to which their assets become encumbered as collateral. See Biliiana Alexandrova Kabadjova, Anton Badev, Saulo Benchimol Bastos, Evangelos Benos, Freddy Cepeda-López, James T E Chapman, Martin Diehl, Ioana Duca-Radu, Rodney Garratt, Ronald Heijmans, Anneke Kosse, Antoine Martin, Thomas Nellen, Thomas Nilsson, Jan Paulick, Andrei Pustelnikov, Francisco Rivadeneyra, Mario Rubem do Coutto Bastos and Sara Testi, “Intraday liquidity around the world” in *Bank for International Settlement Working Paper no. 1089* [2023], <https://www.bis.org/publ/work1089.htm> accessed 26 July 2026

23 See Andrés Alonso-Robisco, José Manuel Carbo, Pedro Jesús Cuadros-Solas, and Jara Quintanero, “The effects of open banking on Fintech providers: evidence using microdata from Spain” in *Banco De España Documentos de Trabajo no. 2514* [2025]. The issue remains contested. See Akila Quinio and Joshua Franklin, “J. P. Morgan spooks fintechs with plans to charge for access to customer data” in *Financial Times* 28 July 28 2025, <https://www.ft.com/content/85ccc517-4a34-4221-aec7-4d8a72a21f35?segmentId=ddd6252-6e37-bb4b-bda7-2193a3453893> accessed on 26 July 2026

24 Walter Bagehot, *Lombard Street: A Description of the Money Market* (first published 1873, Charles Scribner’s Sons 1906); Keynes 1936.

Regulation Of Banking: The Never-Ending Challenge

The quest for sound money and stable banking calls for regulation—but of what kind? The temptation of gaining resources through “creating new purchasing power” seems too great to be left unchecked. The temptation exists for the sovereign, and many cases of “over-issuance” in one form or another are scattered throughout history. The temptation exists in equal measure for private money issuers, as a long history of banking instability vividly attests—with certainly not all cases signifying the risk from over-issuance as such.

There is a long-running divide between those who believed that restricting the issuance of some strictly-defined “money” would solve the whole matter for good, and others who believed that “moneyness” was too slippery a slope to yield to any easy and clear-cut solution. David Ricardo’s intellectual powers stood behind the British Banking Act of 1844, as an example of the former. Milton Friedman’s monetarism represented a revival of the same tradition of ideas that generally fall in line with “narrow” banking regulation. Adam Smith, Henry Thornton, Walter Bagehot, Joseph Schumpeter, and John Maynard Keynes are representatives of the other tradition, thinkers who were vigilant observers of financial realities and who concluded that “money” could not be bottled up for safety all that easily. Historically, these debates also related to the intellectual challenge of grasping the emerging role of central banking as the heart of the emerging public-private partnership that is the foundation of bank money issuance today.

In light of the review of banking theories in Sections 2 and 3, regulation should best help rather than hinder efficiency in the allocation of bank credit as part of overall finance provided to the economy; judged as critical to the progressive evolution of capitalist economies by Schumpeter. At the same time, regulation should help rather than hinder gauging and steering the right provision of aggregate credit and liquidity—as part of overall finance and liquidity needed by the economy—conducive to economic and financial stability (diagnosed as critical by Keynes).

Keynes identified monetary policy as the lead “central control” for steering the macro economy through adjusting the price of “money,” the (policy) rate of interest. In practice, the monetary authority has two policy parameters to operate on, fast-moving monetary [i.e., interest rate] policy, and typically slow-moving regulation (and supervision); although regulation too might be adjustable more quickly when needed, especially in acute crisis or its aftermath (“forbearance”).

Originally, banking regulation focused on what kind of business banks can do and where. America’s “Glass-Steagall” separation of commercial and investment banking is a famously restricting example. As is a strong American focus on separating banking from commerce. Still visible today are historical locational restrictions imposed on American banks (scattered regulatory framework). With banking historically fractured along national lines, additional restrictions of these kinds played less of a role in continental European countries where the prevalence of “universal banking” paired with generally less-developed financial markets persists. And a significant degree of financial fragmentation along national lines still characterizes Europe’s monetary union today.

With the rise in banks' international activities since the 1970s, there have been continued attempts and various rounds of negotiations to establish some degree of harmonization in banking regulation globally through the "Basel Committee"—focusing on quantifying banking risks and requiring banks to harbor adequate precautions against those very risks on (and off) their balance sheets. Those precautions mainly concern bank capital on the one hand, and bank liquidity on the other. And this approach may be understood as broadly following the "new view" and DD model discussed above.

Given the evolution in finance emphasized by Schumpeter and Minsky, regulation has to be continuously adapted to "financial innovations." In turn, however, financial practices and innovations continuously adapt to changing regulations, often with the aim of circumventing or evading regulation or at least weakening its impact ("regulatory arbitrage"). So there is a long-standing, two-way relationship and rich interaction between financial regulation, on the one hand, and competition through technology and financial innovation, on the other, featuring "trial & error" on both sides and with monetary policy as an important backdrop to economic and financial activities in general. Adding bank lobbying into the picture, especially powerful in the US, there is a constant wrangling between financial innovation and (re-)regulation (and supervision) shaping financial evolution.

