

the CATO JOURNAL

VOLUME 41 NUMBER 2 • PUBLISHED BY THE CATO INSTITUTE • SPRING/SUMMER 2021

Editor
JAMES A. DORN

Managing Editor
AMANDA GRIFFITHS

Book Review Editor
TREVOR BURRUS

EDITORIAL BOARD

TERRY L. ANDERSON
Property and Environment
Research Center

CHARLES W. BAIRD
California State University,
East Bay

RANDY E. BARNETT
Georgetown University Law
Center

JOHN H. COCHRANE
University of Chicago

KEVIN DOWD
Durham University

RICHARD A. EPSTEIN
University of Chicago

JAGADEESH GOKHALE
University of Pennsylvania

JAMES GWARTNEY
Florida State University

STEVE H. HANKE
Johns Hopkins University

RANDALL S. KROSZNER
University of Chicago

STEPHEN MACEDO
Princeton University

ANTONIO MARTINO
University of Rome, Luiss

ALBERTO MINGARDI
Università IULM

JEFFREY A. MIRON
Harvard University

KEVIN M. MURPHY
University of Chicago

GERALD P. O'DRISCOLL
Cato Institute

SAM PELTZMAN
University of Chicago

JUDY SHELTON
Fredericksburg, Virginia

VERNON L. SMITH
Chapman University

JOHN B. TAYLOR
Stanford University

ROLAND VAUBEL
Mannheim University

RICHARD E. WAGNER
George Mason University

LAWRENCE H. WHITE
George Mason University

THE CATO JOURNAL (ISSN 0273-3072) is published in the winter, spring/summer, and fall by the Cato Institute, 1000 Massachusetts Ave., N.W., Washington, D.C. 20001-5403. Annual subscriptions are \$22 for individuals and \$50 for institutions. Single copies are \$8. Two-year and three-year subscriptions are \$38 and \$55, respectively, for individuals, and \$85 and \$125, respectively, for institutions. Foreign subscribers should add \$5 per year for regular delivery and \$10 per year for airmail delivery.

Correspondence regarding subscriptions, changes of address, acquiring back issues, advertising and marketing matters, and so forth should be addressed to the Publications Department. All other correspondence, including requests to quote or reproduce material, should be addressed to the editor.

Unsolicited manuscripts cannot be returned and will be acknowledged only if accompanied by a stamped, self-addressed envelope. There is no submission fee. Articles should focus on specific public policy issues, be scholarly, but also be intelligible to the interested lay reader. Accepted manuscripts must conform to the CATO JOURNAL's style requirements. A style sheet is available on request.

Authors may submit their papers electronically, preferably in MS Word, to the editor (jdorn@catoinstitute.org), along with an abstract of no more than 250 words.

Unsolicited book reviews cannot be returned and will be acknowledged only if they are accepted for publication. They should conform to the above requirements and should provide an in-depth analysis of major studies of public policy. Reviews should range from 800 to 1,000 words.

The views expressed by the authors of the articles are their own and are not attributable to the editor, the editorial board, or the Cato Institute.

THE CATO JOURNAL is listed in the *Journal of Economic Literature*; *Current Contents/Social and Behavioral Sciences*; *America: History and Life*; *Historical Abstracts*; *International Political Science Abstracts*; and ABI/INFORM database.

Printed in the United States of America.

Copyright © 2021 by the Cato Institute.
All rights reserved.

DIGITAL CURRENCIES: RISK OR PROMISE?

Jeb Hensarling, Phil Gramm, and John B. Taylor
Reflections on Monetary Policy and Its Future 213

Tobias Adrian and Tommaso Mancini-Griffoli
Public and Private Money Can Coexist in the Digital Age 225

Neha Narula
Technology Development of Digital Currency 231

Lawrence H. White
Should the State or the Market Provide Digital Currency? 237

Eswar S. Prasad
The Case for Central Bank Digital Currencies 251

Jill Carlson
Tunnels, Bunkers, and Escape Hatches: Defending Economic Rights under Fire 259

Alex Gladstein
Financial Freedom and Privacy in the Post-Cash World 271

Martin Chorzempa
Promise and Peril of Digital Money in China 295

Caitlin Long Ten Stablecoin Predictions and Their Monetary Policy Implications	307
Jesús Fernández-Villaverde Cryptocurrencies and All That: Two Ideas from Monetary Economics	321
George Selgin Central Bank Digital Currency as a Potential Source of Financial Instability	333
David Andolfatto Some Thoughts on Central Bank Digital Currency	343
Dong He Monetary Effects of Global Stablecoins	353
Michael J. Casey A Reckoning Looms for America's 50-Year Financial Surveillance System	367
Charles W. Calomiris Chartering the Fintech Future	383
Diego Zuluaga Which Type of Digital Currency for Financial Inclusion?	413
John A. Allison Lessons for the Fed from the Pandemic	423

BOOK REVIEWS

**Information Wars: How We Lost the Global Battle Against
Disinformation and What We Can Do About It**

Richard Stengel

Reviewed by **Will Duffield**

429

A Question of Power: Electricity and the Wealth of Nations

Robert Bryce

Reviewed by **Thomas A. Hemphill**

434

**First Principles: What America's Founders Learned from the
Greeks and Romans and How That Shaped Our Country**

Thomas E. Ricks

Reviewed by **Paul Meany**

440

**Recovering the Liberal Spirit: Nietzsche, Individuality, and
Spiritual Freedom**

Steven F. Pittz

Reviewed by **Aaron Ross Powell**

446

EDITOR'S NOTE

In 1996, Cato held its 14th Annual Monetary Conference, “The Future of Money in the Information Age.” The proceedings, along with additional essays, appeared in a book with the same title in 1997. In that volume, Alan Greenspan wrote, “To develop new forms of payment, the private sector will need the flexibility to experiment, without broad interference by the government” (Greenspan 1997: 48).

Since that time, financial innovation (in particular, blockchain) and the Bitcoin Revolution have spawned hundreds of cryptocurrencies, although only a dozen have achieved notable success (see coinmarketcap.com). Moreover, there is a search for stable-valued digital currencies that can act as a superior means of payment, medium of exchange, and store of value. Several central banks, including the People’s Bank of China, are experimenting with their own digital currencies—and the Federal Reserve is likely to follow suit.

Because of the importance of these developments for the future of money, civil liberties, and monetary policy, Cato’s 38th Annual Monetary Conference, held virtually on November 19, 2020, was devoted to an in-depth discussion of “Digital Currencies: Risk or Promise?” The articles in this issue of the *Cato Journal* stem from that event.

By considering potential benefits as well as possible risks of private and central bank digital currencies, the contributors to this volume will improve our understanding of digital alternatives. In particular, a common thread throughout the journal is that one must be cognizant of the danger of centralizing digital currency in the hands of the

state—especially the risks to monetary and financial stability, privacy, and freedom.

Although the focus of this issue is digital currency, the lead article by Jeb Hensarling, Phil Gramm, and John B. Taylor provides an overview of the long-run implications of the Federal Reserve's response to Covid-19, the impact on Fed independence, and opportunities for positive legislative action—including a move toward a rules-based monetary regime. In a similar vein, John A. Allison closes with “Lessons for the Fed from the Pandemic.”

The remainder of the articles fall into four categories: (1) *Digital Currency: State v. Market*, with articles by Tobias Adrian and Tommaso Mancini-Griffoli, Neha Narula, Lawrence H. White, and Eswar Prasad; (2) *Digital Currency and Civil Liberties*, with articles by Jill Carlson, Alex Gladstein, and Martin Chorzempa; (3) *Digital Currency, Competition, and Monetary Policy*, with articles by Caitlin Long, Jesús Fernández-Villaverde, George Selgin, David Andolfatto, and Dong He; and (4) *Digital Currency and Financial Inclusion*, with articles by Michael J. Casey, Charles W. Calomiris, and Diego Zuluaga.

I thank the authors for their contributions and hope their work will encourage further research to find innovative ways to improve monetary and financial stability while preserving a free society. Finally, I acknowledge the generous support of the George Edward Durell Foundation in making Cato's Annual Monetary Conference possible.

—J. A. Dorn

Reference

Greenspan, A. (1997) “Fostering Financial Innovation: The Role of Government.” In J. A. Dorn (ed.), *The Future of Money in the Information Age*, 45–50. Washington: Cato Institute.

REFLECTIONS ON MONETARY POLICY AND ITS FUTURE

*Jeb Hensarling, Phil Gramm,
and John B. Taylor*

This discussion, moderated by John B. Taylor, took place at the Cato Institute's 38th Annual Monetary Conference on November 19, 2020. The transcript has been edited for publication.

Taylor: It's a real honor to have this conversation with Jeb Hensarling and Phil Gramm, two giants of legislation affecting financial and monetary policy. Jeb, of course, was former chairman of the House Financial Services Committee, and Phil chaired the Senate Banking Committee. I have testified before their committees, so for me to have the chance to ask them questions, rather than be subject to their questions, is a treat.

Although this conference will focus on digital currencies, our conversation will be more general, covering the impact of the pandemic on Federal Reserve policy, central bank policy more broadly, and, toward the end, consider the digital dollar.

So, first of all, there's a question about the impact of Covid-19 on policy. Of course, it's had a big impact on actual decisions made at

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.1.

Jeb Hensarling is former Chairman of the House Financial Services Committee. Phil Gramm is former Chairman of the Senate Banking Committee. John B. Taylor is the Mary and Robert Raymond Professor of Economics at Stanford University and the George P. Shultz Senior Fellow in Economics at the Hoover Institution.

the Fed and, for that matter, on our budget policy. The question is whether those actions are going to change policy in an even bigger way going forward. The Fed's balance sheet has grown to more than \$7 trillion. Should the Fed have a more rules-based policy going forward? What about "flexible average inflation targeting?" What are the long-term implications of what's been happening?

Hensarling: Well, if I could, John, just a few acknowledgments. Number one, as an undergraduate at Texas A&M back in the 1970s, I invested \$25 of hard-earned money to become a sustaining member of Cato just so I could read their quarterly journals. It was one of the best investments I ever made. In a time when government continues to grow and liberty continues to contract, I cannot think of a more important think tank than Cato. Second, I should say that there was no greater single authority who impacted our policy deliberations when I served as chairman of the House Financial Services Committee than John Taylor. I vividly recall being called by President Trump to ask my opinion on who he should nominate as chairman of the Federal Reserve. I was flattered that the president asked my advice. I recommended Dr. Taylor and spent five minutes going through the reasons. Well, it wasn't the first or last time the president didn't take my advice. Moving on to Senator Gramm, it's so great to be with my friend, mentor, and conservative icon. Many years ago, I signed up for a Money and Banking course at Texas A&M University. Phil Gramm taught me economics then, and he's still teaching me economics.

Now that I've got all these accolades out of my system, John, I'll attempt to answer your questions. I think that, in many cases, the Fed's extraordinary measures today regrettably can become ordinary measures tomorrow. I think a number of these measures were indeed called for, because Covid-19 is probably the greatest single shock to our economic system since the Great Depression. Thus, in the short run, many people may be putting Fed Chairman Jay Powell on a pedestal, but the question is: Will he be taken down in the long run? There are many problematic features of what the Fed has done from a long-run perspective. Most importantly, when taboos are broken, they tend to stay broken; when genies are out of the bottle, they tend to stay out of the bottle.

The Fed's huge balance sheet allows it to engage in credit policy (the *composition* of the balance sheet is by definition credit policy), which inherently auto-resides in fiscal policy—but should auto-reside

with Congress. The drift of monetary policy into credit and fiscal policy is a very dangerous precedent. It is going to be very, very challenging for Chairman Powell, at the appropriate time, to shrink the balance sheet and get out of the business of credit policy. In addition, we now know that the Fed is taking on credit risk that it has never taken on before. Consequently, the balance sheet can certainly be injurious to future taxpayers, and it is one more way that the Fed's independence could be compromised.

There is also the problem of "moral hazard" (i.e., taking on risky assets when the costs can be shifted to other parties). Clearly, there was a reason for the Fed to intervene when the federal government, for all intents and purposes, put the economy into an induced coma via the lockdowns in response to Covid-19. However, once you start creating a social safety net under business enterprises, they will take on more risk and exacerbate the trend away from shareholder capitalism toward stakeholder capitalism. Indeed, once the government provides a safety net, ultimately there will be greater political influence upon the free-enterprise system. We're seeing the Fed go from practicing monetary policy, to blurring the lines between monetary and fiscal policy, to totally engaging in fiscal policy. Thus, I think there are many long-run challenges that, if left unaddressed, we will wake up to find our central bankers have become central planners.

Taylor: Jeb, thank you very much. Phil, would you like to comment?

Gramm: Yes. First of all, I guess I should say that I also recommended John Taylor to become Fed chairman. It shows you how much influence Jeb Hensarling and I have!

Well, let's just start with a political Fed. Alan Greenspan was beaten and badgered into saying that, if you've got a budget surplus you'd be better off giving the money back to the taxpayers than spending it. He said it once, after being asked the question repeatedly in testimony before a congressional committee. The *New York Times* condemned his statement as something that could lead to the politicization of the Fed. The Democrat leadership in Congress denounced his statement as well. The current Fed has now undertaken a relentless campaign and in fact become the principal spokesman for greater federal spending. For some six months, the Fed has conducted a daily PR campaign calling on Congress to increase deficit spending. There is no precedent for this action in the history of this country. People talk about politicizing the Fed, but the Fed is now the most political independent entity in American government.

Secondly, when the 2008 financial crisis occurred, the Fed asked for the power to pay interest on excess reserves. I thought when I heard it that they were simply trying to help the banks through a tough period and also that they wanted to pump liquidity into the financial system and assure that banks held the liquidity. But what I didn't understand—and I'm not sure the Fed understood then—is that by paying interest on excess reserves, the Fed turned excess reserves into a financial asset, an income-earning investment for the banks. And so even though the Fed bought some 40 percent of all the government bonds sold during the three quantitative easing programs, it borrowed the money from the banks by paying them interest on excess reserves so the money supply did not expand beyond the needs of trade and there was no inflation. Many economists didn't understand that then; a lot of people don't understand it now.

But now, during the pandemic shutdown, the money supply, M2, has grown by 30 percent. The velocity of money has collapsed. People are holding huge cash balances because interest rates are almost zero and because they are restrained in their ability to spend by the shutdown. However, when things return to normal and interest rates start to rise, the Fed is going to have to do something or the inflation rate is going to start to accelerate.

The federal debt is now 108 percent of GDP, up from less than 80 percent in 2019. The CBO can't foresee a year in the next decade where the national debt won't rise faster than national income, which is a frightening prospect. Moreover, the Fed has a massive balance sheet with the assets it has bought, and it has borrowed the money from commercial banks to pay for those assets. So as astounding as it sounds, the commercial banking system today has loaned more money to the Fed by holding interest earning excess reserves than it has loaned to commercial borrowers.

The Fed has a lot of tools, but it will now have a difficult task in maintaining control of the monetary system it has built over the last 12 years. This is not Alan Greenspan's Fed. And the Fed that we have today and that we're going to have for the foreseeable future is a Fed that is operating unlike any central bank in our history. Unfortunately, every other major central bank in the world has done the same thing. Can there be a happy ending to this policy? I think there can be. Will there be? I think it would require Solomon as head of the Fed and an iron will in Congress to get out of this thing without taking some severe bruises. I don't think we are blessed with either.

Taylor: Well, thank you. You have both made very clear what the problems are that we're facing. I agree. There are so many different aspects of this. The question is: What are we going to do about it? Then there's the issue of whether the Fed should be doing even more with its large balance sheet. Should it be buying particular kinds of securities and making certain kinds of loans? Is this a threat to the Fed's independence? Would legislation come back, reversing what you're looking for, which gives the Fed even more authority and should we be guarding against that? What are the legislative threats that could encourage the Fed to go even further?

Gramm: I'm not worried about Fed independence. The Fed is now one of the most political institutions in American government. For example, the Biden-Sanders unity document talks about the Fed promoting diversity—and the Fed starts talking about promoting diversity. I think the Fed has made itself political, and in the process is not independent of national politics. I am also worried about how the Fed is going to set out a long-term program to wind down its huge balance sheet to get out of the situation where it is borrowing more money from the commercial banking system than the banking system is lending to commercial enterprises. Unwinding this balance sheet will be an extraordinary balancing act.

Also, a very big issue that's got to be decided in the next few weeks is, will the Fed be given the authority to continue to lend money to the private sector after the first of the year. I think that doing that would be a fundamental mistake and extraordinarily dangerous. The last thing on earth we want is for the Fed to be borrowing money from the commercial banks and then lending money to the private sector. It is a formula for industrial policy. It's a formula for inefficiency. The secretary of the Treasury has the unilateral authority to continue this program. I'm sure that many people have encouraged him not to extend the program, including myself. There will be a 20-day period between the time the lending authority expires and President-elect Biden takes office. I think it's very important that this administration lets the new president ask for this authority and lets the new Congress decide whether or not to grant the authority.

Taylor: That's very helpful. Jeb, do you want to comment?

Hensarling: Yes, let me hop in here, John. I think it's certainly foundational to an American economy to have stable money, which is why people believe there should be *monetary policy* independence. Again, I distinguish that independence from *Federal Reserve*

independence, because we know the Fed is a huge prudential regulator, lender of last resort, and has other activities beyond monetary policy. So when we talk about monetary policy independence, it begs the question: Independence from what? I believe what Congress originally intended is independence of monetary policy from short-term election manipulation of the money supply and the departure from the goal of stable money.

Now, as Phil pointed out, there are both internal and external pressures on the Fed that are leading it to be less independent. During my tenure in Congress, Congress found a way to go to the Fed to start financing a highway program and the Consumer Financial Protection Bureau. Congress certainly has the power and authority to do this, but it may not be particularly wise to do it. Yet as Phil has pointed out, all of a sudden we now have a Fed opining on climate change and income inequality. Each of these steps leads to a more politicized Fed, which means by definition the Fed and monetary policy are less independent. This politicization has led President-elect Biden and others in the Democratic Party to propose another mandate for the Fed. I think the Federal Reserve needs fewer, not more, mandates.

Given that members of the Fed's Board of Governors are unelected officials, with 14-year terms and their own budget, it is critical to limit their power, not expand it. This leads us into the discussion of a rules-based policy versus discretion. The closer we get to the paradigm of a rules-based monetary system, the better the Fed can shield itself from outside political influences that ultimately could get us away from having the stable money that is foundational to our economic prosperity in America.

Taylor: I certainly agree with the need for a rules-based monetary regime. The problem, of course, is convincing other people who believe the Fed ought to expand its mandate.

Hensarling: Well, John, I think Phil and I both could tell you that there is a never-ending search in Congress for "free money" and "other people's money." Unfortunately, Congress now sees the Fed as that source.

Taylor: Also, internationally, you're hearing the same arguments from the European Central Bank and others.

Gramm: I am not concerned that they're not going to learn a lesson. I'm concerned the lesson is going to be a painful lesson. I am concerned that this thing is going to spin out of their control; and if

it does, I think the public will react and the changes will be made. But I think we all would like to see a return to a Fed that is focused on monetary stability and economic growth without the economy having to suffer before the problem obviously requires fixing. So I'm not concerned they're not going to figure out this is a problem. I'm concerned that they're going to figure it out only after the economy is bludgeoned.

Taylor: So let's talk a little bit about what could be done. Of course, the Fed is a creation of Congress in many respects. At Cato's 28th Annual Monetary Conference, I presented a paper, entitled "Legislating a Role for Monetary Policy," which was later published in the *Cato Journal*. I think my article had some appeal: the House passed the Choice Act, which had some of these aspects in it and was along the lines you have indicated, but it never became law. I wonder if those efforts should continue. Is there a possibility that the things that you're suggesting could come from legislation?

Hensarling: Well, it's axiomatic that elections have consequences. So, obviously, we're going to have to wait on the outcomes of elections. My fear is, again, that members of Congress are realizing to what extent the Fed can be used to fund programs that simply bypass the appropriations process and allow members to skip votes that they may not want to cast. So that's my first observation. In Congress, I think, quite often, you have to play a short game and a long game and realize that it may take many Congresses to build the vote for an idea. The Choice Act—and once again, Dr. Taylor, thank you so much for your help and assistance in putting that through—probably represented the most significant positive reform to the Fed in several decades. So the fact that we managed to get it out of committee and off the House floor is notable.

I believe the idea of a more rules-based monetary policy has gained traction. It's been normalized in the House, so it sets a high watermark and makes it easier to return to. Also, I will say this, with my good friend Senator Gramm unfortunately on the line: never underestimate the ability of the Senate to do nothing. Although the Senate failed to take up the Choice Act, there is still, I believe, a lot of desire in the House to move forward. Now, having said that, the Fed—and frankly, no government agency—likes to be told what to do. I vividly remember when Speaker Paul Ryan (who's a dear friend) told me, "You'll never guess who called me! It was Chairman Yellen saying, "Please, please don't allow this bill to come to the floor."

Well, little did she know that the speaker and I think almost identically on the issues in the Choice Act. I thought it was very interesting that the Fed would enter the political fray and lobby. I should make it clear that the Choice Act, as Dr. Taylor well knows, did not mandate that the Fed follow any particular rule. What it did say is, “Tell us what your methodology is.” The use of the term “rule” may not have been the best choice of words. What we wanted is greater transparency (e.g., the variables the Fed looks at and the reaction function). It was about communication; it was about transparency; it was about measuring the Fed’s approach to other well-accepted methodologies like the Taylor Rule. Having legislation like the Choice Act would increase Fed independence in the realm of monetary policy. Hence, I’m encouraged that we set a high-water mark. We’ll have to see where it goes from here. But clearly, these efforts need to continue.