In the decades leading up to the Global Financial Crisis of 2007–9, "securitization" and "structured finance" innovations were the order of the day, allowing banks to "economize" on their capital. The banks' connectedness with the expansive "shadow banking system" through liquidity lines and asset exposures—signifying chains of intermediation—then came back to haunt them—and the public.²⁵

The GFC, which at its heart was a banking crisis at the center of the globalized financial system, triggered a profound rethinking and recalibration in regulation. The post-crisis assessment concluded that regulated banks had taken on excessive risks, were extremely levered, as well as highly interconnected with nonbank financial intermediaries, and deeply globally interconnected on top. In response, capital and liquidity requirements were generally raised, especially for large banks. Special treatment is applied to (globally) systemically important banks (and some nonbank financial institutions).²⁶ Relating financial evolution to Minsky's "financial instability hypothesis", Goodhart and Lastra argue that the "inability to determine the optimal amount of risk leads to what may be called 'the Minsky cycle'".²⁷

The relative weakness of banks in the GFC aftermath and the tightening of restraints they were facing through re-regulation provided an opening for new nonbank competitors.²⁸ Intense competition affected all traditional lines of banking business. Asset managers and nonbank financial intermediaries have grown greatly in influence, as have "private markets." In particular, "private credit" surged as an alternative for syndicated loans or high-risk bonds.

25 Zoltan Pozsar, Tobias Adrian, Adam Ashcraft, and Hayley Boesky, "Shadow Banking" in *New York Fed Staff Report* No. 458 [2010]

26 Samuel G. Hanson, Anil K. Kashyap, and Jeremy C. Stein, "A macroprudential approach to financial regulation" in *Journal of Economic Perspectives* [2011] 25(1): 3–28

27 Charles A.E. Goodhart and Rosa Lastra, "Financial regulation: Where do we stand?" in *CEPR Discussion Paper* no. 21590 [2026] <https://ideas.repec.org/p/cpr/ceprdp/21590.html> accessed 26 July 2026

28 See Gregor Buchak, Gregor Matvos, Tomasz Piskorski, and Amit Seru, "Fintech, regulatory arbitrage, and the rise of shadow banks" in *Journal of Financial Economics* [2018] 130.3, pp. 453–483; Claudia M. Buch, B. Gerard Dages, and Hermann Remsperger, "Structural Changes in Banking After the Crisis" in *International Journal of Central Banking* [2021] 17.4, pp. 1–38; Hyun Song Shin, "Financial Intermediation and the Post-Crisis Financial System" in *BIS Working Paper* No. 304 [2010]; Pablo Navarro and Philip E. Strahan, "How Shadow Banking Competes with Traditional Banks" in *Journal of Money, Credit and Banking* [2023] 55.2, pp. 427–456

Effectively, though, bank lending is both enabling “private credit” through loans to NBFIs—signifying new chains of intermediation—as well as competing with private credit as a source of finance for others.²⁹ Similarly, banks also lend extensively to hedge funds (through repos), enabling them to lever up their holdings of Treasury securities, supplementing the banks’ own Treasury holdings as dealers. Money market funds and repo markets have greatly expanded as alternatives for liquidity in the form of bank deposits, providing a liquid store of wealth under uncertainty that is trusted to be convertible into deposits at par. While these (unregulated or more lightly regulated) near-monies may not be “payments-ready” (directly usable for payments), they are nonetheless “runnable” and hence can trigger “liquidity events”—i.e., when trust suddenly dissipates, quite similar to regulated banks (since uncertainty also means promises that are accepted by convention at some point in time can become questionable at another.)

Coinciding with new technologies—most prominently, “blockchain”—banks’ role in payments has become a new surprise pressure point of intense competition. This comes after a long period of relative tranquility in payments evolution, aside from the introduction of ATMs and real-time gross settlement systems decades ago. New products and new players have suddenly entered the market for payments services, challenging banks as the traditional top dog in payments. Competition may concern access to the payments network and/or its underlying infrastructures³⁰ as well as other lines of banking business.

Notably, recent innovations in money and payments fundamentally challenge the existing balance in the public-private partnership that serves as the foundation of today’s bank money system, which has simultaneously also come under pressure due to the declining use of banknotes in payments. What is unclear is whether these changes really involve an “unbundling” of banking as we know it. In other words, is the apparent “unbundling of banking” real or are we witnessing processes whereby new payment service providers simply use payments as their entry point into banking, which remains as traditionally bundled as ever?

The next section discusses the new key players in payment innovations and the consequences for banking and banking regulation (and supervision), zooming in on developments in the EU, China, and the US in the age of geostrategic competition.

29 Sirio Aramonte, S. and Fernando Avalos, “The rise of private markets” in BIS Quarterly Review [2021] December 69–82; Carolyn Sissoko, “Banks are different: why bank-based versus market-based lending is a false dichotomy” in *European Journal of Economics and Economic Policies: Intervention* [2025] 22(1): 32–53; Fernando Avalos, Sebastian Doerr, and Gabor Pinter, “The global drivers of private credit” in *BIS Quarterly Review* [2025] March, 13–30; Sergey Chernenko, Robert Larenti, and David S. Scharstein, “Bank capital and the growth of private credit” in *SSRN Working Paper* [2025] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5097437 accessed 26 July 2026

30 Ulrich Bindseil and George Pantelopoulos, *Introduction to Payments and Financial Market Infrastructures* (Springer 2023)

Fresh Challenges for Policymakers: Payment Innovations and Geopolitics

The (private) challengers to banking come in the form of fintech companies, big techs, and cryptocurrencies, including “stablecoins.” All portend to have some technological edge over banks in payments, and customer usage suggests this is true. Fintechs and big techs are often lumped together and not clearly distinguished, and there is some commonality in that both use innovative technology which they apply to payment services. The distinctive feature of big techs, however, is that they start with a huge network of their original (non-payments) customer base. They were big players in commerce and/or social media to begin with. The fact that their original line of business is built on a huge network appears to tempt them into payments as an additional exploit of network externalities and of potential economies of scope.

It is mainly for these reasons that big techs pose peculiar public policy challenges. The challenges are only partly related to payments as a traditional banking business as such. There are other challenges that may be even more important related to big techs’ sheer network size, mass data aggregation, and deep connections of banking with commerce. Potentially, given the size of its network, a big tech could create a monetary system that is wholly private, global in reach, and largely separated from existing bank money-based monetary systems. It is therefore no surprise that Facebook’s “Libra” initiative in 2019 triggered major concerns among central bankers and other public policy authorities.