Gramm: Let me say that by the time Jeb’s bill passed the House, I was out working for my grandchildren in the private sector, so I wasn’t there. When Congress established the Federal Reserve Bank, they gave it extraordinary independence because its goal was very simple, a stable money supply and stable prices. And they required that its members be chosen based on their expertise. What has happened now is that as the Fed moves into areas like climate change, promoting diversity, and even in its new regulatory functions, it is the only significant regulator that doesn’t have a bipartisan commission. Its role is changing into a role that has more and more political content—and it’s beginning to show in what the Fed is now saying and doing. So I think at some point, there is going to have to be a wholesale restructuring of the Fed to get back to its basic goals.

If things get out of control, then the American people will send the message they want it to be fixed, and, hopefully, it will be fixed in a way that prevents this all from reoccurring. I think one of the things that must be looked at is the Fed’s ability to pay interest on reserves. There’s no way that tool could be repealed today because the money supply would explode. Nevertheless, establishing a strategy to phase out interest on excess reserves and reduce the size of the Fed’s balance sheet is what we need to do. The last thing we want to happen is for the Fed to become a commercial lender, which, I think quite frankly, the pandemic provided a steppingstone toward.

For example, the Biden-Sanders “unity document” calls for the post office to become a commercial lender to consumers and for the

Fed to become a lender to businesses. These recommendations are right out of central planning, and I think they have got to be stopped. I also think that such proposals, once again, show us the direction we're moving in.

Taylor: You both suggested reducing the Fed's balance sheet. But people will ask: Won't that be damaging? Won't it cause pressure in financial markets? Won't there be resistance from Wall Street if that's done quickly?

Gramm: Well, I don't think you could do it quickly, but I think setting out a long-term program to do it would be a very good policy. And look, if you sell the assets at the same time that you lower the rate of interest on excess reserves, you could at least theoretically wind down the balance sheet without disrupting the economy.

Hensarling: If I could add to this, recall there were periods, like the "Great Moderation," when we had very good monetary policy with a fraction of the size of the balance sheet. Also, we know that pre-Covid-19, the Fed was on a path to gradually reduce the size of its balance sheet. That effort ceased with the pandemic. I agree with Phil that we can't abruptly reduce the Fed's balance sheet. Any reduction must be done on an orderly, predictable basis. Otherwise, as Phil noted, we'll end up having a central bank with an unlimited balance sheet engaged in credit policy directed by Congress to serve political interests. That is why I favor gradually decreasing the size of the Fed's balance sheet, which is taking money out of the real economy, lessening disciplinary market forces, and getting us away from any type of independence within monetary policy.

Gramm: John, I'd like to make one more point. The Fed keeps saying that it's going to keep interest rates down for this period of time or that period of time. The Fed has never had less control over interest rates than it has today, never. And the reason is, the banks have these huge excess reserves that the Fed is paying interest on. And if market rates rose and the Fed did not raise the interest rate that it paid on those reserves, the banks would begin to lend them out, and the money supply would explode. So this idea that, "Oh, you can relax because the interest rates are going to be zero from now on so all this debt doesn't matter" is wishful thinking. The problem is that because of the situation the Fed is in, as the largest borrower in the country from the commercial banking system, it has less control over interest rates today than it has ever had.

Taylor: This is very important. But one thing we want to touch on before moving to the next session is digital currencies. So, if either of you would like to comment on that topic before closing this session, please do so.

Gramm: First of all, a currency is valuable as a store of value and a medium of exchange if people will take it in exchange for goods and services. I think digital currencies work as long as people will take them. The federal government makes a lot of money through seigniorage, where it basically gets the benefits from having a monopoly on money creation. Whether Congress is willing to stand by and see private-currency suppliers get that seigniorage is doubtful. Secondly, I think the Fed and the IRS will take action to dramatically reduce the privacy advantage that now comes with using private digital currencies.

Taylor: So, Jeb, would you like to say something about digital currencies?

Hensarling: I think digital currencies are very exciting. I know there are those in Congress, whenever they see a new technology or something that potentially could be disruptive to a government monopoly, who become very disturbed. I think the idea of having a central bank digital currency is worthy of exploration, but certainly not on an exclusive basis. There's the promise of a far more efficient payments system and a far more transparent monetary policy. I know that there are some central banks that are certainly ahead of the Fed in exploring these ideas.

I agree with Phil that the issue of privacy is certainly going to have to be significantly explored. Moreover, with respect to private virtual currencies, the energy expenditure on the mining is another issue that certainly deserves some attention. However, central banks obviously would still have the ability to conduct monetary policy through adjusting short-term interest rates. I think introducing digital currencies could be revolutionary, although I haven't quite concluded this is a good idea. I think it's probably a good idea, and I would certainly encourage policymakers and the Fed to continue their deliberations on this.

Gramm: I think, Jeb, I forgot to mention one thing. If the public shows it really has a demand for these virtual currencies, then there's no doubt the Fed will issue one. And so I think that will become a factor in terms of the value of private alternatives. Now, it may well be that the private sector produces a better currency than

the Fed. It's distinctly possible, but you've got all the risks I talked about earlier.

Taylor: Yes. I think at the beginning, Jeb mentioned how emphasizing the private-sector's provision of digital currency is important. We should not try to squeeze private providers out, which was, I think, originally happening. Now it seems to be a more synergistic thing stimulated by other central banks introducing digital currencies.

I think we're now ready to go to the next session. Thanks so much to Phil and Jeb for getting us started, and even thinking a little about digital currencies. There are a lot of questions here that you raised, and I hope some people at the Fed are listening carefully to what you said. So thank you.

PUBLIC AND PRIVATE MONEY CAN COEXIST IN THE DIGITAL AGE

Tobias Adrian and Tommaso Mancini-Griffoli

We value innovation and diversity—including in money. In the same day, we might pay by swiping a card, waving a phone, or clicking a mouse. Or we might hand over notes and coins, though in many countries increasingly less often.

Today's world is characterized by a dual monetary system, involving privately issued money—by banks of all types, telecom companies, or specialized payment providers—built upon a foundation of publicly issued money—by central banks. While not perfect, this system offers significant advantages, including innovation and product diversity, mostly provided by the private sector, and stability and efficiency, ensured by the public sector.

These objectives—innovation and diversity on the one hand, and stability and efficiency on the other—are related. More of one usually means less of the other. A tradeoff exists that countries—central banks especially—have to navigate. How much of the private sector to rely upon, versus how much to innovate themselves? Much depends on preferences, available technology, and the efficiency of regulation.

So it is natural, when a new technology emerges, to ask how today's dual monetary system will evolve. If digitalized cash—called

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.2.

Tobias Adrian is Financial Counselor and Director of the Monetary and Capital Markets Department at the International Monetary Fund. Tommaso Mancini-Griffoli is a Division Chief in the IMF's Monetary and Capital Markets Department. The views expressed in this article are those of the authors and do not necessarily reflect the view of the IMF, its management, or its executive directors.

central bank digital currency—does emerge, will it displace privately issued money or allow it to flourish? The first is always possible, by way of more stringent regulation. We argue that the second remains possible, by extending the logic of today's dual monetary system. Importantly, central banks should not face a choice between *either* offering central bank digital currency, *or* encouraging the private sector to provide its own digital variant. The two can coincide and complement each other—to the extent central banks make certain design choices and refresh their regulatory frameworks.

Public-Private Coexistence

It may be puzzling to consider that privately and publicly issued monies have coexisted throughout history. Why hasn't the more innovative, convenient, user-friendly, and adaptable private money taken over entirely?

The answer lies in a fundamental symbiotic relationship: the option to redeem private money into perfectly safe and liquid public money, be it notes and coins, or central bank reserves held by selected banks.

The private monies that can be redeemed at a fixed face value into central bank money become a stable store of value. Ten dollars in a bank account can be exchanged into a ten-dollar bill accepted as legal tender to settle debts. The example may seem obvious, but it hides complex underpinnings: sound regulation and supervision, government backstops such as deposit insurance and lender of last resort, as well as partial or full backing in central bank reserves.

Moreover, privately issued money becomes an efficient means of payment to the extent it can be redeemed into central bank money. Anne's 10 dollars in Bank A can be transferred to Bob's Bank B because they are redeemed into central bank money in between—an asset both banks trust, hold, and can exchange. As a result, this privately issued money becomes *interoperable*. And so it spurs *competition*—since Anne and Bob can hold money in different banks and still pay each other—and thus *innovation* and *diversity* of actual forms of money.

In short, the option of redemption into central bank money is essential for stability, interoperability, innovation, and diversity of privately issued money, be it a bank account or other form of money. A system with just private money would be far too risky. And one

with just central bank money could miss out on important innovations. Each form of money builds on the other to deliver today's dual money system—a balance that has served us well.

Central Bank Money in the Digital Age Will Face Pressures

And tomorrow, as we step squarely into the digital age, what will become of this system? Will the digital currencies issued by central banks be so enticing that they overshadow privately issued money? Or will they still allow for private-sector innovation? Much depends on each central bank's ability and willingness to consistently and significantly innovate. Keeping pace with technological change, rapidly evolving user needs, and private-sector innovation is no easy feat.

Central bank digital currencies are akin to both a smartphone and its operating system. At a basic level, they are a settlement technology allowing money to be stored and transferred, much like bits sent between a phone's processor, memory, and camera. At another level, they are a form of money, with specific functionality and appearance, much like an operating system.¹

Central banks would thus have to become more like Apple or Microsoft in order to keep central bank digital currencies on the frontier of technology and in the wallets of users as the predominant and preferred form of digital money.

Innovation in the digital age is orders of magnitude more complex and rapid than updating security features on paper notes. For instance, central bank digital currencies may initially be managed from a central database, though they might migrate to distributed ledgers (synchronized registries held and updated automatically across a network) as technology matures, and one ledger may quickly yield to another following major advancements. Phones and operating systems too benefit from major new releases at least yearly.

In addition, user needs and expectations are likely to evolve much more quickly and unpredictably in the digital age. Information and assets may migrate to distributed ledgers, and require money on the same network to be monetized. Money may be transferred in entirely new ways, including automatically by chips imbedded in everyday products. These needs may require new features of money and thus frequent architectural redesigns,

¹On central bank digital currencies, see Mancini-Griffoli et al. (2018).

and diversity. Today's, or even tomorrow's, money is unlikely to meet the needs of the day after.

Pressures will come from the supply side too. The private sector will continue innovating (see Adrian and Mancini-Griffoli 2019a). New e-money and stablecoin schemes will emerge. As demand for these products grows, regulators will strive to contain risks. And the question will inevitably arise: How will these forms of money interact with the digital currencies issued by central banks? Will they exist separately, or will some be integrated into a dual monetary system where the private and central bank offerings build on each other?

A Partnership with the Private Sector Remains Possible

Keeping with the pace of change of technology, user needs, and private-sector competition will be challenging for central banks. However, they need not be alone in doing so.

First, a central bank digital currency may be designed to encourage the private sector to innovate on top of it, much like app designers bring enticing functionality to phones and their operating systems. By accessing an open set of commands (“application programming interfaces”), a thriving developer community could expand the usability of central bank digital currencies beyond offering plain e-wallet services. For instance, they could make it easy to automate payments, so that a shipment of goods is paid once it has been received, or they could build a look-up function so money can be sent to a friend on the basis of her phone number alone. The trick will be vetting these add-on services so they are perfectly safe.

Second, some central banks may even allow other forms of digital money to coexist—much like parallel operating systems—while leveraging the settlement functionality and stability of central bank digital currencies. This would open the door to faster innovation and product choice. For instance, one digital currency might compromise on settlement speed to allow users greater control over payment automation.

Would this new form of digital money be a stable store of value? Yes, if it were redeemable into central bank money (digital or non-digital) at a fixed face value. This would be possible if it were fully backed by central bank money.

And would this form of digital money be an efficient means of payment? Yes again, as settlement would be immediate on any given

digital money network—just as it is between accounts of the same bank. And networks would be interoperable to the extent a payment from Anne’s digital money provider to Bob’s would be settled with a corresponding move of central bank money, just as in today’s dual system.

This form of digital money, which we have called “synthetic currency” (Adrian and Mancini-Griffoli 2019b), could well coexist with central bank digital currency. It would require a licensing arrangement and set of regulations to fulfill public policy objectives including operational resilience, consumer protection, market conduct and contestability, data privacy, and even prudential stability. At the same time, financial integrity could be ensured via digital identities and complementary data policies. Partnering with central banks requires a high degree of regulatory compliance.

A Monetary System for the Ages

If and when countries move ahead with central bank digital currencies, they should consider how to leverage the private sector. Today’s dual-monetary system can be extended to the digital age. Central bank money—along with regulation, supervision, and oversight—will continue to be essential to anchor stability and efficiency of the payment system. And privately issued money can supplement this foundation with innovation and diversity—perhaps even more so than today. Where central banks decide to end up on the continuum between private-sector and public-sector involvement in the provision of money will vary by country, and ultimately depend on preferences, technology, and the efficiency of regulation.

References

- Adrian, T., and Mancini-Griffoli, T. (2019a) “The Age of Digital Money.” *FinTech Notes* 19/01. Washington: International Monetary Fund.
- _____ (2019b) “From Stablecoins to Central Bank Digital Currencies.” *IMF Blog* (September 26). Available at <https://blogs.imf.org/2019/09/26/from-stablecoins-to-central-bank-digital-currencies>.
- Mancini-Griffoli, T., et al. (2018) “Casting Light on Central Bank Digital Currencies.” *Staff Discussion Notes* No. 18/08. Washington: International Monetary Fund.

TECHNOLOGY DEVELOPMENT OF DIGITAL CURRENCY

Neha Narula

We often spend a lot of time talking about the regulatory aspects of what a digital currency might look like, or the economic aspects. But if we take a look at the largest companies, the most influential on our ways of life, they're tech companies. Technology is incredibly important and influences what we can do with policy and what kinds of functionality we can even enable. So, what I hope to tell you today is a little bit about how I'm seeing the technology development of digital currency.

Digital Payments Today

To start, let's recap where digital payments are today. Digital payments are really, at their essence, just the transfer of information. It should be extraordinarily cheap, easy, and universal to make a digital payment. Yet retail transaction costs are anywhere from 0.5 percent to 0.9 percent of a country's GDP, depending on the country (Hayashi and Keaton 2012). This is a huge amount. About seven million American households don't have bank accounts, so that means they don't have access to digital payments (FDIC 2019). And our existing payment systems are, I would argue, woefully behind. Think about how easy it is for you to send a photo to a friend in another country. It's trivial: you get an email address or an

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.3.

Neha Narula is Director of the Digital Currency Initiative at the MIT Media Lab. This article is based on her remarks at the Cato Institute's 38th Annual Monetary Conference, November 19, 2020.

SMS phone number; and you know that you're going to be able to send that photo. But think about sending a small payment: you both have to agree on a service; you have to think about exchange costs; and you have to think about fees. It can be really difficult and slow to do this type of thing.

I don't think that this is going to be very easy to fix if we leave things the way they are because, unfortunately, large-scale change requires coordination among many different stakeholders. The way the system works today is the way that it's worked for decades. The system was built at a time when it was unfeasible to think about settling hundreds of millions of transactions instantly. It was built at a time when the technology wasn't there, so we had to think about things like netting and batching. The technology has advanced, but the architecture of the system—the structure—has not advanced with it.

I would argue we have a very good payment instrument right now that we should go back to and take a look at some of its features. A lot of people, when thinking about central bank digital currency (CBDC), approach it from the perspective that we have digital money in the form of central bank reserves and perhaps we should give more people access to the reserves. I would argue that another really interesting framework and approach is that we have coins and dollar bills—\$2 trillion worth—and they're very useful. Can we think about digitizing these things?

Cash is universally accepted and very easy to use. Almost no matter who you are, you don't have to be an expert with technology: cash preserves privacy. When I pay someone \$20, there's no one else eavesdropping on that transaction, and it doesn't require an intermediary, an internet connection, or complex new software in order to make cash payments. But unfortunately, cash isn't digital. However, I think it's really good for us to approach the potential for digital currency from the perspective of a universal digital protocol for value transfer. If we look back to the internet, the internet enabled us to standardize the transfer of information into addressable packets.

Many decades ago, we created these layers of protocol, and at the very bottom layer, ultimately, it's very simple. The bottom layer doesn't know if you're streaming a YouTube video, if you're sending a photo, if you're doing a Zoom call, if you're transferring really important sensitive information. The bottom layer has no idea, it's just standardized addressable packets and all of the functionality that we take

for granted that's been built on top of the internet comes on top of that. The system was simple, open, and accessible with useful interfaces and APIs (application programming interfaces), so we were able to build these really rich, amazing applications on top of it by first defining this basic standard.

Cryptocurrencies are a very interesting example of what a universal protocol for value transfer could look like. But digital cash is quite different. If we look back to the internet, we remember that it was a partnership between industry, academia, and government. It was very important to have all three of those sectors present at the beginning in defining these standards. Yet it's very hard once standards are defined and once the technology moves very fast. We're still using the internet protocols from 60 years ago, because we were very careful in designing them in such a layered way. They are still working quite well. We can innovate and move forward at the higher layers.

Central Bank Digital Currency

So how does this apply to CBDC? Well, what I'd like to articulate here are what we see as some of the core requirements for a CBDC. First of all, like dollar bills and coins, CBDC is a liability of the central bank. It means that the central bank controls issuance and final transaction validation, and I think it's very important to consider it from this perspective to maintain the mandate of financial stability. This is critical infrastructure, so security and resilience are the most important features. Moreover, if this becomes a national retail payment system, we must make sure that it's accessible and can't be attacked.

Obviously, a central bank digital currency needs to comply with all laws and regulations, and I would hope that it can support these diverse interfaces to encourage competition and innovation. Now, if we think about a retail CBDC, which individuals have direct access to, then we have some additional requirements. We need a retail CBDC to be very high throughput and low latency, to be broadly accessible and usable, and to consider user privacy. The last two requirements are a little bit in tension. I would hope that we can create a system that preserves fine-grained user privacy. But the challenge is in complying with laws and regulations and preventing illicit activity. This is something that is really fundamentally difficult to do.

CBDC Technical Design

I would argue CBDC technical design doesn't just require building in the private sector, it actually requires fundamental research. The existing private-sector digital currency platforms and protocols were not actually built with a CBDC use case in mind. Many of them were built for decentralized cryptocurrencies, or as an interchange between banks, or for more broad data like supply chains or provenance for other types of things. So, we don't actually have a system right now that was built with purely a CBDC use case in mind, and I think that that introduces a different set of requirements. CBDC research today is generally quite limited, mainly focusing on high-level policy questions or overly simplified proofs of concept that are not really getting at the true challenges of what it would take to create and launch a CBDC. Neutral rigorous CBDC technical research is still needed in order to prove real-world feasibility—in order to get to the point where we can actually uncover important tradeoffs and opportunities in both the technical and policy areas.

Building Central Banks' Capability for CBDC

Unfortunately, central banks at the moment lack the capabilities to rigorously build and test CBDC designs. There are, quite simply, very few expert digital currency engineers globally. Central banks have traditionally not had technical expertise in distributed systems and cryptography, with good reason—they haven't had to. And there is a cultural and knowledge divide right now between engineers and central bankers. So, central banks will need to partner and collaborate with experts in these arenas, because there are so many challenging research questions that we still have to address.

First of all, we need to figure out how to provide universal access for critical infrastructure with security and resilience. So, we want something that is broadly accessible, usable by large parts of the population, and incredibly secure. So how can we do that? Security is usually handled by limiting access to the system.

We also want to think about offline access. If we're thinking about digital cash, we can't presume that the users of the system have access to the internet at all points in time. We want this to be something that is usable in case of a natural disaster, for example. We also

can't assume that the users will have access to the latest smartphone devices, so we want to think about how to access CBDC at the base level for people who might not be very technically literate.

Drawing the Line between the Public and Private Sectors

A very important issue is how to think about designing architectures to best enable competition and innovation in the private sector. A key issue is where is the line between the public and the private sector (see Adrian and Mancini-Griffoli 2021). I don't think we have the answer to that question yet, and we need to build and test different architectures in order to understand what is possible at different levels, at different breaks in the design, between what part of the rails the public sector runs and what part of the rails the private sector runs.

The Biggest Challenge

Our most important challenge that we need to address is to figure out how to preserve user privacy while preventing illicit activity. It's very interesting because there is a lot to learn from the realm of cryptocurrencies. There have been major advances in using cryptography to provide privacy while at the same time making it publicly verifiable that a transaction preserves certain invariants, such as the user actually has the money to spend, money is not being created out of nowhere, and transactions are valid (i.e., authorized by the owner of the funds being spent). These things can be proven without actually being able to see the amount of the transaction or even the people involved. Therefore, I think what is essential is to engage in research to extend what we can prove using cryptography in CBDCs to have the ability to comply with laws and regulations.

The right to privacy is a critical part of our values as Americans. Different central banks will think about digital currency in different ways and they will build different systems. But as Americans, we need to think about what types of values we want to embed in our system, and I would argue that privacy is essential.

We are going to need to have a very involved conversation about how to manage illicit activity while at the same time preserving the privacy of individual transactions (see Narula and White 2020). It shouldn't be the case that every transaction I make (e.g., buying

coffee) is recorded somewhere and readable in some big database. I don't think that the government wants that, and I don't think that we want that. So we have to think about how to do this.

Conclusion

Central banks are realizing that though they might not know yet whether they actually want to issue a digital currency, they need to be prepared to do so. They need to actually engage in this research to figure out what it might look like and what the different approaches are. Research needs to be neutral. We need independent trustworthy results. We can't rely on the private sector to provide results that are trustworthy if they're being driven by a profit motive or promoting a specific token or technology. This should be technology first, but at the same time we need to incorporate policy requirements and user research at each stage, so we need to do these things in tandem.

It can't be that we go and figure out all of the policy and then find the technology that works, nor can we build a design and then layer the policy on top. These things have to be done together because they influence each other. And ideally, the work that we do would be flexible enough so that even though central banks are going to build different systems and incorporate different values, we have enough commonality and enough standards that the systems can work together.

References

- Adrian, T., and Mancini-Griffoli, T. (2021) "Public and Private Money Can Coexist in the Digital Age." *Cato Journal* 41 (2): 225–29.
- Federal Deposit Insurance Corporation (2019) "How America Banks." Available at www.fdic.gov/analysis/household-survey/index.html.
- Hayashi, F., and Keeton, W. R. (2012) "Measuring the Costs of Retail Payment Methods." Federal Reserve Bank of Kansas City *Economic Review* (Second Quarter): 37–77.
- Narula, N., and White, L. H. (2020) "Does the U.S. Need a National Digital Currency?" *Wall Street Journal* (February 23).

SHOULD THE STATE OR THE MARKET PROVIDE DIGITAL CURRENCY?

Lawrence H. White

Some Basics of Currency Provision

Private commercial banks have been providing trusted money to the public for hundreds of years, in the form of banknotes (where allowed) and transferable deposit balances, as an integral part of their business model.¹ Economically, money balances are a *private good*: they are rival in consumption (you and I can't both simultaneously spend a given banknote or deposit balance) and excludable in supply (you and your bank can stop me from spending the funds in your wallet or account) (White 1999: 89).² Accordingly, the market does not inherently fail to provide money efficiently.

The profit motive incentivizes private issuers of payment products to include features that their customers value, including easy access, convenient transferability, and security. Banks have historically offered money that is denominated in a common nonproprietary unit

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.4.

Lawrence H. White is Professor of Economics at George Mason University.

¹ Here I follow the ex-cathedra format (but amend the substance) of the executive summary of the recent report on “Central Bank Digital Currencies: Foundational Principles and Core Features” (BIS 2020).

² It is therefore a mystery what Benoît Cœuré (2020), Head of the BIS Innovation Hub, means when he says that central bank digital currencies might “provide a new form of global public good.”

of account and that serves as a commonly accepted medium of exchange for the sale of goods and services. Where governments have allowed it, a peer-to-peer circulating currency for public use has been an important banking product (Dowd 1992). Basic money, used as a medium of redemption and financial settlement, once consisted of silver or gold coins, but today is fiat money.

The fact that the historical development of payment systems has been driven by private initiative, not state action, is often overlooked. The financial historian Harold James was quite mistaken when he wrote that money “has almost always been an expression of sovereignty . . . , and private currencies have been very rare” (James 2018).³ To say, with the BIS (2020: 1) report, that “central banks have been providing trusted money to the public for hundreds of years,” while omitting mention of privately issued money, and omitting mention of untrustworthy central bank monies, is a misleadingly one-sided summary of the relevant monetary and banking history.

The long history of debasements by ancient and medieval government mints, and the regrettable history of fiat money inflations by modern central banks, show us that governments have often been untrustworthy issuers. Sovereigns have frequently abused rather than rewarded trust in their currencies, culminating in the 20th-century defaults by all central banks on their obligations to redeem their liabilities in gold or silver. A key service that first attracted medieval merchants to private bankers was their more trustworthy payment alternative to the variously debased government-issued coins—namely, a ledger-based system where transferable account balances were denominated in units of unchanging silver content. Historians later called these stable private accounting units “ghost monies,” because they were not embodied in any of the debased contemporary coins from the government mints. Account balances recorded as digits on the banker’s ledger were the first intangible or digital money.

During the 18th and 19th centuries, in the most advanced economies, redeemable bank-issued paper currency (banknotes) became more popular than coins. The majority of paper currency in circulation in most countries consisted of privately issued banknotes. More than 60 economies have allowed competitive private note-issue

³For extended criticism, see White (2018b).

(McBride and Schuler 2012). Private currencies have thus been far from a “very rare” experience. Transferable deposits at reputable commercial banks have long dominated high-value payments. Soon after the arrival of the electric telegraph—“the Victorian internet” à la Standage (1998)—banks and other payment firms began sending coded telegraphic payment messages, making long-distance money transfers instantaneously.⁴ With the arrival of the internet and smartphones, banks and other payment firms have introduced new ways of holding and transferring money. As the BIS report (2020:1) notes, “Commercially provided, fast and convenient digital payments have grown enormously in volume and diversity.” Examples include Paypal, Venmo, Zelle, Alipay, WeChat Pay, PayTM, M-Pesa, Transferwise, and stablecoins, not to mention bitcoin and other blockchain systems that transfer their own native crypto assets.

Central banks have lately begun to display a fear of missing out. Christine Lagarde (2020), president of the European Central Bank, has taken to Twitter to solicit the eurozone public’s input on whether the ECB should issue a “digital euro.” Many central banks have announced plans to study or conduct trials of retail digital payment systems, so-called central bank digital currencies (CBDCs). I say so-called because most proposed projects follow an account-balance transfer model, not a peer-to-peer *currency* model. The difference is simple: a proper currency can be used without having an account.

Is there any good reason to think that central bank digital currencies will improve consumer welfare over private alternatives?

The Myth of the Entrepreneurial State

Proposals for central bank expansion from wholesale into retail payments often appear to subscribe to what Dierdre McCloskey and Alberto Mingardi (2020) call “the myth of the entrepreneurial state.” McCloskey and Mingardi conclude from economic history that dynamic economic growth—during and since the Industrial Revolution—is disproportionately founded on bottom-up innovation and competition. Top-down direction and state-owned enterprises,

⁴Western Union began offering retail telegraph money orders in 1871 (see Western Union 1873). Banks were already “wiring money” via encrypted telegrams in the 1860s (see Anonymous 1869: 248).

because they need not make profits to continue, more often do harm than good. Even cherry-picked examples of state entrepreneurship can fall apart on inspection. It is a myth that Al Gore invented the internet. It is likewise a myth that DARPA (the Defense Advanced Research Projects Agency) invented the internet: it funded data lines and packet-switching research, but it did not intend or anticipate that innovative users and private entrepreneurs would develop email, let alone e-commerce. It is a myth that the Pony Express is an example of technological innovation by the U.S. Post Office (it was a private firm, not under contract to the Post Office). The reason for the disproportionate success of private enterprise at finding gains from trade is the incentive provided by profit and loss. McCloskey and Mingardi (2020: 74) write: “Political decision-making is less directly aimed at human welfare than is market decision-making” because “a market profit comes only when other humans find themselves better off when they purchase a product.” Survival of a subsidized state-owned enterprise does not require a market profit.

It would not be necessary to make these elementary points if those who call for central bankers to provide retail payment services would address the elementary question posed by McCloskey and Mingardi (2020: 74): “Why would someone with no skin in the game do better than people who have plenty of such skin?” Why would you expect good retail service from people who have no experience at providing it, and who have little to gain (or lose) by doing a good (or poor) job? Ignoring this question leads to the error they call “vindicating bureaucracies over market forces.”

In a recent paper, Markus K. Brunnermeier and Dirk Niepelt (2019: 27) ask, “When does a swap between private and public money leave the equilibrium allocation and price system unchanged?” They conclude: “Our results imply that CBDC coupled with central bank pass-through funding need not imply a credit crunch nor undermine financial stability” (p. 27). By “pass-through funding,” they mean that the central bank automatically lends to commercial banks all the funds it gains by the migration of commercial bank deposits into CBDC. Requiring that a CBDC incorporate such a mechanism can be motivated by recognizing that financial intermediation would be less efficient in the hands of a state monopoly than in a competitive private market. Accordingly, the authors write: “By funding the banks rather than purchasing bank assets, the central bank avoids interfering

directly with the credit allocation mechanism—only banks screen and monitor investment projects” (p. 29). But leaving the volume of commercial bank intermediation unchanged is only one side of the balance sheet. The authors regrettably do not explicitly consider the inefficiency of a state-owned monopoly at providing retail payments.⁵

Wishful Thinking on State-Owned Enterprises

Proposals for a central bank bureaucracy to provide cutting-edge digital retail payments bring to mind the *U.S. Post Office’s* E-COM, a money-losing venture into printing out and physically delivering emails during 1982 to 1985 (Leonard 2016), and still earlier proposals in the 19th century to have the U.S. Post Office take over and run the telegraphs. Many of the earlier concerns raised about nationalizing the telegraphs remain relevant to CBDC. In a speech to the National Board of Trade, George H. Thurston (1869), president of the Pacific and Atlantic Telegraph Company, warned that having government in charge of the telegraphs would raise the cost of service, because public-sector employees receive higher salaries (today we would add: and benefits). He also worried that it might endanger the confidentiality of messages, and might even subject messages to partisan censorship, concerns I return to below.

The standard case for CBDC rests on the claims that it will (1) make payments clear faster than present-day deposit transfers, and (2) provide equally convenient service at lower cost. Criticisms of these claims, which I have made elsewhere (White 2018a, 2018d, 2020a, 2020b), can be summarized as follows:

1. The first priority to speed up the clearing and settlement of deposit transfers in the United States is for the Federal Reserve to expand the operating hours of the settlement services it provides to commercial banks, a move favored by the National Automated Clearing House Association (Selgin 2019).
2. A central bank retail-account system, open to individuals and firms, will have to equal or exceed the costs of commercial

⁵They do note (p. 29) that a “key assumption” for allocational equivalence between public and private provision “is that public and private liquidity creation generates the same social costs.” It is reasonable to expect that a bureaucratic central bank would have higher costs of providing retail payment services than competing private banks.

banks to provide the level of service that account holders currently receive from banks, unless a central bank pays less for labor (it doesn't) or somehow attains higher factor productivity (there is no reason to expect that it will). The Fed today deals with commercial banks, the U.S. Treasury, and other central banks. It knows how to process payments at the wholesale level. It does not do retail payments. To match the level of service provided by commercial banks, the Fed would need to invest in branch offices, ATMs, websites, and phone apps. It would have to match the literally hundreds of thousands of tellers and service representatives employed by banks to process account applications, answer customer questions, and more. We should not expect the Federal Reserve System, a government bureau without profit-seeking residual claimants, to execute these tasks more efficiently than the private sector.

The more likely outcome would be a system that falls short on customer service or loses money at taxpayers' expense—or both. This is the outcome we have seen at public monopolies like state-owned liquor stores and the U.S. Postal Service, and at “public option” state-owned retail enterprises like Petro-Canada.⁶ Retail payments will not become more efficient by moving them out of competitive profit-seeking private-sector institutions and into a bureaucratic public-sector agency. Note that the central bank of Ecuador launched a retail payment system in 2015, but the project failed to attract users due to poor design, poor marketing, and lack of public trust in the system. It was terminated after three years (White 2018c).

3. CBDC threatens to reduce the efficiency of financial intermediation. Moving retail deposit accounts to the Fed would diminish the deposits collected by commercial banks, shrinking the volume of small-business loans they can make. The Fed rather than competing commercial banks would decide which businesses get to borrow.

⁶Neil Reynolds (2006) calls Petro-Canada a “sorry 1970s experiment in state-owned oil companies” that upon reprivatization left Canadian taxpayers with more than \$80 billion in debt. He estimates that the state-owned enterprise had “twice as many” employees as it needed.

Federal Reserve Chairman Jerome Powell recognized the disintermediation of commercial banks as a problem in his June 17, 2020, testimony before the U.S. Senate Committee on Banking, Housing, and Urban Affairs (as quoted by American Bankers Association 2020). Asked about the Fed offering digital deposit accounts to the public, he replied:

I think that would be a very dramatic change in the landscape of banking and I would worry about what would happen to the rest of our private system of banking because an awful lot of people would opt to keep their money at the Fed and then who would do the lending? It could hurt our intermediation process.

In principle, shrinkage of commercial bank loan funding could be avoided if the Fed agreed to auction all of its retail funds back to the banks with no strings attached. A commitment to returning the funds to commercial banks (“pass-through funding”) would mitigate the political misallocation problem *if* the pass-through comes with no strings attached—but this is politically unlikely. Socially proactive commitments (lending mandates) could be and likely would be required of commercial banks that receive funding from the Fed. Congress, after all, imposed “affordable housing” quotas on Fannie Mae and Freddie Mac, requiring that 30 percent and later more than 50 percent of their mortgage loans go to below-median-income borrowers (Roberts 2010: 25). Legislation introduced into Congress in August 2020 (“The Federal Reserve Racial and Economic Equity Act”) would enlarge the Fed’s mandate to include a duty “to minimize and eliminate racial disparities in employment, wages, wealth, and access to affordable credit” (Long 2020). Pass-through funding would likely become another channel for the Fed to alter the allocation of credit in politically favored directions.

Today the Fed borrows trillions from commercial banks (by paying interest on reserves) so that it can engage in credit allocation by holding an immense portfolio of Treasuries and mortgage-backed securities. It is wishful thinking to imagine that the Fed would agree to (or be allowed to) intermediate its new liabilities into loans to commercial banks without strings attached. Congress would presumably impose conditions on how banks are to relend the funds, whether for the sake of housing or community development or

perceived equity, further politicizing the allocation of credit. The track records of the Congress and the Fed suggest that the Fed would not maintain a strict neutrality in the allocation of “pass-through” credit.

Privacy

The Chinese government’s digital currency project has already undergone testing and is expected to launch soon. It is clear that the Chinese Communist Party’s motivation for the project is not the desire to add consumer benefits by improving over the efficiency of digital payment services provided by private enterprises. As Izabella Kaminska (2020) observes in *The Financial Times*, “when it comes to efficiency, WeChat and Alipay were already providing a seamless and frictionless service to users all across China.”

The Chinese system, known in the English-language press as DC/EP (Digital Currency/Electronic Payment), is chilling to anyone who values privacy. Beyond front-end transactional features, Kaminska notes, there is the question of the back-end record-keeping: “The bigger issue about who controls the related data and what they do with it must not be lost sight of. The existential risks to liberty are real and very concerning.” She quotes the Australian Strategic Policy Institute’s warning that the structure of DC/EP would “create unprecedented opportunities for surveillance” by enabling “unconstrained data collection and the creation of powerful new tools for social control and economic coercion.”

Other countries’ governments have greater regard for liberty and privacy than the Chinese Communist Party, of course. But a test of how much greater is just how completely they block their central banks from building a financial panopticon.

There is less danger of a panopticon where digital money balances are issued by a plurality of profit-seeking competing banks and other private firms. Competing banks do not deny access to certain customers based on suspicions about those customers’ loyalty to the bank.⁷ Unless a customer requests it, banks do not share client account information with rival firms. Where there is suspicion of a

⁷Granted, U.S. banks are nowadays required to turn away customers lacking proper papers and customers considered at risk for illicit activity under rules promulgated by the Financial Crimes Enforcement Network.

crime, banks may be compelled to share information with the police. A household in the West who finds any digital money service unwelcoming, or insufficiently jealous of its privacy, can turn to rival services, or as a last resort, to analog currency. In contrast, Kaminska (2020) notes:

In a CBDC world—especially a Chinese CBDC world—there are no such privacy or exclusion guarantees. A user can be frozen out of the system entirely, left to starve because they can't access payments for food, at the whim of a warrantless government directive.

CBDCs, because they are cash, are the literal last resort already. And since they do pose an existential threat to the funding mechanisms that allow competitive “secret-keeping” banks to exist at all, we need to think long and hard about the powers we bestow upon the [central banking] institutions battling to issue them.

Proposals for CBDC raise the same privacy and exclusion issues raised by proposals to abolish analog currency, or restrict it to small denominations, in order to combat black-market trade. Sometimes the two proposals are combined: some who advocate CBDC offer it as providing consumers with a close substitute for the analog currency that they wish to see abolished. The combined proposal doubles the problem of protecting privacy. Fortunately, the Bank for International Settlements and seven leading central banks, in their recent report, have announced that “All the contributing central banks commit to continue providing cash as long as there is public demand.” They say that a CBDC is not to be viewed as a replacement for paper currency but, at most, as a “complementary central bank money” (BIS 2020: 1).

Illicit Trade and Economic Welfare

What is the problem with living in a financial panopticon, given a liberal system of government that otherwise respects its citizens' privacy? Who has anything to fear other than financial criminals? How does it harm the welfare of ordinary citizens?

First, avoiding the abuse of power by financial regulators remains a problem even in a liberal democracy. Consider how, under “Operation Choke Point” in 2013, FDIC officials secretly and successfully pressured U.S. commercial banks to refuse checking

accounts to perfectly legal businesses that the FDIC officials disliked, particularly payday lending businesses (Shaul 2018).

Second, for the purpose of economic welfare analysis, we need to distinguish between two very different sets of “financial criminals”: (1) those who distribute the proceeds of violating personal and property rights (scammers, thieves and fences, kidnappers, extortionists, terrorists); and (2) those who peacefully trade in illicit goods and services (drug dealers, sex workers, employers of the undocumented).

The first group generates negative-sum outcomes. Impeding their activities is beneficial to the rest of society. But the second group generates positive-sum outcomes—mutual gains from trade—from the point of view of its participants. Absent third-party victims, the standard approach in modern welfare economics is to adopt the subjective point of view of the participants in trade. The principle of gains from trade—gains from capitalist acts between consenting adults—applies equally to drug sales, sex work, and hiring the undocumented, despite their illicit status in many jurisdictions. Jeffrey Hummel (2017: 140–41) has emphasized this point:

[T]he only reason that drug cartels generate such huge profits is that they provide products that supply something that consumers demand. [The economic analyst] as an individual may paternalistically disapprove of such preferences, but . . . as an economist should at least include in his welfare analysis the lost consumer surplus from any further hindrance to serving those preferences.

It therefore biases an estimate of overall welfare effects of further limiting financial privacy to assume, as Kenneth Rogoff (2016) and others do, that the welfare of people who use untracked money for victimless but illicit purposes *doesn't count*, that we should only count the welfare associated with licit transactions. One's evaluation of the financial panopticon thus has a lot to do with one's evaluation of illicit payments connected with victimless crimes. Raising barriers to victimless black-market trades reduces the economic welfare of the participants in those markets, viewed in a nonpaternalistic manner. A policy to suppress the use of untracked money in victimless markets is thereby harmful rather than beneficial.

Most economists recognize the inefficiency of tariffs and nontariff barriers that block potential gains from trade. Many fail to extend the logic to domestic victimless crime laws that block potential gains from trade. When a law blocks Pareto-improving trades, whether international or domestic trades among consenting adults, I invite my fellow economists to stop offering clever ways of enforcing the law more effectively, and to focus instead on changing the law to allow freer trade.

References

- American Bankers Association (2020) “Statement for the Record on Behalf of the American Bankers Association before the Committee on Banking, Housing, and Urban Affairs” (June 30).
- Anonymous (1869) “Money Cyphers.” *Journal of the Telegraph* (October 1): 248.
- Bank for International Settlements (2020) *Central Bank Digital Currencies: Foundational Principles and Core Features*. Joint report by the Bank of Canada, European Central Bank, Bank of Japan, Sveriges Riksbank, Swiss National Bank, Bank of England, Board of Governors of the Federal Reserve, and Bank for International Settlements. Available at www.bis.org/publ/othp33.htm.
- Brunnermeier, M. K., and Niepelt, D. (2019) “On the Equivalence of Private and Public Money.” *Journal of Monetary Economics* 109 (October): 27–41.
- Cœuré, B. (2020) “CBDCs Mean Evolution, Not Revolution.” Available at www.bis.org/speeches/sp201021a.htm.
- Dowd, K. (1992) *The Experience of Free Banking*. London: Routledge.
- Hummel, J. R. (2017) “The War on Cash: A Review of Kenneth Rogoff’s *The Curse of Cash*.” *Econ Journal Watch* 14 (May): 138–62.
- James, H. (2018) “The Bitcoin Threat.” *Project Syndicate* blog (February 2): www.project-syndicate.org/commentary/bitcoin-threat-to-political-stability-by-harold-james-2018-02.
- Kaminska, I. (2020) “Global Gosbankification Risk Is Now at Orange: Beware of Chinese Central Bankers Bearing Frictionless and Cheap CBDC Payment Gifts.” *Financial Times* (October 27).
- Lagarde, C. (2020) Tweet at <https://twitter.com/Lagarde/status/1322859717329301504>.