Fintechs are a different matter.³¹ The splurge of these companies into the payments market is purely based on technology—typically, as start-up firms—in the absence of any existing “network” to speak of. In fact, part of their advantage may stem from not having legacy issues such as existing IT systems or branches. Another part of their competitive advantage over banks in payments purely stems from some technological edge, most often in offering faster, safer and/or more convenient ways to access and use the existing bank money-based payment system.

Original cryptocurrencies, such as Bitcoin, are not only separate from the existing bank money-based monetary system but also are based on a very different “decentralized ledger” technology (DLT) that comes with the ideological kicker of getting rid of the middleman (the centralized ledger in traditional banking), including the government’s central bank. DLT offers the opportunity to be applied in payments, however inefficient, wasteful, and cumbersome the payment process may be in specific cases, and this feature inspired the marketing of instruments such as Bitcoin as “currencies”—private currencies free from government or bank control.

Importantly, cryptocurrencies can be used in global payments. Any apparent advantage over cross-border bank money payments may arise precisely from avoiding the “frictions” created by national borders rather than from purely technological efficiency. Apart from special situations where these “frictions,” especially legal ones such as anti-money-laundering/countering the financing of terrorism (AML/CFT) laws, are especially annoying, cryptocurrencies are of limited usefulness as payment instruments given their remarkable price volatility—reflecting their true nature

31 Sumit Agarwal and Jian Zhang, “Fintech, lending and payment innovation: a review” in *Asia-Pacific Journal of Financial Studies* [2020] 49(3): 353-367

as highly speculative assets.³² There are variations in the issuance of cryptocurrencies. For instance, Bitcoins get “mined,” or so it may seem, for this mining appearance conveniently hides the fact that the inventor (“Satoshi Nakamoto”) sits on a seigniorage hoard of some \$100 billion.³³ An extreme version of cryptocurrencies with less complicated issuance mechanisms, not masquerading as a payments instrument, is “meme coins”—i.e., collector “coins”—which provide opportunities for online gambling apart from enriching their “issuer” (original seller).

A second generation of cryptocurrencies is known as “stablecoins”.³⁴ Their key characteristic is the promise to stay “stable” in terms of a particular government currency (mostly USD). This means that stablecoins must have some market-making mechanisms in place to actually make the promised peg effective in the market in the face of fluctuating demand. Stablecoins have come to hold a “central” position in the crypto universe as a medium of exchange for pure cryptocurrencies and as a way to temporarily park crypto liquidity. Stablecoins are also used in cross-border payments, side-stepping bank money-based monetary systems while borrowing the stability of some official unit of account.

There are many questions around the promised stability of stablecoins and how they should best be regulated. There are some similarities to the fragility of money market funds, but the threat of “breaking the buck” (or rather, breaking the promise of trading and exchanging at par with bank money at all times) seems even more acute given that stablecoins are more like instant-access deposits than non-payment (saving) deposits, which does not preclude the possibility that they might gain greater use, including internationally, as a liquid store of wealth.

It is in response to this potpourri of challengers to bank money, and also in view of the declining role of banknotes in payments (though not as a precautionary liquid store of wealth) that appears to have accelerated since the pandemic³⁵, that many central banks have decided to enter the fray and explore the issuance of a new form of central bank money called (retail) “central bank digital currency” (rCBDC) for general public use. Specific motivations differ markedly between central banks ranging from financial inclusion, market concentration in

32 See Beat Weber, “Bitcoin and the legitimacy crisis of money” in *Cambridge Journal of Economics* [2014] 40(1); Maarten R.C. van Oordt, “Bitcoin valuation: transactional demand versus speculative bubble” in *VoxEU* 7 December 2024, <https://cepr.org/voxeu/columns/bitcoin-valuation-transactional-demand-versus-speculative-bubble>; Maarten R.C. van Oordt, “On bubbles in cryptocurrency prices” *SSRN Working Papers* 2025, file:///C:/Users/Joerg/Downloads/ssrn-4913885.pdf; Raphael Auer, Ulf Lewrick and Jan Paulick, “DeFying gravity? An empirical analysis of cross-border Bitcoin, Ether and stablecoin flows” in *BIS Working Papers* No 1265 <https://www.bis.org/publ/work1265.pdf>; Paul Krugman, “Crypto is for criming” in *Substack* 16 December 2024 <https://paulkrugman.substack.com/p/crypto-is-for-criming>. Van Oordt applies the classical framework for rational bubbles to model the price of Bitcoin, distinguishing transactional demand and speculative demand derived from net investment inflows. Auer et al. 2025 provide an empirical analysis of cross-border flows of Bitcoin, Ether and stablecoins. Krugman 2024 makes the point that any transactional demand for crypto may be strongly associated with crime.

33 Nassos Stylianou, Nikou Asgari, Dan Clark, Sam Joiner, and Irene de la Torre Arenas, “Can Trump make bitcoin useful?” in *Financial Times* 12 April 2025 <https://ig.ft.com/trump-bitcoin-reserve/>

34 See Rashad Ahmed, R. and Iñaki Aldasoro, “Stablecoins and safe asset prices” in *BIS Working Papers* No 1270, [2025]; Rashad Ahmed, Iñaki Aldasoro, and Chanelle Duley, “Public information and stablecoin runs” in *BIS Working Papers* no 1164 [2025]; Iñaki Aldasoro, Giulio Cornelli, Massimo F. Minesso, Leonardo Gambacorta and Mauricio M. Habib, “Stablecoins, money market funds and monetary policy” in *BIS Working Papers* No 1219 [2025]; Kenechukwu Anadu, Pablo D. Azar, Marco Cipriani, Thomas M. Eisenbach, Catherine Huang, Mattia Landoni, Gabriele La Spada, Marco Macchiavelli, Antoine Malfroy-Camine, and J. Christina Wang, “Stablecoins and crypto shocks: an update” in *Liberty Street Economics* 23 April 2025 <https://libertystreeteconomics.newyorkfed.org/2025/04/stablecoins-and-crypto-shocks-an-update/> accessed 26 July 2026