- Leonard, D. (2016) “The Post Office Almost Delivered Your First E-Mail: A Few Failed Visionaries Tried to Turn the U.S. Postal Service into an Internet Pioneer.” Available at www.bloomberg.com/features/2016-usps-email.
- Long, H. (2020) “Democrats Introduce Bill to Give the Federal Reserve a New Mission: Ending Racial Inequality.” *Washington Post* (August 5).
- McBride, W., and Schuler, K. (2012) “Where Is Private Note Issue Legal?” *Cato Journal* 32 (2): 395–410.
- McCloskey, D. N., and Mingardi, A. (2020) *The Myth of the Entrepreneurial State*. Great Barrington, Mass.: American Institute for Economic Research.
- Reynolds, N. (2006) “Petrocan Debt Has Taxpayer over a Barrel.” *Globe and Mail* (August 25).
- Roberts, R. (2010) *Gambling with Other People’s Money*. Fairfax, Va.: Mercatus Center.
- Rogoff, K. S. (2016) *The Curse of Cash*. Princeton, N. J.: Princeton University Press.
- Selgin, G. (2019) “Facilitating Faster Payments in the U.S.” Testimony before the House Committee on Banking, Housing, and Urban Affairs (September 25). Available at www.cato.org/publications/testimony/facilitating-faster-payments-us.
- Shaul, D. (2018) “There’s No Downplaying the Impact of Operation Choke Point.” *American Banker* (November 28).
- Standage, T. (1998) *The Victorian Internet*. New York: Walker.
- Thurston, G. H. (1869) “Extracts from the Remarks of Geo. H. Thurston, in National Board of Trade, Cincinnati, December 2, 1868, on the Absorption by the Government of the Telegraph Lines.” *Journal of the Telegraph* 4 (January 15): 40.
- Western Union (1873) *Annual Report of the President of the Western Union Telegraph Company to the Stockholders*. New York: Russells’ American Steam Printing House.
- White, L. H. (1999) *The Theory of Monetary Institutions*. Oxford: Blackwell.
- _____ (2018a) “More Evidence of the High Collateral Damage of a War on Cash.” *Alt-M blog* (January 26).
- _____ (2018b) “Bitcoin: More Trustworthy than Some Academic Critics.” *Alt-M blog* (February 22).

- _____ (2018c) “The World’s First Central Bank Electronic Money Has Come and Gone: Ecuador, 2014–2018.” *Alt-M blog* (March 29).
- _____ (2018d) “Central Bank Digital Currency Threatens Financial Privacy and Economic Growth.” *Alt-M blog* (December 4).
- _____ (2020a) “Does the U.S. Need a National Digital Currency? No: It Would Be Costly and Inefficient.” *Wall Street Journal* (February 23).
- _____ (2020b) “Should the U.S. Government Create a Token-Based Digital Dollar?” *Alt-M blog* (June 19).

THE CASE FOR CENTRAL BANK DIGITAL CURRENCIES

Eswar S. Prasad

New financial technologies—including those underpinning cryptocurrencies such as bitcoin—herald broader access to the financial system, quicker and more easily verifiable settlement of transactions and payments, and lower transaction costs. Domestic and cross-border payment systems are on the threshold of major transformation, with significant gains in speed and lowering of transaction costs on the horizon. The efficiency gains in normal times from having decentralized payment and settlement systems needs to be balanced against their potential technological vulnerabilities and the repercussions of loss of confidence during periods of financial stress.

Multiple payment systems could improve the stability of the overall payments mechanism in the economy and reduce the possibility of counterparty risk associated with the payment hubs themselves. However, multiple systems without official backing could be severely tested in times of crisis of confidence and serve as channels for risk transmission. Decentralized electronic payment systems are also exposed to technological vulnerabilities that could entail significant economic as well as financial damage.

The potentially transformative potential of cryptocurrencies was highlighted by Facebook's 2019 announcement that it plans to issue

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.5.

Eswar S. Prasad is Tolani Senior Professor of Trade Policy at Cornell University. He is also a Senior Fellow at the Brookings Institution, where he holds the New Century Chair in International Economics, and a Research Associate at the National Bureau of Economic Research.

a cryptocurrency called Libra, which would be backed by reserves of fiat currencies. According to Facebook, the goal is to create a more inclusive financial system as well as a more efficient and cheap payments system for both domestic and cross-border transactions. The fully backed nature of Libra suggests that it will provide a stable store of value and will not have any monetary policy implications. The latter proposition, which is the one of more direct concern to central bankers, remains to be seen. After all, it is not obvious what could restrain Facebook from using its massive financial clout to issue a cryptocurrency backed by its own resources rather than by a basket of fiat currencies.

It is an intriguing, and in some ways disturbing, prospect that other large nonbank financial institutions and nonfinancial corporations could also become important players in financial markets, perhaps even issuing their own tokens/currencies. For instance, a company such as Amazon could conceivably issue electronic tokens for trading goods on its platform. The backing of such a large company could ensure the stability of its value and make it a viable medium of exchange, reducing the demand for central bank money for commercial transactions. Such digital tokens issued by Facebook and other well-known nonfinancial corporations could end up being seen as stores of value as well, given the scale, apparent stability, and financial firepower that these corporations command. The major implications of such developments would not just be the reduction in the demand for central bank money as mediums of exchange or stores of value, but the consequences they would have for the business models of banks and other existing financial institutions. Although the potential effects are not obvious and need careful study, these developments could have implications for central banks.

While it is premature to speak of disruption of traditional concepts of central banking, it is worth considering if the looming changes to money, financial markets, and payments systems will have significant repercussions for the operation of central banks and their ability to deliver on key objectives such as low inflation and financial stability. The rapid rise of cryptocurrencies has elicited a range of responses from central banks and governments, from trying to co-opt the changes to their advantage to resisting certain developments for fear of endangering monetary and financial instability. For many central banks, the responses are driven by concerns about the rapidly declining usage of currency and the implications for both financial and

macroeconomic stability if decentralized, privately managed payment systems displace both cash and traditional payment systems managed by regulated financial institutions.

Central Bank Digital Currencies

One response to these technological shifts has been for central banks themselves to innovate in the means for producing money. At a basic level, central bank digital currencies (CBDCs) are simply digital forms of central bank money. The scope of CBDCs encompasses both retail and wholesale payments systems. Wholesale CBDCs entail some efficiency improvements but not fundamental changes to the interbank payments system managed by central banks, since balances held by commercial banks at the central bank (reserves) are already in electronic form. Retail CBDCs, which would be a digital complement to or substitute for physical cash, would be more of a revolutionary change. Retail CBDCs can take one of two forms—either token based or value based. These have very different implications for monetary and other policies.

In the latter incarnation of retail CBDCs, all agents in an economy would have access to central bank accounts, where the balances could in principle be interest bearing. The central bank would in effect become the manager of a sophisticated payments system that would also allow it, depending on the structure of this CBDC, to implement conventional and unconventional monetary policy in non-standard ways and, in some respects, more effectively.

The motives for issuing retail CBDCs range from broadening financial inclusion to increasing the efficiency and stability of payment systems. For instance, Sweden's Riksbank is actively exploring the issuance of an e-krona, a digital complement to cash, with the objective of "promoting a safe and efficient payment system." CBDCs could function as payment mechanisms that provide stability without necessarily limiting private fintech innovations or displacing privately managed payments systems. Other central banks that have already issued or are considering issuing CBDCs, especially those in developing economies, seem to put higher priority on giving households easier access to electronic payments systems.

One obvious question is whether CBDCs will have an effect on monetary policy or other aspects of macroeconomic policies. Retail CBDCs disseminated through electronic wallets would make it easier

to implement monetary policy more effectively in two ways. First, the nominal zero lower bound, which became a binding constraint for traditional monetary policy in advanced economies during the worst of the global financial crisis, would no longer apply. The central bank could institute a negative nominal interest rate simply by reducing balances on these electronic wallets at a preannounced rate. In an economy with physical cash, this should in principle not be possible since consumers (and firms) have the alternative of holding physical currency banknotes, a zero nominal interest rate instrument. In principle, negative nominal interest rates that would become feasible with certain forms of CBDCs should encourage consumption by making it expensive for households to maintain cash positions.

Monetary policy could also be implemented through “helicopter drops” of money, once seen as just a theoretical possibility of increasing cash holdings in an economy in a nondistortionary fashion by making lump sum transfers to all households. This would be easy to implement if all citizens in an economy had official electronic wallets and the government could transfer central bank money into (or out of) those wallets. Channels for injecting outside money into an economy quickly and efficiently become important in circumstances of weak economic activity or looming crises, when banks might slow down or even terminate the creation of outside money.

Thus, a central bank could substantially reduce deflationary risks by resorting to such measures in order to escape the liquidity trap that results when it runs out of room to use traditional monetary policy tools in a physical cash-based economy.

There is, however, a flip side to the ease with which a central bank can increase or decrease the supply of outside money. The ability to impose a haircut on CBDC holdings, or to increase them rapidly in case the government were to apply pressure on a central bank to monetize its budget deficit, could lead to substitution away from the CBDC. The reduction in nominal balances and the erosion in the real purchasing power of nominal balances through monetary injections would have similar effects—decreasing confidence in the currency as a safe asset that can hold its value, at least in nominal terms.

Analytical Considerations

The academic literature has only recently begun to grapple with the implications of CBDCs for monetary policy. Some authors argue

that a CBDC will not in any material way affect the implementation of monetary policy, although there could be other macroeconomic effects. The conclusions, as indicated by the limited and selective survey below, depend to a great extent on the model structure and the manner in which the CBDC is introduced into the economy.

Barrdear and Kumhof (2016) develop a DSGE (dynamic stochastic general equilibrium) model with multiple sectors and several nominal and real rigidities to understand the effect of introduction of CBDCs. These authors suggest that infusing CBDCs into an economy could result in substantial steady state output gains of nearly 30 percent. This effect persists if the central bank issues a large amount of CBDCs against government bonds.

Bordo and Levin (2019) consider how digital cash could bolster the effectiveness of monetary policy. They lay out some steps for implementing digital cash via public-private partnerships between the central bank and supervised financial institutions. They conclude that digital cash could significantly enhance the stability of the financial system.

Andolfatto (2021) studies the implications of CBDCs in an overlapping generation model with a monopolistic banking sector. In this model, the introduction of interest-bearing CBDCs increases the market deposit rate, leads to an expansion of the deposit base, and reduces bank profits. This is because competition from the CBDC causes banks to raise deposit rates. However, the CBDC has no effect in terms of bank lending activity and lending rates. Although the introduction of the interest-bearing CBDC increases financial inclusion, diminishing the demand for physical cash, it does not disintermediate banks. Fernández-Villaverde et al. (2020) show how, in an economy with CBDC, depositors can internalize the stability of the central bank relative to commercial banks, leading to the central bank becoming a deposit monopolist even in normal times. Agur, Ari, and Dell'Ariccia (2019) model the difference between cash and CBDCs as hinging on two features: anonymity and security.

Mishra and Prasad (2020) develop a simple general equilibrium model that highlights the tradeoffs between physical and electronic forms of fiat currency issued by central banks. The key differences between these two forms of central bank-issued outside money include transaction costs (lower for CBDCs), possibilities for tax evasion (higher for cash, but with a positive probability of being caught

and penalized), and nominal rates of return (zero for cash; potentially positive or negative for CBDCs). They show the conditions under which cash and CBDCs can coexist and also show how different combinations of government policies, such as the level of taxes and the penalty for being caught undertaking tax evasion, can influence the relative holdings of cash and CBDCs. The model provides a framework that can eventually be extended to evaluate conditions under which different forms of government-backed and privately issued currencies can coexist, conditional on the attributes of each of those currencies and also government policies.

While this burgeoning literature has provided some useful insights for designing and evaluating the implications of CBDCs, a great deal of work clearly remains to be done in fleshing out the monetary policy and financial stability implications of CBDCs.

Conclusion

Central banks are now being forced to confront the question of whether to issue digital versions of their fiat currencies. The potential benefits of CBDCs include lower transaction costs, easier monitoring of transactions, and the creation of a backstop to a privately managed payment infrastructure. In addition, well-designed retail CBDCs can also broaden financial inclusion, a particular priority for developing economies, and serve as a backstop to the infrastructure of privately managed payments systems.

However, the issuance of CBDCs will not in any way mask underlying weaknesses in central bank credibility or other issues such as fiscal dominance that affect the value of cash. In other words, digital central bank money is only as strong and credible as the central bank that issues it. In considering a shift to digital forms of retail central bank money, it is important to keep in mind that the transitional risks could be higher in the absence of stable macroeconomic and structural policies, including sound regulatory frameworks that are agile enough to be able to recognize and deal with financial risks created by new types of financial intermediaries.

It should also be recognized, notwithstanding the potential benefits, that there are many unanswered questions about how the new financial technologies could affect the structure of financial institutions and markets. Questions also abound about whether retail CBDCs will in any significant way affect monetary policy implementation

and transmission. These uncertainties suggest a cautious approach to embracing the concept of CBDCs but not shunning it altogether.

One interesting point to note is that small advanced economies—such as Canada, Singapore, and Sweden—along with developing economies such as China seem to be taking the lead in pushing forward with exploration and development of digital versions of their fiat currencies. By contrast, the issuers of the major reserve currencies—the U.S. Federal Reserve, the European Central Bank, and the Bank of Japan—have taken more neutral positions, although some officials even from these institutions have recently begun to espouse interest in the prospect of issuing CBDCs. It would be a game changer if any of the G-3 central banks were to issue their currencies in digital form. Emerging market and developing countries, particularly those that suffer from a high degree of dollarization, might find such developments particularly challenging as they could further erode the demand for money, either physical or digital, issued by national central banks.

In fact, such challenges to domestic fiat currencies might be more imminent than previously thought, now that major multinational social and commercial platforms such as Amazon and Facebook are developing their own digital tokens. Given the easy access that households even in emerging market economies have to these platforms and the enormous financial and commercial clout that such corporations have, cryptocurrencies such as Facebook's Libra could further reduce the domestic demand for fiat currencies, both as mediums of exchange and stores of value. Emerging market central banks and governments may be left with little choice but to proactively develop a strategy that helps harness the benefits of the developments discussed in this article. Every central bank will eventually have to confront the looming challenges from cryptocurrencies, stablecoins such as Libra, and broader fintech developments.

References

- Agur, I.; Ari, A.; and Dell'Ariccia, G. (2019) "Designing Central Bank Digital Currencies." IMF Working Paper No. 252.
- Andolfatto, D. (2021) "Assessing the Impact of Central Bank Digital Currency on Private Banks." *Economic Journal* 131: 525–40.
- Barrdear, J., and Kumhof, M. (2016) "The Macroeconomics of Central-Bank-Issued Digital Currencies." Bank of England Working Paper No. 605 (July 18).

- Bech, M., and Garratt, R. (2017) “Central Bank Cryptocurrencies.” *Bank for International Settlements Quarterly Review* (September): 55–70.
- Bjerg, O. (2017) “Designing New Money: The Policy Trilemma of Central Bank Digital Currency.” CBS Working Paper, Copenhagen Business School.
- Bordo, M. D., and Levin, A. T. (2019) “Digital Cash: Principles and Practical Steps.” NBER Working Paper No. 25455.
- Fernández-Villaverde, J.; Sanches, D.; Schilling, L.; and Uhlig, H. (2020) “Central Bank Digital Currency: Central Banking for All?” NBER Working Paper No. 26753.
- Mishra, B., and Prasad, E. (2020) “A Simple Model of a Central Bank Digital Currency.” Unpublished manuscript, Cornell University.

TUNNELS, BUNKERS, AND ESCAPE HATCHES:
DEFENDING ECONOMIC RIGHTS
UNDER FIRE
Jill Carlson

Being all equal and independent, no one ought to harm another in his life, health, liberty, or possessions.

—John Locke

In his *Second Treatise of Government* ([1689] 1980), Locke viewed life, health, liberty, and possessions as the natural, inalienable rights of mankind. He posited that government exists to serve the best interest of its people, protecting those natural rights. The legitimacy of government rests in the consent of the governed.

Possessions, or property, have been reiterated as a human right over the course of the centuries since Locke first wrote—enshrined in everything from the U.S. Declaration of Independence to the United Nations Declaration on Human Rights (1948: 217, A III).

Nevertheless, executives, judiciaries, legislative bodies, and central banks around the world have continually broken their social contract on this front: not only failing to defend the natural rights of possessions and property, but often actively harming individuals' ability to hold value and to freely transfer and exchange assets. Access to a free, open, and functional financial system is a fundamental

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute.
All rights reserved. DOI:10.36009/CJ.41.2.6.
Jill Carlson is Cofounder of Open Money Initiative.

human right. One that is continuously violated by states and policy-makers globally.

The threats posed to this right by governments are many, varied, and often interconnected. In this article, I will not address either taxation or social and welfare policies, which are arguably accepted by Locke's framing of government (1980: XI: 140–42). One need not go that far in order to demonstrate government violation of rights around property and possessions. Inflation, confiscation, capital controls, price controls, rationing, bank withdrawal limits, cash shortages, and all manner of similarly restrictive policies fall clearly in this category. These are often implemented in response to crises: ballooning government deficits, rampant corruption, liquidity and banking crises, sanctions, shortages, and sovereign defaults. Sometimes these issues are of governments' own making. In other scenarios, they are exogenous shocks. Either way, policy responses that restrict the rights of citizens and corporations have become all too common.

While these responses can act as short-term bandages to slow the bleed, they are rarely effective over the long term. As Locke himself may have predicted, individuals and entities tend to take it into their own hands to defend their rights when they are under attack. They find ways to slip the binds of the restrictions, they get their savings out of their failing currencies, and in some cases, they physically flee the jurisdiction. In other words, in order to evade problematic economic policies or the damage of monetary mismanagement, people and organizations build tunnels to get their assets out, find bunkers to protect the value of their property, or exit altogether.

These phenomena can be found to varying degrees in nearly every country in the world, playing out either subtly in purportedly freedom-loving democratic societies, or much more obviously in authoritarian regimes. Perhaps nowhere, however, have all of these phenomena manifested so clearly as they have over the last decade in Venezuela. Rampant government spending due to socialist policies has led to an economic dependency on oil. The oil price rout of the last half-decade, combined with electoral controversy, rampant corruption, and prolonged geopolitical tensions with would-be trading partners, has resulted in economic trauma and isolation. The government's responses to these situations have led to hyperinflation of the local currency, capital controls, confiscation of assets, price controls, rationing, and debt default. Just about every possible breach of

economic and monetary freedom that could happen has occurred in the last decade in Venezuela.

Venezuela is also illustrative of the creativity that people and organizations employ in response to these contraventions of their rights. Entrepreneurial individuals operate underground marketplaces. Engineering students mine bitcoin as an inflation-proof source of income. Mothers and fathers who went abroad in search of better prospects leverage *hawala* networks to send money back. Those living close enough to the borders smuggle goods and monies in from neighboring countries. The solutions that Venezuelan people have crafted in the face of extreme economic strife are a testament to their resilience and also to the depth of the human need for a sound monetary system, for protected property rights, and for freedom to transact and trade.

It is unrealistic and unreasonable to expect that Venezuela, or any other state actor, will ever relinquish its hold over economic policy-making or its monopoly on money. As long as governments and central banks are around to do so, economic and monetary policies will be mismanaged at the expense of the rights and best interests of the people. As demonstrated by the extreme example of Venezuela, it is therefore up to the private sector as well as individuals to craft and make accessible the avenues to achieve economic and monetary freedom.

In the remainder of this article, I discuss three ways individuals and organizations go about defending their economic rights from government infringement by (1) accessing alternative financial systems, (2) hedging their exposure to their failing local economies, and (3) emigrating to freer jurisdictions. I refer to these three approaches as building tunnels, finding bunkers, and using escape hatches. In detailing these methods, I return frequently to Venezuela, relying on both secondary sources as well as firsthand data gathered by myself and my Open Money Initiative colleagues: Jamaal Montasser, Alejandro Machado, and James Downer. I define tunnels, bunkers, and escape hatches in turn and detail how they are used. I speak to the benefits and shortcomings of each approach. Finally, I touch upon how these methods have existed and evolved throughout time and how cryptocurrency and other technologies represent only the latest additions to a wide array of tools used in the protection and maintenance of economic freedoms.

Tunnels

The global financial system is extremely fragmented. Every currency, every jurisdiction, and every individual or type of institution operates within its own silo. These silos are connected via correspondent banking systems, technology, individuals employed in critical back office reconciliation roles at banks, legal and compliance teams, communications systems, pools of carefully managed liquidity, market makers, and the many other entities and processes that comprise global markets. All of this infrastructure ensures the free flow of capital and goods between and within counterparties. When these paths break down or are cut off, people and organizations find their right to a free and open financial system compromised. In these conditions of restriction, repression, and friction, people build tunnels in order to continue to freely transact and trade.

There are many reasons these connections can be severed. Sometimes, the connection may be cut by an external party. Sanctions are the most obvious example: other countries limit or halt the movement of funds and goods to a specific jurisdiction. In other cases, the flows are stopped by the government itself. Capital controls and limits on bank withdrawals are representative examples.

The issues here become fractal, with similar patterns recurring at successively more local scales. There is the nation-state level of fragmentation, in which assets cannot be moved or exchanged across borders based on the policies of one or both countries. There is also fragmentation that occurs within a given country at the institutional level, in which friction exists (for example) in executing a transfer between two banks. Finally, there is fragmentation that can exist at the individual and organizational level: limiting the ability of people, merchants, and service providers from interacting and transacting. For each of these blockades, however, people have found ways to build tunnels through and around.

Venezuela, in the last decade, has experienced issues at each of these levels. At the national level, sanctions (in particular those imposed by the United States) have limited the movement of goods and capital into the country. These sanctions, coupled with a sovereign default, have effectively locked the nation-state out of international borrowing markets. If sanctions are keeping international funds out, capital controls are keeping local funds in. Meanwhile, institutions within the country suffer enormous difficulties in transacting and transferring among each other. Due to the fragility of

the banking system and the careful monitoring of the liquidity profile of each banking institution, banks do not freely send funds among each other. This is to say nothing of the pain that individuals endure in interacting with these institutions: prohibitively long lines and waits for service, withdrawal limits, and other hurdles. There is nothing either free, nor open, nor functional about this financial system. And yet, through creativity and resilience, people and institutions have dug the tunnels necessary to enable them to continue to operate freely at each of these levels.

Faced with rationing, price controls, and scarcity of goods, people have built networks and inroads to each other at an individual level to enable the continued functioning of markets. Generally, here, these tunnels consist of social networks, whether virtual or literal. Facebook groups and WhatsApp conversations connect individuals in service of helping each other to track down hard-to-find goods such as medicine and hygiene staples. Outside of the digital realm, people leverage their church groups, country clubs, college classmate cohorts, and other communities to find markets for the products and services they need. Facebook, WhatsApp, and these real-world factions work together to send, receive, and exchange currencies outside of the local, hyperinflating bolivar. These social networks rely on trust among the participants: trust that the group will not be outed to the authorities, trust that counterparties will follow through on their leg of the trade, and trust that the group will come through to source the necessary item, asset, or service.

When the financial system is as fragile as it is in a place like Venezuela, restrictions get implemented on money movement out of and between banks. The careful management of capital reserves at each institution means that each bank must clear enormous hurdles before moving money out. The result is that customers face a difficulty in moving money between accounts at two different banks and a near impossibility of withdrawing sufficient cash. Thanks to cash shortages and the need for ever-higher cash denominations due to hyperinflation, the entire economy runs on bank transfers. What does this mean when transfers themselves are high friction? For these situations, people have again built the tunnels to enable the free flow of funds. It is not uncommon for people to have accounts at—and balances in—multiple institutions so that if their grocer only uses a given bank, they can still pay him. Money changers, who act as conduits among several jurisdictions and who serve

dozens of clients, often have up to seven accounts at different banks in Venezuela alone to ensure they can work with their entire customer base.

These money changers also provide conduits in and out of the country, effectively enabling people to evade capital controls. Not only do they have six or seven bank accounts and clients at various institutions within Venezuela, they also have access to bank accounts and customers in other countries, like the United States or neighboring Colombia. These money changers provide remittance corridors for these countries using an informal network. In such a system, money does not actually cross borders and is therefore not subject to capital controls. Rather, if someone is seeking to remit money from Colombia to Venezuela, they will send Colombian pesos to the changer's Colombian bank account. The money changer will then transfer the corresponding amount of Venezuelan bolivars from one of his Venezuelan accounts to the recipient on the other side. Rather than executing one transfer across two systems, he executes two transfers within two systems. This naturally demands active and painstaking management of liquidity within each silo—at the national level but also at the level of each bank and institution. Nonetheless, this mechanism ends up being largely effective.

Often these money changers are found via the WhatsApp and Facebook communities mentioned earlier. There are also other options that exist for seeking them out, however. Products that leverage cryptocurrency, like LocalBitcoins for example, serve as marketplaces for moving money across borders. On LocalBitcoins, market makers post the exchange rate at which they are willing to buy or sell bitcoin as well as the jurisdiction and banking institutions they can work with. When using LocalBitcoins, a Colombian seeking to send money to Venezuela might exchange pesos into bitcoin using an exchange and then cash the bitcoin out as bolivars to be deposited in a friend's or family member's account on the Venezuela side.

Services like LocalBitcoins are not the only way in which cryptocurrency serves as a tunnel between jurisdictions. The act of mining cryptocurrency also transcends borders. For those with the expertise and access to the requisite hardware, mining bitcoin is a way to generate auxiliary income outside of the failing local currency. In Venezuela in particular, mining is attractive due to the government subsidy of energy. Where elsewhere mining would be

prohibitively expensive to get started, in Venezuela, it is much more accessible.

While these examples may suggest that building tunnel networks amongst people, institutions, and between countries is an act that relies on modern technologies—from social media sites to bitcoin miners—it is worth noting that the subversive use underground tunnels in defense of one’s financial rights predates any of the aforementioned practices. As Carvalho and Garcia (2006: 31) observe: the “market, then, appears to always find a means of circumventing restrictions placed on foreign capital, rendering capital controls ineffective in the medium term.” Up until the last decade, however, these tunnels were only accessible to those with financial means and privileged social and political positions. Financial engineering approaches to evading capital controls; leveraging derivatives, options, and depository receipts; as well as legal strategies, including disguising short-term trades as foreign direct investments and reallocating profits amongst subsidiaries, have been used for the better part of a century. But these methods were only possible for those with strong foreign and domestic banking relationships: high net worth individuals and multinational corporations. Technology has opened new, more available tunnels and a new frontier in the fight for economic and monetary rights and freedoms.

Bunkers

While tunnels help to evade restrictions on the ability to freely spend and make transfers, they are insufficient in the fight to store value effectively. In order to achieve the latter, the tunnel must lead to safety: to a bunker. A bunker in this context could be a store of value, a safe haven from volatility or debasement, a refuge from possible confiscation, or a hedge against the local economy. If a tunnel is the conduit by which assets move outside of the formal system, a bunker is the asylum in which assets can be safely held.

Different types of attacks result in the need for different types of bunkers. Inflation, depending on how it manifests, may demand hedges, or the positioning of assets in instruments that will offset the deterioration of the value of the currency. It is not always enough to diversify savings and accumulated wealth: sometimes the bunker takes the form of diversified income streams as well. Real estate, foreign currencies, and financial assets are often used as hedges, but

goods and products can be equally sound and much more accessible. Hoarding of these products can be a refuge for value. When it comes to threat of confiscation, other types of bunkers are needed. In some cases, these are secure physical locations to store goods or cash. In other cases, the bunker is a digital vault in the form of an asset like bitcoin, secured by a secret passphrase and inaccessible by the government or other entity. Financial and economic freedom is not only about the right to spend and transfer assets: it is also about a person being able to secure the worth of their assets.

In Venezuela, in the face of inflation, people and organizations tunnel their way to all manner of safe havens. For many, tunneling their assets out of the country altogether is the optimal solution. Corporations and wealthy, well-connected individuals who can move assets offshore do so. For some companies, this means repatriating operations. For people, this may mean moving what money they can to the bunker of a bank account in another country. This can also mean making purchases abroad. Real estate is a popular choice. The best situation of all lies in the carry trades conducted by individuals and organizations alike: taking out a loan in their depreciating local currency and using that money to buy property overseas. The value of the loan trends toward zero as inflation takes its toll while the property maintains its worth.

These financial havens are generally available only to those with existing international accounts and the means to access them. Those who do not have these connections directly have had to be more creative in diversifying out of the inflating local currency. In many cases, people get access to these bunkers via friends or family members. They may not, themselves, have bank accounts or access abroad, but often they know someone who does. It is not uncommon for an aunt to request that her nephew, who went to university in the United States, hold money in dollars for her in his U.S. bank account. He will effectively serve as her bank, offering an exchange rate and accepting local currency from her. Thus, she can access the relative safety of dollars without having direct access offshore herself.

Diversification of savings is one goal. Many, however, do not have savings to diversify and instead need to earn income in an inflation-resistant manner. Finding and doing work internationally online has become a lifeline for many in this situation. Even those who are in elite professions in Venezuela—professors, doctors, lawyers—frequently find that they earn more performing digital tasks remotely

and cross border than they can in their careers locally. It is not unusual for these individuals to get paid in and rely on bitcoin. In this case, the bitcoin payment represents the tunnel while the bitcoin itself is the bunker, acting as a relatively stable store of value compared with the inflating local currency.

Bitcoin offers another benefit as well: because bitcoin does not need to be stored in a bank, the frictions of withdrawals and the risk of loss or seizure at the hands of government or institutions are diminished. As long as those who are saving in bitcoin maintain the security of their mobile phones, their assets are securely theirs. Outside of cryptocurrency, other methods of achieving seizure resistance also exist. Because there are restrictions on how long a merchant can hold goods on their books, for example, to prevent hoarding, some merchants create multiple entities and effectively launder their products among the entities to evade enforcement. This, too, is a bunker.

Bunkers provide refuge to people and organizations that need to shelter their assets from inflation, from debasement, from volatility, and from vulnerability to seizure and forfeiture. Wherever economic rights are violated, people find ways to defend them, first by building tunnels out of their failing systems and then by finding safe havens in which to store their assets. It is, however, impossible to stay forever in a bunker. In order to purchase food, in order to pay for school, in order to make rent, people need to continually interface with their local economy. Thus, there is a constant motion in and out of bunkers for most: cashing out just enough money to spend over the next hour or day before the money loses its value. It is no wonder that amidst this anxiety and chaos, some feel that even the bunker is insufficient and that the only option is to leave altogether.

Escape Hatches

Although they are often not acknowledged with the formal status reserved for those fleeing violent conflict, there exists the very real phenomenon of economic refugees. There are situations in which the right to a free, open, and functional financial system is so deeply and routinely violated that there becomes no other choice than to emigrate.

The emigration pattern in Venezuela demonstrates that even the tunnels and bunkers people have found and created fall short of

preserving the freedom people need to reasonably live, let alone thrive. In the three years between 2016 and 2019, 4.6 million people left Venezuela out of a population of roughly 30 million (World Bank 2019). Most have left to seek the better economic situations of neighboring or friendly countries. This is to say nothing of the numerous corporations who have exited the country, taking their operations with them.

In the case of both companies and individuals, one of the key challenges of exiting lies in being able to take assets along when leaving. Companies have faced confrontations with the socialist government and had to take losses on their Venezuelan operations when leaving the country. Individuals, too, suffer these challenges. Having assets in a bank account in Venezuela does one very little good once they get to their destination country. They need to find a tunnel out to take their assets with them. In many cases, people work to physically carry their assets across the border—smuggled as cash in their shoes or hidden in their hair, worn across in the form of jewelry. These methods, however, are vulnerable to confiscation by the officials overseeing emigration.

Cryptocurrencies again can play an important role here in creating a more accessible path for people to take their savings with them in leaving. As long as a person's phone is not confiscated, or, for more sophisticated users, as long as they can remember their passphrase, cryptocurrency assets can be brought with them safely across the border.

In the fight to defend their economic rights, many are forced to choose the escape hatch: to exit the system altogether. The challenges do not end there, though, in that people then need to plan how to take their assets with them. This is not even to mention the emotional, legal, and logistical challenges that these economic refugees face in starting over in a new country.

Conclusion

Since long before John Locke wrote about inalienable rights in the 17th century, people have been battling to maintain those rights. Underground salons have served as bastions of free speech in areas where censorship reigns. Books and texts have persisted in places where they were repressed. Religious practices have persevered even as others sought to ban their beliefs. People have long fled their

homelands seeking greater freedoms. It is no different when it comes to economic freedoms. In speaking of tunnels, bunkers, and escape hatches, I do not speak of anything specific to economic and monetary practices. Nor do I speak of anything new. These are the three paths available to anyone experiencing repression in any form. What is different and new is that these paths forward are no longer reserved only for those who can afford them, have the connections to access them, or have the risk tolerance to attempt them. Technology, and most particularly cryptocurrency, is for the first time providing people with tunnels, bunkers, and ways of taking their wealth with them when they leave their country. The methods and approaches used in fighting for the right to a free, open, and functional financial system will doubtlessly continue to evolve—and as surely as that, people will continue to leverage technology in waging these battles.

References

- Carvalho, B., and Garcia, M. (2006) “Ineffective Controls on Capital Inflows under Sophisticated Financial Markets: Brazil in the Nineties.” NBER Working Paper No. 12283.
- Locke, J. ([1689] 1980) *Second Treatise of Government*. Edited by C. B. Macpherson. Cambridge, Mass.: Hackett Publishing.
- United Nations General Assembly (1948) “Universal Declaration of Human Rights.” New York: United Nations (December 10).
- World Bank (2019) “Venezuelan Migration: The 4,500-Kilometer Gap between Desperation and Opportunity.” Washington: World Bank (November 26).

FINANCIAL FREEDOM AND PRIVACY IN THE POST-CASH WORLD

Alex Gladstein

The future of currency is digital. The majority of transactions made every day are already electronic and controlled by banks or tech companies. These payments are easily surveillable, confiscatable, and censorable. Physical cash still functions as an essential savings mechanism and privacy tool for millions of people worldwide. With cash, individuals can buy goods and services or save without sharing their identity with a third-party merchant or custodian. But as banknotes fade from daily use, the future of financial freedom and privacy comes into serious jeopardy.

Users of platforms like Visa, Apple Pay, WeChat, or PayPal trade their freedom and privacy for convenience. Quick daily purchases done through phone apps or credit cards bear little resemblance to purchases done with cash. Transactions are no longer an exchange of bearer instruments but modified entries in a tech company's ledger. Personal information is demanded and shared rather than protected. For those without identification documents, these systems are inaccessible.

Beyond corporate money, two types of currency will most likely compete in the coming years to replace banknotes and their social function. One is central bank digital currency (CBDC): a digital central bank liability issued by governments across the world for citizens

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute.
All rights reserved. DOI:10.36009/CJ.41.2.7.

Alex Gladstein is Chief Strategy Officer at the Human Rights Foundation.

to hold and use directly in mobile wallet apps. The other is bitcoin: the world's most dominant, robust, liquid, valuable, and convertible cryptocurrency, distinguished by its monetary policy, which operates outside the control of governments and corporations. Both CBDCs and bitcoin could replace cash, but each system faces challenges in implementation, regulation, and adoption.

This article will take a global view on the civil liberties implications of both CBDCs and bitcoin as potential heirs to paper cash. According to the Human Rights Foundation (2020), approximately 4.2 billion people across 93 countries live today under authoritarian regimes. These individuals have little to no ability to push peacefully for reform concerning economic problems such as state corruption, currency debasement, and financial surveillance. Cash is a vital tool of savings and privacy for them. Once it is gone, the nature of whatever replaces it will, in no small way, dictate their freedom.

Financial Repression on the Rise

In countries like the United States and the United Kingdom, individuals have some protections against state or corporate abuse of financial power. Citizens in liberal democracies can petition effectively for change through their elected representatives, they can write op-eds to spark change in independent media, and they can even sue the government. Such accountability can trigger reform. For example, in the United States, after the global financial crisis, laws like Dodd-Frank (H. R. 4173 [2010]) were passed to prevent banks from gambling client funds. Central banks in electoral democracies also typically have some degree of independence from the executive branch, ostensibly shielding monetary policy from country's rulers' often-myopic whims. In addition, consumer protection laws, such as the Right to Financial Privacy Act in the United States, provide nominal defense against financial surveillance (FDIC 1978). But the truth is, even in liberal democracies where citizens can—in theory—protect themselves, corruption thrives and financial privacy is on the verge of extinction.

As revealed in the FinCEN files leak, in September 2020, Western banks are involved in the flow of hundreds of billions of dollars of dirty and corrupt money, much of which ends up in the coffers of the Davos elite, at the expense of the average citizen, with virtually none of the money launderers going to prison (FinCEN Files Reporting

Team 2020). A 2018 investigation by the *Financial Times* revealed that outside of a handful of executives from Iceland, Ireland, and Spain, only four bankers in the world were sentenced to jail time for their role in the global financial crisis (Noonan et al. 2018). And only one Wall Street executive—Credit Suisse senior trader Kareem Serageldin—actually went to prison. Even in democracies, financial actors at the top of the food chain have immunity, while lower- or middle-class people face a proliferation of financial restrictions.

In the United States, citizens are ruled by the Bank Secrecy Act (BSA), which forces financial institutions to disclose information about their customers to the federal government in an increasingly intrusive way. The BSA created a \$10,000 daily cash reporting threshold in 1970, but authorities never adjusted for inflation. This means more transactions fall under surveillance every year. When the threshold was first created, only transactions that were more than approximately \$60,000 (in today's dollars) were monitored, but now, as a result of gradual inflation, payments six times smaller are tracked (Bureau of Labor Statistics 2020). Ironically, the U.S. government's FinCEN *fin*es are adjusted for inflation (Financial Crimes Enforcement Network 2020).

In general, very little American economic activity is protected from the eyes of the government. In 1976, the Supreme Court case *United States v. Miller*, 425 U.S. 435 (1976) ruled that bank records are not protected under the Fourth Amendment, establishing the “third-party doctrine” holding that citizens who voluntarily provide financial information to banks have no expectation of privacy. This doctrine enables the government to collect financial data from banks without a warrant or probable cause.

The digital currency-focused nonprofit CoinCenter points out that, when the BSA was rendered constitutional in the United States in 1971, dissenting justices voiced major concerns about privacy leaks that would happen when Americans transacted through intermediaries (Brito and Valkenburgh 2020). The BSA still stands, but compared to 1971, when most small transactions were done with paper money, today nearly every transaction an American makes is done through an intermediary, available for the government to peruse.

The situation in the United States is an example of how even some of the world's most empowered citizens—protected by a Bill of Rights, an independent judiciary, and a free press—struggle to challenge the creeping erosion of their financial rights.

In dictatorships and authoritarian regimes, the prospects for financial freedom and privacy are darker still. There are no accountability mechanisms like independent media or an independent Supreme Court in countries like China, Saudi Arabia, Russia, and Turkey. Such regimes often abuse their money printing abilities to satisfy short-term aims with no public accountability, they conspire with the heads of commercial banks to commit massive fraud, and they trespass on the financial transactions of their citizens with no fear of penalty.

Ironically, the Chinese, Saudi Arabian, Russian, and Turkish governments are all part of the Financial Action Task Force (FATF), a multilateral organization responsible for crafting recommendations and customs for global financial policy. These regimes stand diametrically opposed to values like freedom and privacy, yet can influence FATF recommendations, steering the whole world toward more financial restrictions and state immunity.

These regimes routinely win seats on the United Nations Human Rights Council. There is significant public protest against this hypocrisy, but there is virtually no opposition to these same regimes being allowed to govern financial bodies. One FATF recommendation worth mentioning is the “Travel Rule,” which urges money transmitters to share customer information, creating an international financial dragnet.

In October 2020, in the United States, FinCEN and the Federal Reserve Board opened the door for a new, more invasive interpretation of this rule. Today, American financial institutions are obligated to share information about transactions of more than \$3,000. The proposed rule would mean surveillance for any international transaction of more than \$250 (Board of Governors 2020). This crackdown is in line with general government sentiment following last September’s FinCEN files leak, where authorities have called for more restrictions and less privacy to “solve” the problem of corruption.

Given expected future U.S. inflation, this trend of decreasing the surveillance threshold is especially troublesome, leading to more and more transactions under watch. As CoinCenter notes, “The current threshold for ‘travel rule’ obligations (\$3,000) was in 1971 roughly equivalent to \$20,000 in today’s money adjusted for inflation. The newly proposed \$250 threshold would equate to a \$40 threshold in 1971 when these warrantless data collection mandates were last constitutionally scrutinized” (Brito and Valkenburgh 2020: 4).

While there still may be a slim hope that citizens can push and lobby to keep some vestiges of financial freedom in electoral democracies, this possibility is nonexistent for the billions of people who live under dictatorships. Because of the great global digital transformation, even that slim hope for citizens of the free world is rapidly shrinking.

The War on Cash

Society is currently undergoing a historic shift away from paper-based, bearer asset daily money toward completely electronic, corporate ledger daily money. This change is part of a long trend of disuse of all bearer instruments, like stock certificates and bearer bonds.

Decades ago, small daily transactions were predominantly made with coins or notes, which disclosed nothing about the buyer to the seller. Cash is an excellent privacy tool, capable of fully anonymous transactions—for example, a donation to a community collection box. Cash also permits citizens to save securely. Putting money under a mattress may be widely mocked, but banknotes and especially dollar bills are still commonly stored in this manner in countries around the world.

Credit cards, on the other hand, are an excellent tool for surveillance and control. Increasingly, individuals make purchases with credit cards, smartphones, and even wearables, revealing a tremendous amount of information about them to merchants, third parties, and governments. Funds in bank accounts or phone apps are freezable and seizable. Given existing trends, where only about a quarter of daily transactions in the United States are still done with cash, it is not hyperbole to say that children born today are unlikely to use paper money as adults in the 2040s and beyond (Board of Governors 2019).

As the monetary historian Brett Scott explains, there are three traditional varieties of money in use today: (1) central bank or public money, in the form of reserves issued to banks and banknotes or coins given to the public; (2) commercial money, dispensed by those big banks; and (3) “fintech” money, private ledgers operated by tech companies using commercial bank accounts (Scott 2020).

Scott observes a “war on cash” where the (bearer asset) public money notes and coins that the world has used in the past few hundred years are being replaced primarily by commercial digital money. This was accelerated in 2020 by the Covid-19 crisis, where a Bain

analysis indicated that the pandemic could trigger a 10 percent reduction in cash payments in the coming five years (Gringoli et al. 2020). The World Bank, meanwhile, has publicly called for more digital payments for the sake of “social protection” against banknotes that could transmit disease (Rutkowski et al. 2020).