35 Alberto Di Iorio, Anneke Kosse, and Ismail Mustafi, “And so we pay: more digital and faster, with cash still in play” BIS Committee on Payments and Market Infrastructure, *CPMI Brief* no. 8 (2025) https://www.bis.org/statistics/payment_stats/commentary2503.htm accessed 26 July 2026

payments, national security, and monetary sovereignty.³⁶

There was once a fairly steady balance between banks and the central bank in the “money business”—as a well-established public-private partnership—over the past hundred years. The GFC rocked the balance as banks’ central bank reserves, which were generally very small prior to the crisis, surged in the context of quantitative easing. But through newly remunerating reserves central banks made sure this was not going to rock bank profitability as well. Now, with the declining use of banknotes, it is the central banks’ profitability which is under (longer-term) threat, heralding the unwelcome prospect that one day central banks might become dependent on finance ministries for their own budgets. But other motivations are important too and central banks seem to be inclined to design their rCBDCs in ways that would tend to protect rather than expand their share in the money business – particularly as banks are under pressure from those other challengers anyway.³⁷

All these factors are likely to continue playing a role in the evolution of payments and banking.³⁸ In the next 10 years, decisive change appears possible. It is informative to now take a closer look at some international experiences. Different countries are charting different courses at this stage in the evolution of payments and banking. We will first focus on China, the EU, and the US as the three key global players, before turning to the rest of the world at the dawn of a new era of geopolitics shaping global payments.

5.1 China

China experienced super-rapid innovations in payments, described by many observers as a “revolution” in payments.³⁹ Until about 10 years ago, there was still very extensive use of banknotes in payments in China. The banking system was dominated by large (state-owned) banks catering mainly for large (state-owned) enterprises while presiding over an antiquated bank money-based payment system with little use of card payments. China’s central bankers and regulators then chose to stay on the sidelines as China’s two home-grown big techs—Alipay and WeChat Pay—catapulted “fintech” into China’s payment system. The two giants essentially took over much of the payments market. While doing so—and also exploiting their data advantages derived from their commercial

36 Samuele Bibi, and Islam Yerzhan, “Central Bank Digital Currency and digital payment instruments: Kazakhstan’s experience between obstacles, threats and opportunities” in *Journal of Post Keynesian Economics* [2025] 48(3): 575–603 <https://www.tandfonline.com/doi/full/10.1080/01603477.2025.2503149?src=exp-la>; Kevin Dowd, “So far, Central Bank Digital Currencies have failed” in *Economic Affairs* [2024] 44: 71–94 <https://onlinelibrary.wiley.com/doi/10.1111/ecaf.12621>; Charles A.E. Goodhart, David Llewellyn, and Alistair Milne, “Retail Central Bank Digital Currency: A review and assessment” in *SUERF Policy Notes* no. 370 [2025] <https://www.suerf.org/publications/suerf-policy-notes-and-briefs/retail-central-bank-digital-currency-a-review-and-assessment/>; Geoffrey Goodell, Hazem D. Al Nakib, and Tomaso Aste, “Retail Central Bank Digital Currency: Motivations, opportunities, and mistakes” in *International Journal of Political Economy* [2026] 55(1): 109–143

37 Martin Diehl and Constantin Drott, “Empowering central bank money for a digital future” in *SUERF Policy Notes* no 312 [2023] <https://www.suerf.org/publications/suerf-policy-notes-and-briefs/empowering-central-bank-money-for-a-digital-future/>; European Central Bank, “A Stocktake on the Digital Euro: Summary Report on the Investigation Phase and Outlook on the Next Phase” [2023]; https://www.ecb.europa.eu/euro/digital_euro/progress/shared/pdf/ecb.dedocs231018.en.pdf; ECB, Preparation phase of a digital euro – closing report [2025] https://www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202510.en.html

38 Samuele Bibi, “Bitcoin, Central Bank Digital Currency and the loss of money value(s)” in *Review of Political Economy* [2025] <https://www.tandfonline.com/doi/full/10.1080/09538259.2025.2456734>; Brett Fiebiger, “The future of money – Central Bank Digital Currencies and/or cryptocurrencies?: Safeguarding monetary sovereignty and deterring U.S.-owned payment system oligopolies” in *Review of Political Economy* [2025] <https://www.tandfonline.com/doi/full/10.1080/09538259.2025.2481424?af=R>

39 Martin Chorzempa, *The Cashless Revolution – China’s Reinvention of Money and the End of America’s Domination of Finance and Technology* (BBS Public Affairs 2022); David Dollar and Yiping Huang (eds), *The Digital Financial Revolution* (China Brookings Institution Press 2022); Thunes, “China: Asia’s digital payments titan” [2025] <https://www.thunes.com/insights/trends/china-asia-digital-payments-titan/>

and/or social media platforms—they added the whole range of other financial services to their business. In other words, starting with payments, they became banks.

As other Chinese fintechs joined the online financial marketplace, fraud was rampant, and turmoil ensued—so regulators stepped in to end China’s brief era of financial Wild West. Regulators stepped in hard on payments too. The two big techs dominating payments had to turn their payments business into “narrow banking”; they have to hold 100 percent backing for their money balances at the Peoples Bank of China. They were essentially absorbed for safekeeping into China’s bank money-based monetary system which is ultimately controlled by the PBoC.