Undoubtedly, the commercial and fintech monies that Scott describes are on the rise. While a 2019 Consumer Payment Choice study showed cash still being used in 26 percent of daily American transactions, that number is down 5 percent over the previous two years alone (Board of Governors 2019). Elsewhere, from London to Seoul to Berlin to Caracas, cash plays an even smaller role in people’s daily lives. Increasingly, consumers rely on debit cards, credit cards, and phone apps built by a variety of fintech and tech companies to transact (Kumar and O’Brien 2019).

Individuals transact more and more on corporate ledgers based on, for example, dollars, euros, or renminbi. Moving forward, they could very well also be based on currencies issued by companies. The early failure of Facebook’s Libra project should not distract us from the potential future of independently run corporate currency.

According to fintech analyst Nic Carter, as of October 2020, \$20 billion of stablecoins are in circulation, with that number only projected to increase in the coming months and years (Carter 2020). While these “stablecoins” are virtual assets mainly pegged to fiat currencies, they are controlled by nonstate corporate actors and operate as a kind of shadow banking system.

No matter the form, corporate money—whether traditional fintech or new stablecoins—is censorable, trackable, subject to regulatory capture, and is an inadequate replacement for paper money and its role as a savings and privacy tool.

Central Bank Digital Currency

In the war on cash, whatever money is not replaced by Apple, Ant Financial, or a new corporate stablecoin may be replaced by a digital form of public money. Governments worldwide seek to replace cash with a new form of central bank liability known as central bank digital currency. Today, central bank liabilities exist in the form of digital reserves given to commercial banks and in the form of banknotes distributed to the public. CBDCs would be digital central bank liabilities distributed directly to the public.

An operational CBDC system could, hypothetically, allow central banks to have fine-grained control over fiscal stimulus, delivering cash to specific subsections of the population at the press of a button. In a world where citizens couldn't extract physical banknotes out of their deposit accounts, CBDCs could allow the widespread introduction of negative interest rates, where citizens would be forced to pay a fee to save their money. CBDCs could also help governments more easily confiscate funds from political opponents or even auto fine people who violate certain laws.

Already in 2020, the world's biggest governments were openly experimenting with CBDCs. As of October 2020, the Federal Reserve said it was undertaking "active research" in this area (Brainard 2020), with Fed chair Jerome Powell describing a cautious yet serious approach to CBDCs in recent public remarks (Hayashi 2020). U.S. lawmakers have proposed that reserve banks create "digital dollar" wallets (S. 3571 2020), and MIT's Digital Currency Initiative has started a research effort to explore the design of CBDCs in cooperation with the Federal Reserve Bank of Boston (Narula 2020). Elsewhere, CBDC projects are being rolled out everywhere from Beijing to Brussels to London. According to a recent survey conducted by the Bank of International Settlements, 20 percent of central banks are likely to launch a digital currency by 2025, and 80 percent of central banks are actively researching a CBDC (Auer et al. 2020).

As digital currency scholar Michel Rauchs observes, CBDCs aren't primarily about digitizing payments (Rauchs 2020). Again, most money is already digital. He argues that the real goal is to nationalize or rein in financial infrastructure and the commercial banking sector. The public sector "has effectively outsourced the creation, management, and distribution of money to the private sector," and CBDCs present a challenge to and possible reversal of this system.

There are two main visions for CBDCs: token-based and account-based systems. As monetary historian Lawrence H. White points out, account-based CBDCs would mean that "households and businesses have retail checking accounts directly" on central bank balance sheets (White 2020). He argues, convincingly, that a government bureaucracy would be spectacularly bad at handling the customer service needs of tens or hundreds of millions of new clients.

A token-based system is a more widely discussed option. This would mean that households and businesses hold central bank

liabilities (Fedcoins or digital dollars) in smartphone or computer wallets likely designed by third-party tech companies. A high-profile research and policy group called the “Digital Dollar Project” is already lobbying for a token-based model in the United States (Giancarlo and Gorfine 2019).

Regardless of the format, CBDCs will face resistance. As the *Wall Street Journal* recently reported, commercial banks are worried about CBDCs limiting their source of customer deposits and shrinking their businesses (Sindreu 2020). Some central bankers are even worried that citizens will take their commercial deposits and swap them for CBDCs, in what could amount to a massive slow-motion global bank run (Alloway and Weisenthal 2020).

CBDCs and Financial Freedom

If CBDCs can launch successfully, the big question remains: Will they function like cash and be anonymous bearer assets, not leaking anything about buyers and sellers, or will they function like commercial money and pair transactors to names and addresses and share that sensitive information with third parties? For now, governments seem united in saying they won’t design CBDC systems with full anonymity. While a payment in one of these systems may protect against leaking transaction data to the general public, backdoors would be built-in, allowing government access to the data.

In December 2019, the European Central Bank (ECB) published a paper exploring anonymity in central bank digital currencies, where they describe a “simplified CBDC payment system that allows users some degree of privacy for lower-value transactions, while still ensuring that higher-value transactions are subject to mandatory AML/CFT checks” (ECB 2019). This would be a “hybrid privacy” model (Koning 2020), which is to say, privacy would be discretionary and up to the authorities. In October 2020, the ECB noted that anonymity “may have to be ruled out” in the design of a CBDC euro (Lagarde and Panetta 2020: 27).

In the United States, the architects of the Digital Dollar Project say they will “support a balance between individual privacy rights and necessary compliance and regulatory processes.” Moreover, according to Loretta Mester, president of the Federal Reserve Bank of Cleveland, American digital cash “would be just like the physical currency issued by central banks today, but in a digital form and,

potentially, without the anonymity of physical currency” (Mester 2020: 9). The Bank for International Settlements has been perhaps the most unequivocal—noting that “full anonymity [for CBDCs] is not plausible” (BIS 2020: 6). Not often mentioned is that anonymity is a costly feature to build in a digital system and requires strong motivations to pay that cost.

In 2005, several central bank advisers, including Charles Kahn, wrote that the key social function of cash is to protect the purchaser’s identity and that, even though banknotes may get displaced, users would push for their survival (Kahn, McAndrews, and Roberds 2005). However, the ensuing decade seemed to change Kahn’s mind. In 2017, he wrote,

When central banks first took on the job of note issuance they became privacy providers. . . . As they try to get out of the paper money business, I think the future of central banks and payment authorities is no longer in privacy provision, but in privacy regulation [Kahn 2017: 11].

That regulation is subject to constant negotiation and an observable erosion of citizen rights. In fact, in 2020, Kahn pushed his opinion even further away from a defense of privacy writing that an anonymous CBDC would pose “security risks” to users (Kahn and Rivadeneyra 2020: 3).

Even if citizens of democracies could convince their governments that digital cash should have the same privacy qualities as paper cash—which seems unlikely—could such a system be built? Technically, today, the answer is unclear.

For a digital currency to provide true freedom and privacy, it must be decentralized and not have “backdoors” that enable third-party control of transactions. The only proven mechanism to achieve this goal is decentralization of transaction processing, as found in bitcoin’s proof-of-work model (Nakamoto 2008). But, as discussed later in this article, even bitcoin’s model is only pseudonymous and has significant privacy issues. There is no way, at the moment, to make a decentralized currency that has both an auditable money supply and fully anonymous transactions. If priority is given to anonymity, the system could be undermined by an undetectable “inflation bug” where attackers could exploit flaws in the code to quietly create more money, wreaking havoc on the stability of the system.

A central bank could try the centralized route and issue digital cash that doesn't offer the confiscation resistance and censorship resistance of banknotes but provides strong privacy. This technology might look like Chaumian e-cash, which could theoretically allow an administrator to issue a digital currency made anonymous through blind signatures (Chaum 1982). But even if such a system could be built where transactor identities were hidden, administrators could still freeze or confiscate funds. And unlike banknotes, which can be collected in huge amounts, governments would likely not permit digital cash usage beyond a certain daily threshold. Today's stablecoins like Tether and USD Coin provide a useful comparison, as they are digital pseudonymous currencies operated by companies, pegged primarily to dollars. And yet, they still have blacklists and comply with government regulations.

According to the public money advocate Rohan Grey, as of October 2020, there is not "a single" technical paper or resource explaining how fully anonymous public money would work (Grey 2020). A 2019 Bank of Canada overview on privacy in CBDC technology concludes that "techniques to achieve cash-like privacy are immature . . . their risks include hidden vulnerabilities, a lack of scalability, and complicated operations" (Arora and Dharba 2020).

In sum, the age of central bank liabilities offering protection from surveillance and seizure is ending. It is unlikely that electoral democracies will soon learn how to build privacy-protecting CBDCs, and even more unlikely that they would have the motivation to provide them to the public. After all, many of the features that excite central bankers—the ability to micromanage the economy or to comply better with anti-money laundering laws—are incompatible with anonymous money. And for the billions of people living under dictatorships, there is simply no hope that the crucial privacy and savings benefits of cash will survive into the digital era.

Social Engineering through Monetary Control

In the early age of digital money, before smartphones, the machine learning and AI algorithms necessary to make sense of hundreds of millions of transactions did not exist. But today, governments and corporations can understand the language of global payments. Within moments of buying something online with a tap or

swipe, your identity is revealed to authorities and data markets that share and trade your personal information. The end of cash and the insta-analysis of financial transactions enable surveillance, state control, and, eventually, social engineering on a scale never thought possible.

In China, this is unfolding with alarming rapidity and existential social impact. Real-time linking of all payments to identities has allowed for the beginnings of a vast social credit system that—though more Kafkaesque than Orwellian and seemingly patchwork for the time being—lays the foundation for eventual financial omniscience (SupChina 2020). When the government can take financial privileges away for posting the wrong word on social media, saying the wrong thing in a call to parents, or sending the wrong photo to relatives, individuals self-censor and exercise extreme caution. In this way, control over money can create a social chilling effect.

Consider Andrew Liu’s analysis of harsh Chinese mobile payment regulations: “While the Chinese government puts up an altruistic front of wanting to prevent criminal activity and improve mobile payment security, the People’s Bank of China (PBOC) and Chinese Communist Party’s true intentions . . . are far more pragmatic, and seek to help the Communist Party maintain full political, social, and economic power of the country” (Liu 2019: 96).

Today, 90 percent of citizens in the most populous Chinese cities use WeChat and AliPay as their first choice for payments and already rely on QR codes and digital wallets for transactions (Tencent 2019). But a CBDC would allow the Chinese Communist Party (CCP) to take back some of the financial power that Ant Group and Tencent have accumulated through these products while giving the government greater and easier insight into citizens’ daily micro-financial activity. As PBOC digital currency research head Mu Changchun said in October, “WeChat and AliPay are just wallets, while the DCEP is the money inside them” (Tang 2020).

DCEP, which stands for “digital currency and electronic payment,” is the CCP’s CBDC project, initiated in 2014 and launched in 2020, and is a digital liability of the PBOC. Though marketed as offering privacy for users, DCEP will offer the PBOC total surveillance capabilities, augmented by big data analysis and AI systems.

DCEP is being built primarily as a substitute for bank notes, and the PBOC doesn’t plan to pay interest. As of now, citizens will purchase DCEP with their traditional digital RMB from commercial

banks, which are required to deposit one-for-one with the PBOC in a 100 percent reserve arrangement. The PBOC recently published a draft law that includes DCEP as part of the country's fiat currency and bans any other party from issuing RMB-backed digital tokens (Tang 2020).

In October 2020, distribution began with a government handout of 10 million RMB of DCEP to 50,000 winning residents in Shenzhen, around \$30 per person (Manoylov 2020). Allocation was done by lottery, which some two million individuals signed up to enter. The winners could spend the DCEP at more than 3,000 cooperating merchants.

DCEP is already being piloted in several major regions in China, is scheduled to be used at the 2022 Olympic Games, and is a major fixture of CCP propaganda. According to a 145-page document released last summer by the Beijing municipal government, the overarching goal of Chinese products like DCEP is a “programmable society” (Graham 2020).

In a recent brief, the Australian Strategic Policy Institute made the following conclusion about DCEP:

It has the potential to create the world's largest centralised repository of financial transactions data. . . . It would also create unprecedented opportunities for surveillance. . . . It is not far-fetched that the Chinese party-state will incentivise or even mandate that foreigners also use DC/EP for certain categories of cross-border RMB transactions as a condition of accessing the Chinese marketplace. . . . A successful DC/EP could greatly expand the party-state's ability to monitor and shape economic behavior well beyond the borders of the PRC [Hoffman et al. 2020: 3].

It is fair to question claims that most people across the world will one day use a Chinese digital currency, simply because only 2 percent of the world's foreign exchange transactions are done in yuan (Brown 2020), and less than 2 percent of the world's foreign exchange reserves are held in yuan (IMF 2020). But if these numbers begin to rise, perhaps on account of broader use of DCEP by citizens around the world through phone apps, then more attention should be paid—especially given the CCP's track record of mass financial transformation, where in just a matter of years, they leapfrogged

hundreds of millions of citizens from cash, past credit cards, and straight into mobile payments.

China's control and surveillance-based CBDC system is also an increasingly inspirational and attractive proposition for authoritarian governments from Cambodia to Cuba to Cameroon. Even if a few hundred million people in North America and Europe enjoy enough civil liberties and democratic rights to push back against a digital panopticon, more than 4 billion people lack those same rights and have no way to fight back.

Another point to consider is that in a fully implemented CBDC system, governments could financially exclude individuals or entire groups of people with the press of a button, leaving them with nothing. Governments like the CCP could target dissidents, sexual minorities, ethnic minorities, or religious minorities. If banknotes don't exist and access to government-issued digital cash is revoked, then they are truly helpless.

Freedom and Privacy through Technology

Given the global prevalence of authoritarianism and the eager nature of even democratic governments to erode privacy, public-driven policy reform is unlikely to protect the digital rights of everyone in the world. The alternative is to build monetary tools that cannot be abused by governments and that protect the financial freedom and privacy of individuals.

The perspective's ethos was perhaps best enunciated by Wei Dai, a cryptographer whose pioneering work was cited in the bitcoin white paper. In a prescient February 1995 email to the Cypherpunks mailing list, Dai said:

There has never been a government that didn't sooner or later try to reduce the freedom of its subjects and gain more control over them, and there probably never will be one. Therefore, instead of trying to convince our current government not to try, we'll develop the technology . . . that will make it impossible for the government to succeed.

Efforts to influence the government (e.g., lobbying and propaganda) are important only in so far as to delay its attempted crackdown long enough for the technology to mature and come into wide use.

But even if you do not believe the above is true, think about it this way: If you have a certain amount of time to spend on advancing the cause of greater personal privacy (or freedom, or cryptoanarchy, or whatever), can you do it better by using the time to learn about cryptography and develop the tools to protect privacy, or by convincing your government not to invade your privacy? [Dai 1995]

It was easy for Dai to conclude, even in the mid-1990s, that it would be more effective to build authoritarian-resistant technology than to try and plead with governments that they should not invade individual privacy.

Over the past three decades, that strategy has been followed, and open source technology has forced public opinion and even government policy toward a more favorable view of citizens protecting their personal communications and information.

In the early 1990s, the U.S. government tried and failed to classify encryption technology as illegal. At that time, privacy activists like Adam Back printed encryption source code on T-shirts to protest the U.S. government's attempts to restrict the export of private email messaging tools. These shirts had, for example, code allowing one to encrypt a message on the front, and images of the U.S. Bill of Rights on the back, under a VOID stamp. Today, these shirts are no longer illegal to export from the United States or to show to foreigners, due to the government's changing the laws and conceding that it couldn't stop the code.

Today, communications encryption technology has become wildly popular, with open-source phone apps like Signal boasting tens of millions of daily active users and even closed-source chat applications that serve billions like WhatsApp and Facebook Messenger incorporating some level of encryption. Michael Hayden, who famously ran the National Security Administration at the time of the 9/11 attacks and the outbreak of the War on Terror, has even argued that "Americans are safer with end-to-end encryption," and that backdoors sought by the government undermine everyone's security (Hayden 2016).

Digital freedom and privacy tech have become so popular in part because many customers oppose third parties spying on or trying to sell their information. It has also spread because it is powered by open-source code that cannot be reliably stopped or easily regulated.

Personal communications remain at risk, with the governments of seven countries, including the U.S. Department of Justice (2020), recently threatening a crackdown on end-to-end encryption. But social sentiment on privacy is shifting toward mainstream acceptability. Even in authoritarian China, there is public surveillance fatigue, a fear of rising data collection (Feng 2020), and tens of millions of citizens who use VPN (virtual private network) technology to break the law and hide their internet browsing activity from authorities (Marvin 2018).

The past three decades demonstrate that even when there is no political will to enshrine digital freedom and privacy, computer scientists and cryptographers can defend it through open-source code.

Bitcoin: Open-Source Money

If all money is becoming digital, and if corporate money is going to be a tool of control and surveillance, and if most citizens across the world will not be able to convince or pressure their governments to develop and implement digital cash, then what can be done to protect financial freedom and privacy for all of humanity? Could someone do for money what the cryptographers of the 1990s did for personal communications?

Enter Satoshi Nakamoto and bitcoin, an open-source, peer-to-peer, decentralized electronic cash system. Nakamoto's (2008) creation offers three significant advantages versus CBDCs and convenient-yet-centralized fintech.

First, bitcoin is an international payment system that is not tied to any personal identification, cannot be stopped by authorities, and does not require trusted third parties. Today, with bitcoin, anyone can download software from the open internet and send any amount of money to anyone else within minutes, without asking permission from any government, without needing to provide personal information, and without the possibility of censorship. The transaction does not contain your phone number, email address, or any other identifying information. This is the revolution that Wei Dai and Adam Back pushed for in the 1990s: if citizens cannot convince governments to protect their financial rights, they must make technology that renders mass surveillance impossible.

Second, bitcoin's "be your own bank" feature makes it more difficult to seize. Users have the option of self-custody and can keep the

password to their funds written down or inscribed somewhere hidden, locked in a multiparty arrangement requiring the digital signatures of several individuals, or even memorized. When the U.S. government seized gold through executive order 6102, this effort was effective as authorities could simply go to banks custodying everyone's gold and capture it there. But it would be extraordinarily expensive and time consuming for a government to try and seize the bitcoin of all or even most of its citizens.

Third, bitcoin provides a level of financial freedom beyond even the capabilities of banknotes: protection against inflation. There were private digital currencies before bitcoin, most famously David Chaum's DigiCash. However, a fundamental problem of DigiCash and other similar experiments was that they were tied to the existing banking system. Their tokens were digital representations of dollars and euros and were, in one way or another, controllable by the issuers of dollars or euros. In contrast, bitcoin is an entirely parallel economic system.

The following text is embedded in the very first entry in bitcoin's blockchain ledger: *Times 03/Jan/2009 Chancellor on brink of second bailout for banks*. The text references a report from the British newspaper *The Times* on how the government rescued banks by printing more money. In contrast, Nakamoto created a monetary system that could not be arbitrarily inflated, instituting a decentralized, algorithmic issuance schedule that will eventually end with a final circulation of just under 21 million bitcoin. With this, Nakamoto was the first to invent decentralized digital scarcity. Like gold, bitcoin is scarce, and its issuance is based not on the whims of bureaucrats but on a decentralized global competition. But unlike gold, bitcoins are digital and can be sent across the world in minutes and can be effectively hidden from seizure.

Neither governments nor billionaires can change the rules of the bitcoin network or prevent individuals from making transactions. This set of properties has given bitcoin tremendous monetary value. Today, each bitcoin is worth more than \$50,000, and the network has a global market capitalization of more than \$1 trillion.

An increasing percentage of Wall Street and Silicon Valley insiders are starting to buy bitcoin directly or through financial vehicles. For example, Paul Tudor Jones, one of the world's most prominent investors, announced a large bitcoin position in June 2020; two months later, Michael Saylor, the CEO of the publicly traded MicroStrategy,

swapped more than \$450 million of cash on his company's balance sheet for bitcoin; and one month later, fintech giant Square announced an acquisition of \$50 million of bitcoin and has launched an effort to support bitcoin software development. Most recently, Tesla bought \$1.5 billion of bitcoin. The trends point to a future where large corporations and even governments add bitcoin positions to their balance sheets to hedge against instability and inflation.

If economic elites and governments invest in bitcoin—even if merely because of self-interest—it inhibits their ability to stop it. This could potentially drive them to want to accumulate more bitcoin, as opposed to shutting it down. The first governments to join the fray might be rogue states that may resort to bitcoin as a plan-B reserve asset if they are locked out of the Western financial system, are sanctioned, or can't easily acquire dollars or euros. In a world where there may be no government incentive or ability to make digital cash, bitcoin could harness greed and self-interest to help it survive.

Bitcoin and Financial Privacy

As of 2020, bitcoin faces several challenges in its quest to become digital cash, including privacy, small transaction usability, and merchant adoption. On a technical front, bitcoin has a long way to go to provide privacy for its users. Given its open ledger model, today it can be trivial to track transactions on its blockchain ledger. While it is true that governments or corporations have to deanonymize users first and pair their personal information to addresses to make sense of what's happening on the blockchain, the reality is that, at the moment, most users buy bitcoin from exchanges like Coinbase, where they must provide their personal information. This means Coinbase knows everything about them so that when they withdraw their funds to a private address, Coinbase knows who owns those coins. Coinbase could then be subject to regulatory pressure (perhaps a call from the NSA or FBI) or hacking (if criminals steal internal information, they might launch ransomware attacks against individuals who have withdrawn large amounts of bitcoin).