In effect, China marshalled its home-grown big techs as a vehicle to leap-frog Western payment system technology, and ended up with a state-of-the-art payment system that, at the end of the journey, became tightly regulated (again). That is not to say that China has found any satisfactory solutions to dealing with the other challenges posed by big techs related to data aggregation and connections between commerce and banking. Moreover, whatever lessons China has learned in this regard, they may not be easily transferable to the West. Suffice to mention that China is hostile to cryptocurrencies and the PBoC launched a retail CBDC years ago, which uses a two-tier model of CBDC design and pays no interest. The “digital yuan” has only met comparatively limited demand.⁴⁰

While China’s payments revolution is very illuminating, it is hard to tell to what extent the loss of payments business may have weakened Chinese banks in their traditional role. China’s banking system is still reflective of its centrally-planned economy of the past. China’s mostly state-owned banks remain central to the provision of credit to the economy which, in turn, is central to how China’s Communist Party (CCP) controls the economy today. But the CCP has other levers of control at its disposal which make the role of finance in China’s economy uniquely different from Europe and the US (the background to Schumpeter and Keynes’ theorizing). A lack of finance does not seem to hinder innovation and investment in China, although a good number of Chinese private corporations have listed on US stock markets.

5.2 Europe (with a Concentration on the EU and Euro Area)

Europe’s banks may be “universal banks” by tradition, but their financial market activities have customarily played a relatively smaller role reflecting the “underdevelopment” of financial markets compared to America’s more “market-based” financial system. Today, the issue is not so much “underdevelopment” as such but the continued fragmentation in both banking and financial markets along national borders that is holding back Europe’s financial system.

Europe also lacks home-grown big techs, and card payments too are dominated by US players. Attitudes toward crypto vary among EU members. Europe’s banks are either competing or merging with its cohort of flourishing fintechs that have delivered manifold innovations in retail payments access products. The EU has passed regulations on payments at a relatively early stage of the recent surge in payment innovations to provide a level playing field for

40 Ahanya Kumar, “A report card on China’s Central Bank Digital Currency: the eCNY” (Atlantic Council GeoEconomics Center 2022) <https://www.atlanticcouncil.org/blogs/econographics/a-report-card-on-chinas-central-bank-digital-currency-the-e-cny/> accessed 26 July 2026; Haichen Bai, Lin William Cong, Mai Luo, and Ping Xie, “Adoption of Central Bank Digital Currencies: Initial Evidence from China” in *FEB-RN Research Papers* No. 43/2025 <https://ssrn.com/abstract=5022129> accessed 26 July 2026

fair competition between banks and nonbank payment service providers and forestall regulatory arbitrage.⁴¹

Some might say that the EU's payments regulations are too "preemptive" in the sense of hindering experimentation and innovation; exemplifying "over-regulation" as the culprit of Europe's lack of innovation and growth. But with Europe's recent record of banking crises in mind, much is at stake. At least the events in the US in the spring of 2023—when America experienced three of its four largest bank failures in history, with the crypto industry featuring prominently—did not spread to the EU. (Switzerland's Credit Suisse seems to be a special case.)

At this point, ongoing payments innovations taking shape in a settled regulatory environment do not seem to decisively undermine banks' capacity to fulfill their traditional roles as providers of finance and liquidity in Europe's bank-based financial system. Start-up financing appears to be a particular weakness, despite the presence of public sector investment banks (KfW, Bpifrance, for instance). But deficiencies do not seem to stem from payments innovations and their potential impact on banks. Furthermore, the ECB appears to be cautious in designing the "digital euro" (rCBDC) in ways that would not encroach on the banks' money business and profitability either.

Regarding its payments infrastructure, Europe would appear to be broadly on track to follow the path outlined in the BIS blueprint for a modernized monetary system based on bank money but featuring "tokenized" bank deposits and tokenized central bank reserves (wholesale CBDC) with transactions being recorded in a (permissioned) "unified ledger".⁴²

5.3 United States of America

The evolution of payments in America appears to point in a different direction. Despite recent Instant Payment innovations (the Federal Reserve's FedNow service and the Clearing House's RTP network), America's payment system is in many ways "behind the curve" and exceptionally costly. Card payments are deeply entrenched, but many fintechs and some of the US's big techs are active in payments, including collaborations with America's powerful credit card companies. Arguably, US payments regulation is even more dated than its payment system, which is at least catching up.⁴³ Payment service providers are either regulated (and supervised) as banks by the respective authorities (depending on size and location) or "money transmitters", the prudential regulation of which is a state-level responsibility.

The U.S. payment system may be set for disruption though – mainly by a big gamble on crypto. Having issued his own meme coin, President Trump declared that America should be the "crypto capital of the planet". The gamble features the idea of building a strategic crypto reserve and promoting stablecoins as a means to bolster the US

41 In particular, the "Markets in Crypto-Assets Regulation" (MiCA) of 2023 (<https://eur-lex.europa.eu/eli/reg/2023/1114/oj/eng>), which is part of the EU's Digital Finance Strategy, and the EU's "Payment Services Directive" (PSD3, updating PSD2) <https://eur-lex.europa.eu/eli/dir/2015/2366/oj/eng>

42 The Bank for International Settlements makes the case for modernizing rather than replacing the established two-tiered banking system with central banks as guardians of the payment system and stability of the unit of account, creating a new tokenized monetary architecture incorporating "smart contracts" transforming settlement processes. See BIS, "Annual Report", chapter 3: The future monetary system [2022]; BIS, "Annual Report", chapter 3: Blueprint for the future monetary system: improving the old, enabling the new [2023]; BIS, "Annual Report", chapter 3: The next-generation monetary and financial system [2025]; BIS, "Annual Report", chapter 3: Anchoring trust in money: innovations beyond stablecoins [2026]

43 Dan Awrey, *Beyond Banks – Technology, Regulation, and the Future of Money* (Princeton University Press 2024)

dollar's global status.⁴⁴ Given the global roles of the US dollar and US finance, the unfolding American crypto gamble will be a development of global significance.

The “Guiding and Establishing National Innovation for U.S. Stablecoins” (GENIUS) Act⁴⁵ regulating stablecoins was passed contemporaneously with the administration's landmark fiscal legislation – the “One, Big, Beautiful Bill Act” (OBBBA) – in the summer of 2025. While OBBBA set the issuance of Treasuries on a rampant path, the hope is that growing global use of USD stablecoins would boost the demand for Treasuries as backing. America is actively promoting the use of USD stablecoins in foreign nations for both payment and holding purposes. While the Federal Reserve was blocked from launching a CBDC, issuance of stablecoins is open to both banks and nonbanks, including even commercial players.

Domestically, at this time, it is hard to gauge to what extent payment innovations as such might undermine America's financial system's capacity to fulfil its vital roles in providing finance and liquidity to the economy.⁴⁶ Banks have long played a relatively smaller role in the US “market-based” financial system. But perhaps that appearance is misleading. As in the US, too, liquidity produced by banks—as member banks of the Federal Reserve System—remains the closest layer to ultimate system liquidity and therefore central to finance. But the chains of intermediation are becoming ever longer and ever more complex, making it ever harder to identify just how and by which players the job of providing credit and liquidity to the economy is achieved, both in the aggregate and through which specific channels any new purchasing power might reach the creatively destructive entrepreneurs as drivers of innovation and growth in the US economy.

The evolution of the US financial system, featuring rising complexity and lengthening of chains of intermediation and including new forms of “shadow banking” that pertain to payments, might provide indications for the direction of travel elsewhere. Financial evolution makes deciphering the “transmission mechanism of monetary policy” ever harder. It becomes more testing to imagine that the routes through which policy impulses are travelling through the system will remain stable over time. Innovations in payments and their potential impact on banking provide just one of the moving parts in the overall picture.⁴⁷

What is true in normal times is even more so at moments of acute crisis. Crisis management is about flushing official liquidity into the system or opening new valves for the system to draw on when private channels of finance are at risk of stoppage due to a surge in preference for liquidity of higher quality. The Federal Reserve's emergency

44 Donald J. Trump, “Strengthening American Leadership in Digital Financial Technology” Executive Order 23 January 2025 <https://www.whitehouse.gov/presidential-actions/2025/01/strengthening-american-leadership-in-digital-financial-technology/> accessed 26 July 2026

45 See <https://www.congress.gov/bill/119th-congress/senate-bill/1582/text>. As of July 2026, the “Digital Asset Market Clarity Act” (CLARITY Act) is still under discussion in U.S. Congress.

46 And US banks like JP Morgan are experimenting with tokenized deposits (“JPM Coins”). See <https://www.jpmorgan.com/kinexys/jpm-coin>

47 Fiorella De Fiore, Leonardo Gambacorta, and Cristina Manea, “Bit techs and the credit channel of monetary policy” in *BIS Working Papers* no. 1088 [2023] <https://www.bis.org/publ/work1088.htm> accessed 26 July 2026; Samuel G. Hanson, Victoria Ivashina, Laura Nicolae, Jeremy C. Stein, Adi Sunderam, and Daniel K. Tarullo “The evolution of banking in the 21st century: evidence and regulatory implications” in *Brookings Papers on Economic Activity* [2024]

liquidity programs unleashed in the context of the GFC, the pandemic⁴⁸, and the most recent US banking crisis in the spring of 2023⁴⁹ illustrate what is required to keep a complex financial system afloat and in shape to provide adequate finance and liquidity to the economy. While some liquidity programs were designed to bolster banks, either in their lending to the economy or to the financial system, the vast majority were set up to target specific markets directly. Evolution forced central banks to extend their “lending of last resort” responsibility for banks à la Walter Bagehot to financial markets, assuming a “market maker of last resort” role.⁵⁰

Recent rounds of innovation and financial evolution in America were built on securitization and repo and derivative markets. Stablecoins might turn out to be the decisive factor in shaping the extent of connectedness between the crypto universe and dollar banking (and global monetary) system(s). Beyond their backing in the form of T-bills and private traditional short-term financial instruments, including bank deposits, stablecoins will bridge the crypto-dollar divide also through “wealth effects” and “collateral effects”.⁵¹ Monetary policy will be a critical factor shaping the fate of stablecoins. Higher short-term interest rates boost the profitability of stablecoin issuance (seigniorage) but competition from (tokenized) money market funds or (tokenized) Treasury funds will tend to limit the demand for zero-yielding stablecoins. By contrast, a zero-interest rate environment would mean less competition from close substitutes while stablecoin issuers – escaping regulation – might be tempted into “investing” in high-risk assets (including crypto), creating more interconnections with traditional finance.

Globally, America’s crypto gamble will be felt as a double-whammy, first as a rising presence of USD stablecoins competing with national monies of all forms, and second, as all this is unfolding in the context of America’s general push for financial deregulation, shaking up the “Basel endgame” along the way and chancing another “Minsky moment”.⁵²

5.4 Rest of the World and Cross-Border Payments

Much innovation and experimentation in payments is also unfolding with rapid speed in the rest of the world. In Asia, India’s “Unified Payments Interface” (UPI) is lauded as a great success in boosting financial inclusion

48 Jordan Barone, Alain Chaboud, Adam Copeland, Cullen Kavoussi, Frank Keane, and Seth Searls, “The Global Dash for Cash in March 2020”, Federal Reserve Bank of New York *Liberty Street Economics Blog* [2022] <https://libertystreeteconomics.newyorkfed.org/2022/07/the-global-dash-for-cash-in-march-2020/>; Eric Milstein and David Wessel, “What did the Fed do in response to the COVID-19 crisis?” (Brookings Institute 2024) <https://www.brookings.edu/articles/fed-response-to-covid19/> accessed 26 July 2026