On the bright side, a growing number of smartphone applications and techniques are improving transaction privacy by enabling users to collaboratively spend their coins and move funds or make payments in an extremely difficult way for authorities to follow. There are also nascent technologies like the Lightning Network and statechains that

help by moving bitcoin transactions off the surveillable ledger onto a second layer. So, while today chain surveillance is a clear and present danger to bitcoin users, the currency's programmability points in the direction of more privacy. An upcoming bitcoin network upgrade called Taproot will provide significant privacy upgrades by enabling systems that make it harder to differentiate transactions and that push more transactional data off the ledger.

There are, of course, other cryptocurrencies that market themselves as privacy protecting. They are important to track in as much as they experiment with privacy features that aren't stable enough to be introduced into bitcoin. Monero and ZCash are two examples. There are also ways to build private transactions using Ethereum. These alternatives, however, in the long term, lack bitcoin's decentralized scarcity value proposition and are vulnerable to the following:

- Creator or majority-owner abuse or conflict;
- Undetectable inflation bugs causing instability;
- Scaling issues;
- Small crackable anonymity sets;
- Or some combination of the foregoing.

Any major problems cause the price of the system's token to drop on the open market, which disincentivizes mining, which reduces network security, causing a further drop in price. So, while these alternative cryptocurrencies are useful to observe from a scientific perspective, they project to eventually dwindle to zero in bitcoin or dollar terms, making them weak financial tools for future generations.

Bitcoin and Small Transactions

In recent years, bitcoin could be used like banknotes for small purchases, as the transaction fee was only on the order of a few cents or dollars. However, fees have at times eclipsed \$15 in recent months and should continue to rise significantly with increased global network usage. In the far future, users will pay a premium to make bitcoin transactions and will only likely use it as a settlement layer or when they need to cash out savings or take advantage of bitcoin's borderless, confiscation-resistant, censorship-resistant properties.

If bitcoin is to replicate the social function of cash over the long term, tiny amounts must be spendable. This is where second-layer scaling technology could provide a solution. Just as promises to pay gold in the form of banknotes historically triggered the growth of

commerce, and just as promises to pay banknotes in the form of credit cards later triggered the growth of even more commerce, a similar evolutionary phenomenon could be possible with bitcoin.

In addition to improving privacy, the Lightning network provides instant and cheaper payments, without users needing to trust intermediaries. Lightning fees are based on the amount sent, making it favorable for small transactions. Statechains like the Mercury network could also increase the amount of bitcoin activity without increasing the amount of network-level bitcoin transactions. Both ideas allow users to batch many payments into a single entry, avoiding transaction fees. For now, these solutions are early in development and lack sufficient usability and stability. But every few months, they are improved by a growing ecosystem of open-source developers and corporate competition.

These types of technological solutions to scaling bitcoin are vastly preferable to scaling bitcoin through third parties. For example, if 10,000 users buy bitcoin on Coinbase, they aren't making 10,000 transactions: Coinbase marks these purchases on its internal ledger, and only occasionally buys bitcoin in batches to add to its reserve. But in this case, the users don't actually control their bitcoin. They are trusting Coinbase, which knows everything about them, and bitcoin used in this way, while perhaps an effective savings asset, is simply an expansion on the current system of corporate money and not a digital replacement for cash.

Bitcoin and Merchant Adoption

A significant challenge for increased bitcoin adoption is the increasing number of restrictions on exchanges and users. If one is to use bitcoin like cash, then one should be able to buy something or withdraw bitcoin from an exchange without divulging personal information.

Mixing and second-layer privacy technology covered above may help users retain privacy after withdrawing bitcoin from custodians. But if merchants are forced by “know your customer” laws to identify customers who wish to pay in bitcoin, then any technological privacy benefits could be nullified. These rules, designed by FATF, FinCEN, and others, will provide major challenges for the growth of the bitcoin ecosystem. However, it's again important to give global consideration to bitcoin, which may not see adoption as a means of payment first in advanced economies where there is already so much fintech competition. Much of bitcoin's growing user base is elsewhere.

An increasing number of users are navigating trade channels between, for example, Nigeria and China, or sending remittances home to countries like the Philippines from thousands of miles away, or are living inside sanctioned countries like Iran and Venezuela. Merchants in certain regions will accept bitcoin to varying degrees and will be subject to, or will choose to enforce, different kinds of KYC (know your customer).

Conclusion

In “Cypherpunk’s Manifesto,” privacy activist Eric Hughes (1993) wrote: “We cannot expect governments, corporations, or other large, faceless organizations to grant us privacy out of their beneficence.” The world seems destined to track toward the extinction of banknotes and an endgame of trackable and seizable CBDC and commercial money. In the post-cash world, there simply may not be very much financial freedom and privacy. In this context, bitcoin is worthy of continued study and exploration by monetary economists and human rights activists alike.

Bitcoin’s unique combination of open source programmability, permissionlessness, scarcity, censorship resistance, seizure resistance, and decentralization makes it a promising foundation for digital cash, especially for the billions of people unable to lobby their governments to uphold digital freedom and privacy, who may have no other option.

Bitcoin is already helping individuals in nearly every country on earth replicate the savings aspect of physical cash. Whether it can just as effectively replicate the private payments aspect may be something that only follows later, as adoption and awareness spread.

References

- Alloway, T., and Weisenthal, J. (2020) “Benoît Coeuré on Central Bank Digital Currencies.” Bloomberg’s *Odd Lots Podcast* (October 21).
- Arora, R., and Dharba, R. (2020) “Privacy in CBDC Technology.” Staff Analytical Note 2020–9 (June), Bank of Canada. Available at www.bankofcanada.ca/2020/06/staff-analytical-note-2020-9/ Bank of Canada.
- Auer, R., et al. (2020) “Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies.” Bank for International Settlements (August 24).

- Bank for International Settlements (2020) “Central Bank Digital Currencies: Foundational Principles and Core Features.” Available at www.bis.org/publ/othp33.pdf.
- Board of Governors of the Federal Reserve System (2019) “The 2019 Federal Reserve Payments Study.” Available at www.federalreserve.gov/paymentsystems/2019-December-The-Federal-Reserve-Payments-Study.htm.
- _____ (2020) “Agencies Invite Comment on Proposed Rule under Bank Secrecy Act” (October 23). Available at www.federalreserve.gov/newsevents/pressreleases/bcreg20201023a.htm.
- Brainard, L. (2020) “An Update on Digital Currencies.” Speech at the Federal Reserve Board and Federal Reserve Bank of San Francisco’s Innovation Office (August 13).
- Brito, J., and Valkenburgh, P. (2020) “Comments to the Board of Governors of the Federal Reserve System and the Financial Crimes Enforcement Network on Changes to Threshold for ‘Travel Rule’ Obligations.” CoinCenter (October 29).
- Brown, T. (2020) “China’s Digital Currency Ambitions Are on Display in 1 Billion Yuan Roll Out.” *Barron’s* (October 15).
- Bureau of Labor Statistics (2020) “CPI Inflation Calculator.”
- Carter, N. (2020) “The Crypto-Dollar Surge and the American Opportunity.” CoinDesk (September 3). (Note: Carter provided author with updated number on October 30.)
- Chaum, D. (1982) “Blind Signatures for Untraceable Payments.” University of California, Santa Barbara.
- Dai, W. (1995) “Law vs Technology.” Cypherpunks Mailing List (February 10). Available at <https://cypherpunks.venona.com/date/1995/02/msg00508.html>.
- European Central Bank (2019) “Exploring Anonymity in Central Bank Digital Currencies.” *In Focus* 4 (December).
- Federal Deposit Insurance Corporation (1978) “Right to Financial Privacy Act.”
- Feng, E. (2020) “In China: A New Call to Protect Data Privacy.” NPR (January 5).
- Financial Crimes Enforcement Network (2020) “Inflation Adjustment of Civil Monetary Penalties.” *Federal Register* (February 19).
- FinCEN Files Reporting Team (2020) “HSBC Moved Ponzi Scheme Millions Despite Warning.” *BBC News* (September 20).

- Giancarlo, C., and Gorfine, D. (2019) “We Sent a Man to the Moon. We Can Send the Dollar to Cyberspace.” *Wall Street Journal* (October 15).
- Graham, M. (2020) “Last Week the Beijing Municipal Government Released a 145 Page Document Outlining Its Vision for Utilizing Blockchain to Create a ‘Programmable Government.’” We Read the Doc So You Don’t Have to. Here’s What’s Important. THREAD” Twitter (July 22).
- Grey, R. (2020) “There Isn’t One Single One, Unfortunately. But at This Stage That Isn’t the Issue as Much as Political Will.” Twitter (October 9).
- Gringoli, V., et al. (2020) “The Covid-19 Tipping Point for Digital Payments.” Bain & Company (April 29).
- Hayashi, Y. (2020) “Fed Takes Cautious Approach to Possibly Issuing Digital Currency.” *Wall Street Journal* (October 19).
- Hayden, M. (2016) “Michael Hayden: America Is Safer With End-To-End Encryption.” WBUR (March 1).
- Hoffman, S., et al. (2020) “The Flipside of China’s Central Bank Digital Currency.” ASPI International Cyberpolicy Center.
- Hughes, E. (1993) “A Cypherpunk’s Manifesto.” Available at <https://nakamotoinstitute.org/static/docs/cypherpunk-manifesto.txt>.
- Human Rights Foundation (2020) “Political Regime Map.”
- H. R. 4173 (2010) “Dodd-Frank Wall Street Reform and Consumer Protection Act.” Commodity Futures Trading Commission (January 5).
- International Monetary Fund (2020) “Currency Composition of Official Foreign Exchange Reserves.”
- Kahn, C. M. (2017) “The Threat of Privacy.” Keynote Address at Financial Market Infrastructure Conference II: New Thinking in a New Era, De Nederlandsche Bank, Amsterdam (June 7–8).
- Kahn, C. M.; McAndrews, J.; and Roberds, W. (2005) “Money is Privacy.” Available at SSRN: <https://ssrn.com/abstract=714265>.
- Kahn, C. M., and Rivadeneyra, F. (2020) “Security and Convenience of a Central Bank Digital Currency.” Bank of Canada (October 5). Available at www.bankofcanada.ca/wp-content/uploads/2020/10/san2020-21.pdf.
- Koning, J.P. (2020) “Central Banks are Privacy Providers of Last Resort.” CoinDesk (July 30).
- Kumar, R., and O’Brien, S. (2019) “2019 Findings from the Diary of Consumer Payment Choice.” Cash Product Office.

- Lagarde, C., and Panetta, F. (2020) “Report on A Digital Euro” European Central Bank.” Frankfurt: European Central Bank.
- Liu, A. (2019) “An Analysis of the PBOC’s New Mobile Payment Regulation.” *Cato Journal* 39 (1): 87–98.
- Manoylov, M. K. (2020) “Chinese City to Host Digital Currency Lottery as Part of DCEP Trial.” *The Block* (October 9).
- Marvin, R. (2018) “Breaking Down VPN Usage around the World.” *PCMag* (September 21).
- Mester, L. J. (2020) “Payments and the Pandemic.” Keynote Address, 20th Anniversary Chicago Payments Symposium, Federal Reserve Bank of Chicago (September 23).
- Nakamoto, S. (2008) “Bitcoin: A Peer-to-Peer Electronic Cash System.”
- Narula, N. (2020) “Digital Currency Initiative and Federal Reserve Bank of Boston Announce CBDC Design Collaboration.” *Medium* (August 14).
- Noonan, L.; Tilford, C.; Milne, R.; Mount, I.; and Wise, P. (2018) “Who Went to Jail for Their Role in the Financial Crisis?” *Financial Times* (September 20).
- Rauchs, M. (2020) “What CBDC Is (Not) About: Part I.” *Mrauchs.com* (October 6).
- Rutkowski, M., et al. (2020) “Responding to Crisis with Digital Payments for Social Protection.” Washington: World Bank (March 31).
- Scott, B. (2020) “The Landscape of Money: Visualizing Crypto Invasions, Stablecoins & CBDCs Amidst the War on Cash.” *YouTube* (August 18).
- Sindreu, J. (2020) “Central Banks Haven’t Made a Convincing Case for Digital Currencies.” *Wall Street Journal* (October 12).
- SupChina (2020) “In Beijing, Social Monitoring and Control Turns Kafkaesque.” *SupChina* (March 23).
- S. 3571 (2020) “To Require Member Banks to Maintain Pass-Through Digital Dollar Wallets for Certain Persons, and for Other Purposes.” *Govinfo* (March 23).
- Tang, F. (2020) “China Moves to Legalize Digital Yuan and Ban Competitors with New Draft Law.” *South China Morning Post* (October 27).
- Tencent (2019) “2019 Annual Report.”
- U.S. Department of Justice (2020) “International Statement: End-To-End Encryption and Public Safety” (October 11).
- White, L. H. (2020) “Should the U.S. Government Create a Token-Based Digital Dollar?” *Alt-M* (June 19).

PROMISE AND PERIL OF DIGITAL MONEY IN CHINA

Martin Chorzempa

Digital currency and fintech have been some of the most powerful forces for freedom and personal liberty in China for the past decade, but their future influence is uncertain. Starting as a disruptive force that gave Chinese unprecedented autonomy in their financial lives, connected either to global cryptocurrency networks or local tech ecosystems built by private firms, a new chapter is beginning. In this new era, one speech urging an emphasis on innovation instead of regulation can seemingly bring the full force of the Chinese state to bear onto a firm that once disrupted state banks with impunity. Technologies like blockchain first embraced by libertarians and cryptography enthusiasts as freeing money from dependence on the state look poised to become tools for governments to increase their ability to monitor and shape financial transactions. Meanwhile, disruptive fintech tools have become symbiotic with the major state banks, which will retain their role as the core of the financial system.

One of the most discussed but least understood elements of this potential shift in the liberating or controlling power of digital money is the plan from the People's Bank of China (PBOC) to launch a central bank digital currency (CBDC). Around 80 percent of central banks in a recent survey by the Bank for International Settlements (BIS) are now researching and exploring CBDCs, but

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.8.

Martin Chorzempa is a Research Fellow at the Peterson Institute for International Economics.

few other central banks have committed to launching one (Auer, Cornelli, and Frost 2020). China's system, dubbed DC/EP (digital currency/electronic payments) is already in consumer trials and is likely to be the first CBDC rolled out in a major economy. The impact of DC/EP will be felt not only by 1.4 billion Chinese, but will also have global implications by setting a precedent for CBDC standards that could spread around the world.

The impact depends on a set of crucial design choices that do not yet appear settled, despite the advanced stage of thinking and implementation of DC/EP. This article will explore some of these design features and their implication for privacy, consider the prospects for new controls on the economy coming from DC/EP, and conclude with an evaluation of its potential international impact.

The Origins of China's CBDC Plans

Less than a decade ago, Chinese lived under heavy-handed financial repression. They had few choices to invest their hard-earned money outside apartments, a stock market dominated by state companies, and deposits at state banks. Capital controls made it difficult to get money out of the country to freer financial markets abroad. Deposits, the most common investment, had interest rates capped by the government, part of a system designed to funnel artificially cheap funds to state companies and government priorities.

Then, starting in 2013, digital currency in two key forms took off. Chinese rushed to buy and mine cryptocurrencies like bitcoin, and fintech tools like Alipay and WeChat pay, which rely on digitization of money bundled into ecosystems of e-commerce, games, and social media, became the most important touch point for the financial system for nearly a billion Chinese. Both have since been more strictly regulated, however, to reduce the potential threat they pose to the state.

Only months after bitcoin boomed in China, regulators stepped in with rules to ensure it would not compete with the RMB as a currency in circulation or unit of account, nor could Chinese financial institutions handle bitcoin. The regulations, issued in December 2013, relegated bitcoin to a niche role as a speculative asset, and academic studies suggest that these measures stopped its role in capital flight that could move wealth out of the purview of the state (Ju, Lu, and Tu 2016). Since then, regulations have tightened to the point

that digital currency exchanges have been forced out of the country as unwelcome gateways both to risky speculation and evasion of the state's controls.

At the same time, the PBOC took away an important lesson from the bitcoin boom and subsequent rise of digital currency and blockchain technology. Rather than being forced to quickly respond to financial innovations from abroad, the PBOC and other key Chinese policymakers aim to shape the way technology is applied to finance by being at the technological frontier. Success in fintech has also become a point of national pride and strategy. PBOC Vice Governor Fan Yifei, who oversees payments and digital currency, recently said that “fintech is the commanding heights of future global financial competition” (Fan 2019).

The PBOC first began research on launching its own digital currency in 2014, when it established a dedicated research team. Though six years have passed, and even retail trials have begun, many of the important elements of what DC/EP aims to achieve and how it will work remain to be either determined, announced, or both. The PBOC has not issued the equivalent of a “white paper” that comprehensively lays out the purpose and design choices involved in issuing the digital currency, and the ambitions and scope of the initiative may change. The PBOC's digital currency research institute has numerous patents and research papers spanning the blockchain/digital currency space, but the system may not work in practice as described in patent filings or publications. Nevertheless, the basics of the DC/EP system have been gradually fleshed out, mostly through interviews in Chinese media and speeches by PBOC officials, which serve as the main source material for the following analysis.

The ABCs of DC/EP

PBOC officials have said that DC/EP will be a direct liability of the central bank, part of base money (M0) like cash that is available to individuals and institutions alike. Like cash, it will pay no interest and maintain a stable value equivalent 1:1 to regular RMB. The PBOC describes it as a “two-tiered” system, which means that while the PBOC will centrally manage the new system, banks and other intermediaries will provide the consumer-facing elements. The two-tiered distinction is important because it means the PBOC will avoid the unprecedented and risky step of providing accounts at the

central bank directly to consumers, a move most central banks believe risks too much disintermediation of the banking system and exposure to operational risks to which central banks are unaccustomed. Recent speeches by Vice Governor Fan and Mu Changchun, head of digital currency research at the PBOC, have outlined an issuance model similar to cash, in which the central bank issues digital money to qualified banks, the only intermediaries that can buy or sell it. However, once purchased, like cash the digital currency can then be transacted either with banks or other digital wallets like Alipay and WeChat Pay (Mu 2020).

While blockchain technology allows for the creation of more decentralized payment systems, Mu and Fan have said that that decentralized systems “corrode the state’s monetary sovereignty,” and that blockchain systems cannot handle the required transaction throughput of at least 300,000 transactions per second for regular retail payments (Mu 2019). The PBOC has thus opted for a centralized architecture in which it controls the ledger of balances. It will not use blockchain, but payment providers will be welcome to build payment solutions using blockchain on top of DC/EP. How exactly the PBOC will control the ledger, which means having a payment system that connects different providers of digital wallets, and be “technology neutral” as it claims it will be, is unclear.

The initial stated ambition for DC/EP is to replace part of physical cash in circulation, but eventually the PBOC envisions it entirely replacing cash—a worrying prospect for many concerned about civil liberties. Complete replacement of cash, however, is likely far in the future. Zhou Xiaochuan, the reformist central bank governor who initiated the PBOC’s CBDC plans during his tenure, said in 2016 that, “digital currency will coexist with cash for quite a long time before it finally replaces cash” (Zhou 2016). Mu Changchun also recently stated that “as long as people have a need to use banknotes, the PBOC will not stop supplying them. I personally feel that in the foreseeable future, digital RMB and banknotes will coexist for a long time” (Mu 2020).

The impact of DC/EP will also depend on the extent to which it replaces other forms of currently digital money, like commercial bank money. Vice Governor Fan has asserted that it is not meant to replace these, which in any case tend to be already digital, but it is hard to imagine that a currency fully backed by the state will not take significant market share away from bank deposits and balances in

digital wallets like Alipay due to its direct state backing and status as fiat money (Chorzempa 2018a).

The Context for Privacy in China

Contrary to often oversimplified narratives on China, in the past few years, Chinese consumers have awakened to the importance of privacy and data protection, though they have little choice when it comes to government surveillance and data access. Too often, discussion on China considers new technologies without critical context: the extent to which the current system enables surveillance without the new technology, or the practical and political difficulties of installing and making use of an effective technology.

Cash transactions in China are already not fully anonymous, because ATM machines and other scanners record the serial numbers of banknotes that enter and leave the banking system. Of course, small individual transactions are anonymous (e.g., you can buy dumplings without sharing any information about yourself with the vendor or state). The extent of privacy from the government for payment transactions on systems run by banks or popular third-party wallets that dominate Chinese online payments today is largely unknown. There are no independent courts to establish guardrails on data that the government can obtain, but some widely publicized cases of firms refusing to share data with government agencies like the central bank suggest that visions of pipes shipping real-time microlevel data to government offices on payments are inaccurate.

At the moment, Chinese generally have little choice but to have each of their payment transactions watched by either Ant Group, which runs the Alipay super app alongside an empire of financial services that plugs into Alibaba's e-commerce and services ecosystem, or Tencent, whose WeChat super app plugs payments into a social media and gaming empire and a lot more. Together, they control around 90 percent of the online nonbank payments market. Some reports indicate that Tencent's data remain fragmented between the different areas of the app (Ding 2018). Nevertheless, then-PBOC research director Xu Zhong noted in a 2018 speech on big tech in finance that, "some tech companies used tech advantages to seize market share and mixed customer data from different services, raising the difficulty of protecting privacy" (Xu 2018). The PBOC is surely right that individuals' payments data are being used

for a host of other purposes. Every transaction with Alipay and WeChat pay generates a data trail freely available for the tech companies to use for credit scoring, advertising, cross-selling, and more.