49 Cecilia Caglio, Jennifer Dlugosz, and Marcello Rezende, “Flight to Safety in the Regional Bank Crisis of 2023” (NYU Law School Working Papers 2023) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4457140; Jonathan Rose, “Understanding the speed and size of bank runs in historical comparison” in Federal Reserve Bank of St. Louis, *On the Economy Blog* [2024] <https://www.stlouisfed.org/on-the-economy/2023/may/understanding-the-speed-and-size-of-bank-runs-in-historical-comparison>; Cipriani et al. (2024) Marco Cipriani, Thomas Eisenbach, and Anna Kovner, “Anatomy of the bank runs in March 2023” Federal Reserve Bank of New York *Liberty Street Economics Blog* [2024] <https://libertystreeteconomics.newyorkfed.org/2024/12/anatomy-of-the-bank-runs-in-march-2023/>

50 Perry Mehrling, *The New Lombard Street: How the Fed became the Dealer of Last Resort* (Princeton University Press 2011).

51 Joshua Franklin reports that “JPMorgan explores lending against clients’ crypto holdings” (Financial Times 22 July 2025), <https://www.ft.com/content/70279a78-6e48-49ec-a0c3-b091e9d87bc1> George Steer reports that “Crypto lenders dial up risk with ‘microfinance on steroids’” (Financial Times 27 July 2025) <https://www.ft.com/content/c531a2bc-d258-431b-855c-2a6aaf230661?syn-25a6b1a6=1>

52 Charles A.E. Goodhart and Rosa Lastra, “Financial regulation: Where do we stand?” in CEPR Discussion Paper no. 21590 [2026] <https://ideas.repec.org/p/cpr/ceprdp/21590.html> accessed 26 July 2026

and reaching many previously unbanked people.⁵³ In Latin America, Brazil's central bank coordinated an instant payment system initiative ("Pix") that proved so successful⁵⁴ as to provoke an attack by President Trump, alleging unfair discrimination against US credit card giants.⁵⁵ Additionally, Kenya's mobile money success story M-Pesa has reached many countries in Africa and beyond.⁵⁶ Countries at different stages in their financial development explore different paths.

The "quest for speed in payments" continues.⁵⁷ A key obstacle is that countries have different payment and settlement infrastructures that hinder global payments.⁵⁸ For now, the G20 continues to pursue a coordinated upgrade to cross-border payments, traditionally based on correspondence banking with SWIFT as the central messaging network hub.⁵⁹ Related initiatives (initially) spearheaded by the BIS Innovation Hub include "Nexus", "Dunbar", "Jura", "mBridge" and "Agorá".⁶⁰ CBDCs, stablecoins, and connecting national instant payment systems—perhaps built on tokenized bank deposits—provide alternative avenues for cross-border payments that will not be fully compatible without a high degree of international cooperation in both regulation and infrastructure. Correspondence banking networks typically include credit and hence feature the elasticity characteristic of bank money, in contrast to stablecoins.

While global finance would gain from more efficient cross-border wholesale payments, remittances represent an important concern for cross-border retail payments. The high cost of remittances and the lack of inclusiveness of banking continue to represent development challenges in many poorer countries. This is a niche in which stablecoin usage seems promising, and principally a safe "narrow banking" stablecoin version backed by wCBDC is conceivable. But this is not the approach pursued by the Trump administration which seems determined to extract more dominant currency rent ("exorbitant privilege"). Alas, dollar stablecoins might further impinge on nations' monetary sovereignty and further augment vulnerabilities created by financial globalization,

53 Sen 2025). Giulio Cornelli, Jon Frost, Leonardo Gambacorta, Sonalika Sinha, and Robert M. Townsend, "The organization of digital payments in India – lessons from the Unified Payments Interface (UPI)" in *SUERF Policy Notes* no. 355 [2024] https://www.bis.org/publ/bppdf/bispap152_e_rh.pdf accessed 26 July 2026; Julius Sen, "India's Unified Payments Interface (UPI) system and its transformative impact" in *Financial Markets Group Discussion Papers* DP 918 [2025] <https://www.fmg.ac.uk/publications/discussion-papers/indias-unified-payments-interface-upi-system-and-its-transformative> accessed 26 July 2026

54 Angelo Duarte, Jon Frost, Leonardo Gambacorta, Priscilla Koo Wilkens, and Hyun Son Shin, "Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix" in *BIS Bulletin* No. 52 [2022] <https://www.bis.org/publ/bisbull52.pdf> accessed 26 July 2026

55 Michael Stott and Michael Pooler, "Brazil rallies to defend much-loved payment system from Donald Trump's attack." In *Financial Times* 21 July 2025, <https://www.ft.com/content/e17e6de1-d863-46f8-bfab-fa8cbfc495f0>; Samantha Pearson, "Why Trump Is Going After Brazil's Beloved Payment System" *Wall Street Journal* 17 July 2026 <https://www.wsj.com/world/americas/trump-brazil-payment-system-pix-097baca?mod=Searchresults&pos=1&page=1> accessed 26 July 2026

56 IMF Blog "Fintech in Sub-Saharan Africa: A Potential Game Changer" [2019] <https://www.imf.org/en/Blogs/Articles/2019/02/14/fintech-in-sub-saharan-africa-a-potential-game-changer> accessed 26 July 2026

57 Morten L. Bech, Yuuki Shimizu, and Paul Wong, "The quest for speed in payments" in *BIS Quarterly Review* [2017] https://www.bis.org/publ/qtrpdf/r_qt1703g.htm accessed 26 July 2026

58 Kabadjova et al. 2023

59 Marco Cipriani, Linda S. Goldberg, and Gabriele La Spade, "Financial sanctions, swift, and the architecture of the international payment system" in *Journal of Economic Perspectives* [2023] 37(1): 31–52; Rodney Garratt, Patricia Koo Wilkens, and Hyun Son Shin, "Next generation correspondent banking" in *BIS Bulletin* no. 87 [2024]

60 Rudy Bouguellia and Bruno De Contib, "Building bridges or competing in a payments arms race? The geopolitics of the mBridge Project" in *International Journal of Political Economy* [2026] 55(1): 70–87

especially—but not only—in developing countries.⁶¹

A fundamental challenge in payments, especially global payments, concerns the interoperability of different payment rails and systems. Traditionally global cooperation focused on establishing network compatibility and connectivity. With the (partial) fragmentation of the global financial system and global trade system that appears to be in the making, (partially) fragmented and competing payment systems may become a feature rather than a bug.

As payments have thus become a matter of geopolitics, China's ambitions to further expand the external reach of renminbi payments, through CIPS and other channels, whilst reducing its dependency on the US dollar, seem most advanced. After successfully creating a common currency (adopted by a majority of countries) and the associated payments infrastructure, Europe's aspired "strategic autonomy", which has found new urgency in light of the ongoing dissolution of the transatlantic partnership by US President Trump, will inevitably also include payments; as protection of its monetary sovereignty. Policymakers confronted with the usual challenges of financial innovation and evolution will have to be on geopolitical alert as well.

06

Conclusions

A conventional perspective might suggest that "better payments" are essentially an efficiency booster to the economy (either productivity or convenience). The Minskyan synthesis of Schumpeter and Keynes presented here would not deny this prospect – but add another dimension as innovation shapes the evolution of financial structures. Specifically, *if payments become "unbundled" from banking, the capacity of banks to provide finance and liquidity to the economy might become impaired*. The issue has both a micro dimension—allocation (Schumpeter)—as well as a macro dimension—stability (Keynes). Policymakers will be interested in whether regulatory arbitrage is at play or level-playing-field competition guiding the financial system towards balancing any impact that payment innovations might have on banking with respect to the overall provision of finance and liquidity. Central bankers will be particularly interested in whether any reduced role of banks – the second line of defense in the system and vital providers of elasticity – might call for further extensions of the first line of defense, by central banks themselves.

Banks remain the closest liquidity layer to the ultimate (official) system liquidity. Banks stand at the (private) core of expanding "chains of financial intermediation" featuring non-bank financial intermediaries that constitute the shadow banking sprawl. Banks could lose their informational advantages gained through payment services if payments "unbundled" from banking. The presence of big techs in payments raises questions about a level playing

61 EC B, "Stablecoins: implications for monetary policy, financial stability, market infrastructure and payments, and banking supervision in the euro area" Crypto-Assets Task Force, Occasional Paper no. 247 [2020] <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op247~fe3df92991.en.pdf>; Jan A. Kregel and Paolo Savona, "The Impact of Technological Innovations on Money and Financial Markets" Levy Economics Institute Public Policy Brief No. 150 [2020]; Jamie Morgan, "Systemic stablecoin and the brave new world of digital money" in *Cambridge Journal of Economics* [2023] 47: 215–60; Colin Chia and Eric Helleiner, "Central bank digital currencies and the future of monetary sovereignty" in *Finance and Space* [2024] 1(1): 35–48; Philip R. Lane, "The digital euro: maintaining the autonomy of the monetary system", (ECB 2025) https://www.ecb.europa.eu/press/key/date/2025/html/ecb.sp250320_1~41c9459722.en.html; Daniela Gabor, "Transatlantic faultlines: risks and opportunities EU-US macrofinancial relations" (European Parliament Think Tank 2025) [https://www.europarl.europa.eu/thinktank/en/document/ECTI_STU\(2025\)764372](https://www.europarl.europa.eu/thinktank/en/document/ECTI_STU(2025)764372)

field in information, apart from other delicate public policy issues. Speedier payments mean speedier runs on runnable (uninsured) deposits; especially instant-access deposits but perhaps others as well.

As financial evolution progresses, the never-ending challenges of banking regulation remain much the same. Regulation both adapts to and shapes financial evolution. While banks have always faced competition as lenders and liquidity providers, today's fierce competition in payments is new and quite disruptive. The long-established balance in the public-private partnership on which bank money traditionally rests is under pressure. The specific design of rCBDCs will be one important factor shaping the balance going forward. But new private nonbank players are far more critical. Perhaps banking on payments is not really outmoded, but nonbank payment service providers are using payments as their entry point into banking – as money issuance (and seigniorage) remain as attractive as ever; especially if one can hide from banking regulation as a new round in “shadow banking” with banking on payments is unfolding.

Globally, the evolution in payments is taking place within different national regulatory environments. China has marshalled its home-grown big techs to “revolutionize” its payment system, before turning their payments business into “narrow banks.” The EU keenly established a level playing field in an attempt to avoid fresh banking instabilities. Here the future may be pointing in the direction of a tokenized bank money-based monetary architecture. The US is taking a more adventurous approach that features a gamble on crypto. The US banking crisis of the spring of 2023 illustrated that the crypto universe and the dollar monetary system are already interconnected to a considerable degree.

Stablecoin positioning is the wild card in the game. Geostrategic considerations are at play. Global payments are now the subject of geopolitics. The Trump administration sees stablecoins as a way to reinforce dollar supremacy. Eurodollar (offshore) stablecoins promise both stability and connectivity – beyond sovereign reach. Fresh threats of vulnerability in weaker countries in the rest of the world seem likely. Even advanced economies may find their monetary sovereignty threatened, calling for adequate regulatory responses by the authorities.