Concerns about privacy from companies, however, have led to government action that in some cases goes beyond the United States. To name just one surprising example, Ant Group, which runs the Alipay super app used by over 700 million people, found itself in a public scandal with summons from multiple regulators because its system for enrolling people in Sesame Credit scores required users to opt out in a relatively hidden part of an agreement. Meanwhile, Americans have no ability to opt out of Equifax's credit data gathering and processing, despite its disastrous data breach that put their financial lives at risk, and generally in the United States, having to opt out seems far more common than making people opt in to services.

Most Western visions of China imagine that there is some giant tube feeding all data in China, including that at private-sector companies like Alibaba and Tencent, to government officials arrayed in a giant room of screens, but this oversimplifies a complex reality of give and take. My work has chronicled the government's difficulty in gaining access to financial sector data specifically from payment providers like Alipay and Tencent (Chorzempa 2018b). For example, a government system to pool credit data called Baihang has been unable to overcome tech giant opposition to sharing their valuable data, even though its largest shareholder is the PBOC. Data from Ant Group's online consumer lending activities, which started half a decade ago and has now reached 1.7 trillion RMB in outstanding loans, was only recently added into the central bank's credit bureau. It is unknowable for any outsider the extent of government access to tech companies' payment data, but it is not unfettered.

Privacy and CBDC

Privacy is one of the most contentious issues in digital currencies, mainly because the system design can enable either far more monitoring or more anonymous digital transactions compared to physical cash or existing digital payment methods. The privacy issues can be considered at two levels: what access do government authorities have to individual transaction data, and what access do parties to the transaction (e.g., merchants, banks, and payment processors/digital wallets) have. This analysis will focus on the former, which currently is

primarily related to anti-money laundering and counter-terrorism financing (AML/CFT) regulations.

The current AML system in many countries outsources much of the search for suspicious transactions involving banks and payment companies to those institutions, which are required to report transactions above a threshold or that constitute “suspicious activity.” Government data access is not some sort of “back door” built into their systems, nor does it control the ledger that would allow it to build surveillance into the currency itself. When it comes to cash, one of the benefits (or drawbacks, depending on one’s perspective) is its near anonymity. One does not need to provide identity documents to obtain or use cash. Paying in cash does not generate a data trail tied to one’s identity at the merchant, nor for any bank or payment processor. Of course, cash’s anonymity is not absolute. AML rules often mandate that a data trail be created for transactions above some size threshold, and cash can be tracked by serial numbers when it leaves and enters the financial system, as it is in China.

“Controllable Anonymity” Privacy from Firms, not Government

The PBOC is promoting DC/EP to the Chinese public as a more privacy-preserving way to pay than China’s currently dominant payment tools run by private firms, though government access to data will be unprecedented under the new system. In September 2020, Vice Governor Fan said that the current retail payment system based largely on Alipay and WeChat (though they are not named) “still has great room for improvement in . . . user privacy protection and anonymous payment” (Fan 2020). He says that DC/EP will provide what the market has not, because of firms’ incentives to sell or otherwise employ user data.

The PBOC’s slogan for privacy in DC/EP is “controllable anonymity,” which seems like a juxtaposition of two mutually exclusive concepts. In fact, it offers consumers something of a choice between relative privacy from private-sector tech companies (by using DC/EP) or government (with Alipay/WeChat), though of course no option in China provides full privacy from authorities. Vice Governor Fan has described controlled anonymity as limiting access to the vast majority of data to the PBOC, which, however, will “grasp the entirety of information so it can employ big data, AI, and other

technology to analyze transaction data and money flows, prevent and eliminate money laundering, financing of terrorism, tax evasion, and other illegal criminal behaviors” (Fan 2020) This striking statement suggests that the PBOC will have a “god’s eye” view of a ledger that shows every balance and transaction in real time. CBDCs bundle money and a payment system, a fact explicitly recognized by China’s decision to include currency and payments together in the system’s name. How to maintain privacy under a CBDC is a difficult issue in any jurisdiction, because it is hard to imagine including features of a payment system without a strong AML/CFT regime.

A choice to make the system a “no privacy” scenario, in which the PBOC has stores and unlimited ability to access the real name of every individual or entity associated with the wallet addresses transacting with DC/EP, would encounter fierce political resistance from other parts of the bureaucracy because of what that would mean for the PBOC’s relative power. Such data could be the ultimate weapon for political battles of different patronage networks, too powerful to put in any individual’s hands, especially because of what it would reveal about powerful officials involved in corruption. Too often, “the government” or “the Party” in China is assumed to be a unitary entity, while in fact it is composed of bureaucracies and individuals within them that have diverging interests and often acrimonious disagreements. Therefore, what results is likely to have at least some privacy controls built in, if only to protect the data of important people from rivals within government.

Imagine a system like bitcoin’s design in which every transaction is tracked but only associated with a wallet address. Unlike bitcoin, only the PBOC could view the whole ledger. With the caveat that China lacks independent courts and other mechanisms that could restrain government data access, it could set procedural requirements with oversight outside the PBOC for it to request the wallet provider or bank involved to “unmask” and identify the entity associated with the address in the event of a criminal investigation. Though Yao Qian, when acting as director of the PBOC’s Digital Currency Research Institute in 2018, outlined a plan for controllable anonymity in which the PBOC would have full access to individual identity data, that does not necessarily mean the PBOC will want, or be able, to go this route (Yao 2018).

Another possible scenario is also best understood within the context of bitcoin. One can buy and sell bitcoin on Coinbase with only an

update to Coinbase's private ledger, but transfers of bitcoin in and out of Coinbase require submission to the blockchain. DC/EP could permit a similar structure, in which the PBOC would have a record of a wallet/payment provider's purchase, sale, or transfer of DC/EP to and from other wallet/payment systems. That would ensure control over the money supply and authority over the new digital equivalent of the interbank payment system. Transactions between individuals using the same wallet, however, could occur without any record being sent directly to the PBOC. Such a design would preserve many elements of the division of labor in the current financial system. It would also fulfill the "two-tier" concept the PBOC has insisted on from the beginning of the DC/EP project that maintains intermediaries between regular consumer transactions and the central bank, in addition to preserving more privacy from the government than if every transaction needed to be reported. This scenario, however, is less likely than the first because it would result in the PBOC losing the advantage in control and surveillance that DC/EP would otherwise offer it.

Officials have also discussed options to maintain a deeper level of anonymity, similar to cash today, by allowing individuals to transact and hold amounts below a threshold determined by the PBOC in DC/EP wallets without providing identification or linking to a bank account, which it calls a system "loosely coupled" to bank accounts. Officials familiar with the current plans confirmed that this kind of system will involve registering wallets only with phone numbers that can only be linked to them with a special data request from the PBOC to the telecom companies. This idea, part of an initiative to expand financial inclusion to an unbanked population about as large as the entire population of the United States, also includes support for offline transactions so that people in rural areas without reliable internet access can still transact peer-to-peer digitally. This feature, however, is not yet part of the public pilot program, as it is technically more complex than online transactions that the PBOC can verify.

Despite claims of a focus on anonymity, all signs point to DC/EP enabling much greater surveillance of financial transactions than the current system. Sensible design choices could create a useful compromise, but the desire to surveil could well overcome political constraints and inter-department turf battles, meaning DC/EP would end all privacy from the government for financial transactions that use the system.

Control

One of the primary motivations for many central banks exploring CBDCs is an increase in the controls they have over the economy, including the ability to impose negative interest rates without risking a flight to paper cash. In China, the PBOC has not yet endorsed use of smart contracts or adding new functionality into money that would raise serious civil liberties concerns, though they do not rule out adding this later.

In 2018, Vice Governor Fan spoke about the potential for digital currency to enable regulators to program in, for example, automatic tax payments on transactions or block payments that might fund terrorism. However, he also said that there would need to be solid legal footing to do so, which would most likely necessitate amending the definition of the currency in the central bank law (Fan 2018). There is good reason to think that smart contracts are not coming to DC/EP anytime soon. A revision to the central bank law proposed in October 2020, which includes formal recognition of the RMB's digital form, does not include any smart contract-related alterations, and the law is not amended often—the last time was in 2015 (People's Bank of China 2020).

Conclusion

Despite being one of the most advanced economies in development of a CBDC, China's plans as presented to the public still leave many of the most important questions and tradeoffs about privacy and control unanswered. DC/EP will likely continue the general pattern of privacy protections in China, which increasingly constrain private actors' data gathering and use activities but at the same time increase the government's technical capability to surveil the populace and control more economic transactions. Chinese have already largely given up privacy by giving up cash to adopt digital payment systems, and they may end up in the next stage transacting CBDC in Alipay or WeChat Pay wallets, giving their data to both the government and private-sector wallet providers. That would be the worst-case scenario for civil liberties.

However, the more the surveillance and control is built in, the more the digital RMB's chances to attain international influence will be constrained. Few governments like dollarization, but at least their citizens can transact without the Federal Reserve seeing every one of

their retail transactions. None would want their citizens using an off-shore digital RMB if it would mean opening their domestic transactions to Chinese government surveillance or future controls.

Though other central banks' approaches to privacy are also not fully fleshed out, some based in democratic countries are already working on what appears to be an alternative vision for CBDC more in line with their values, as evidenced by the recent BIS report on central bank digital currencies that pointedly did not include China (BIS 2020), which suggests that China's pioneering role in CBDC development will not automatically result in other countries following the PBOC's standards or taking the same side of important trade-offs. Other countries, will, however, be able to learn from China's successes and missteps with DC/EP, making China a preview of a potential future that appears in time to ensure that objectionable versions of it do not make their way to other countries.

References

- Auer, R.; Cornelli, G.; and Frost, J. (2020) "Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies." BIS Working Papers No. 880 (August).
- Bank for International Settlements (2020) *Central Bank Digital Currencies: Foundational Principles and Core Features*. Report No. 1. Basel, Switzerland: BIS. Available at www.bis.org/publ/othp33.pdf.
- Chorzempa, M. (2018a) "China's Central Bank-Backed Digital Currency Is the Anti-Bitcoin." Peterson Institute For International Economics *China Economic Watch* (January 31).
- _____ (2018b) "China Needs Better Credit Data to Help Consumers." Available at www.piie.com/publications/policy-briefs/china-needs-better-credit-data-help-consumers.
- Ding, J. (2018) "Tencent: A Complete Takedown and Rethinking of China's So-Called AI Giant." *ChinAI Newsletter* No. 25 (August 26).
- Fan, Y. F. (2018) "Yicai Interview: Some Thoughts on Central Bank Digital Currencies." Available at www.yicai.com/news/5395409.html.
- _____ (2019) Speech at the Sina Financial Qilu Forum, November 28. Reported in "Fintech Will Be the Commanding

- Heights of Global Financial Competition in Future: PBOC Vice Governor Fan Yifei.” *China Banking News* (November 29).
- _____ (2020) “范一飞：关于数字人民币M0定位的政策含义分析.” *Yicai Media* (September 14). Available at www.yicai.com/news/100770937.html.
- Ju, L.; Lu, T.; and Tu, Z. Y. (2016) “Capital Flight and Bitcoin Regulation.” *International Review of Finance* 16 (3): 445–55.
- Mu, C. C. (2018) “Speech at the Third Yichun Forum.” *China Finance 40 Forum* (August 10). Available at https://k.sina.com.cn/article_6465571420_18160ca5c01900i0li.html.
- _____ (2020) “穆长春谈数字人民币钱包：已发现假冒的深圳没在二手房试.” *Bund Financial Summit* (October 26). Available at <https://web.archive.org/web/20201103122329/https://www.cnbeta.com/articles/tech/1045037.htm>.
- People’s Bank of China (2020) “中国人民银行关于《中华人民共和国中国人民银行法（修订草案征求意见稿）》公开征求意见的通知.” People’s Bank of China (October 23). Available at www.pbc.gov.cn/goutongjiaoliu/113456/113469/4115077/index.html.
- Xu, Z. (2018) “大技术公司如何影响金融发展?.” *Yicai Media* (November 18). Available at <https://www.yicai.com/news/100061767.html>.
- Yao, Q. (2018) “Technical Aspects of CBDC in a Two-Tiered System.” Available at www.itu.int/en/ITU-T/Workshops-and-Seminars/20180718/Documents/Yao%20Qian.pdf.
- Zhou, X. C. (2016) “Transcript of Governor Zhou Xiaochuan’s Exclusive Interview with *Caixin Weekly*.” People’s Bank of China (February 14). Available at www.pbc.gov.cn/english/130721/3017134/index.html.

TEN STABLECOIN PREDICTIONS AND THEIR MONETARY POLICY IMPLICATIONS

Caitlin Long

Thank you to the Cato Institute for your kind invitation for me to address you today. I'd like to make clear that these remarks are mine personally and not those of Avanti or any other group with which I'm affiliated.

Jim Dorn booked me for this way back on February 11, 2020, when the world was a very different place. Covid-19 was already ravaging the world, but back then most hadn't predicted the regime-shifting impact it would have on physical cash and the face-to-face processes involved in banking. End-to-end digital ways of transacting have suddenly replaced long-entrenched analog ways of doing things. And one place where that regime shift had a massive impact relative to its pre-Covid status is the U.S. dollar stablecoin market.

Stablecoins are financial obligations issued on a blockchain. They are generally fully collateralized with either fiat currency deposits at a bank, or with short-term government bonds held at a custodian. They're issued only by nonbanks, although FINMA in Switzerland does allow Swiss banks to issue Swiss franc-denominated stablecoins. Usually stablecoins do not pay interest, and they are designed to trade at par with the fiat currency. Because they are issued on a

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.9.

Caitlin Long is Founder and CEO of Avanti Financial Group. This article stems from her Keynote Address at the Cato Institute's 38th Annual Monetary Conference on November 19, 2020.

blockchain, they usually settle in minutes, with irreversibility, and—critically—they are “programmable,” which means users can build their own software applications to interact with them.

The value of U.S. dollar stablecoins outstanding on the day Jim contacted me was \$5.6 billion. Today, it is \$22.1 billion. How prescient of Cato!

But the real story is that annualized stablecoin trading volume is \$16 trillion by one measure (Coinmarketcap.com), which is huge compared to the U.S. B2B payment volume of \$25 trillion (Mastercard 2018). How does \$16 trillion of trading volume happen when a base of only \$22 billion of the underlying is outstanding? Answer: velocity. One stablecoin is turning over at a reported rate of 914x per year right now. Another is at 158x, and another is at 70x. By looking at publicly available blockchain data, it’s easy to confirm that the average velocity of U.S. dollar stablecoins is at 109x—again, this is verified data. These are eye-popping velocities relative to the velocity of traditional forms of U.S. dollars. Something interesting is happening here.

But what does it mean for monetary policy? Remember, in the United States, stablecoin issuers are in all cases nonbanks. But stablecoins do impact the traditional financial system in two ways. First, they are an important new source of demand for T-bills and other Level 1 high-quality liquid assets (HQLAs)—the very same, scarce high-quality liquid assets that traditional banks need for meeting their capital and liquidity coverage ratio requirements, and which also are so critical to monetary policy transmission channels such as the repo and other pledged collateral markets. Second, stablecoins can touch traditional banks directly, as banks may hold the cash collateral backing the stablecoin obligations of nonbank issuers. Indeed, the OCC in September explicitly acknowledged that U.S. national banks may do this.

Ten Predictions

With that as background, here are my 10 stablecoin predictions and their monetary policy implications.

Prediction 1

U.S. dollar stablecoins outstanding will quadruple again to more than \$100 billion by year-end 2021.

Prediction 2

U.S. dollar stablecoin velocity will continue at “shock and awe” levels relative to the velocity of traditional forms of U.S. dollars. Again, high velocity is the real story about stablecoins. What is causing that, and is it sustainable? The key characteristics of stablecoins are fast settlement; settlement finality; traceability on a blockchain; public, open-source protocols; and, probably most importantly, programmability—in other words, faster, better, cheaper technology. These are all desirable characteristics to many users, ranging from digital asset traders to everyday businesses. Among the everyday businesses that are using stablecoins, according to the CEO of one stablecoin issuer, are “e-commerce marketplaces, advertising networks, luxury goods producers, recruiting platforms, digital content markets, peer-to-peer lending platforms, payment companies, software firms, professional services firms, rewards businesses, mobile banking providers and other internet companies” (De 2020).

It’s worth stepping back to discuss the origin of stablecoins. They were invented to solve real problems. Trades in digital assets settle in minutes and with finality—that is, once a bitcoin is sent, it’s gone and it can’t be reversed. But U.S. dollar payment systems don’t work that way. For example, ACH payments can take days to settle and can be clawed back by the sender. This is a real risk issue for intermediaries in digital assets. If, for example, a customer purchases bitcoin with an ACH transfer, takes delivery of the bitcoin, and then claws back its ACH transfer, the intermediary is out both sides of the trade. This is a huge risk. If the U.S. dollar leg is in the form of a stablecoin, though, the risk is minimal or potentially even zero. The problem for institutional digital asset traders who typically don’t pay with ACH is slightly different but it’s still there—they can’t settle both the digital asset and U.S. dollar legs of their trades simultaneously, 24/7/365, with finality. This means counterparty risk abounds because one side is carrying the unsettled trade while waiting for the dollar leg to post with finality (FX traders may recognize this as “Herstatt risk”). So, stablecoins go a long way toward solving fundamental risk issues in digital assets, and therefore it’s no surprise that the digital asset industry invented a new way to settle the U.S. dollar legs of their trades.

In sum, high stablecoin velocity is no accident because stablecoins really are a faster, cheaper, better, auditable—and programmable—way to move U.S. dollars. Indeed, a FEDS Notes piece written in

August 2020 by Wong and Maniff explores the concept of “programmability” in money, which enables the automated execution of operations using code (Wong and Maniff 2020). Users of U.S. dollars are voting with their feet, flocking to programmable versions for these fundamental reasons.

Prediction 3

Stablecoins will be an important new tool for monetary policymakers. Stablecoins have high natural velocity, which means they create liquidity without using leverage. Monetary policy has traditionally relied on forms of leverage to create liquidity, such as traditional money multipliers or collateral re-use. But stablecoins don’t need leverage to create liquidity. The technology on its own generates the liquidity, without the need for leverage.

Let’s unpack this concept. Liquidity that greases the wheels of commerce must, by definition, flow through the financial system, and it can come from three places—from expanding central bank balance sheets; from expanding private financial institutions’ balance sheets; or from higher natural velocity of both official and private-sector institutions’ *existing* balance sheets. So, it’s not necessarily true that the financial sector’s aggregate balance sheet must keep expanding in order to provide the liquidity needed by the nonfinancial sector. Higher velocity of existing financial-sector balance sheets, delivered via technology in lieu of leverage, could be a tool in the monetary policy toolkit too.

As I’ll discuss in a moment, by bringing stablecoins into the banking system, monetary policymakers have an opportunity to deploy existing central bank reserves that are currently dormant, thereby relieving some of the pressure to use QE. Commercial bank-issued tokens backed by reserves on deposit at central banks would complement, not compete with, existing real-time gross settlement efforts of central banks, such as FedNow.

In September 2020, the *Financial Times* published a piece co-authored by IMF economist Manmohan Singh and me on this topic, summarizing a chapter on which we collaborated in the most recent edition of his book, *Collateral and Financial Plumbing* (Singh 2020). I’ve been citing his work regarding the velocity of collateral reuse for years, going back to my Morgan Stanley days when I helped corporate clients understand liquidity risks in financial markets. The size and leverage of dealer balance sheets has always been a key driver

of liquidity, especially in the repo and related securities financing markets. Indeed, I found it notable when a globally systemically important bank (GSIB) in August appointed the former head of its repo desk to be the new head of its digital asset group, based in London (where rehypothecation and commingling rules differ from those in the United States). Keep a close eye on this space.

Prediction 4

Stablecoins will grow big enough to start gumming up monetary policy within five or so years, assuming they're not brought inside the banking system before then. Stablecoins are “collateral silos”—they wall off T-bills and other high-quality liquid assets, making these scarce HQLAs unavailable for reuse in pledged collateral markets. This is not an issue yet because stablecoins are not big enough yet, but it is of course one of the big issues raised by policymakers when Facebook Libra was announced last year. European Central Bank staff issued a bulletin about this in May 2020, noting that Facebook Libra could become a \$3 trillion collateral silo. The delayed launch of Facebook Libra merely bought time but didn't solve the monetary policy pressure posed by the siloing of collateral by stablecoin issuers generally—because the market outside of Facebook Libra is proliferating.

As we move to the next prediction, it's worth noting that only some of the total collateral that backs stablecoins is HQLAs, as some of it is also in bank deposits.

Prediction 5

Owing to payment system risk, the cash collateral managers of stablecoin collateral will be mostly nonlending banks. There is significant liquidity risk in managing stablecoin cash collateral. Stablecoin deposits are “volatile money deposits,” and there are scenarios in which they could be withdrawn in huge size within the span of minutes—so they might even be the hottest of hot money deposits. This liquidity risk can easily lead to payment system risk, in the event of sudden, unexpected, large withdrawals of stablecoin deposits at banks, especially for a bank in an overdraft position that has exhausted both its short-term and long-term liquidity sources. This is why it's critical that the banks managing stablecoin deposits not

invest the assets backing them in anything other than cash or T-bills (the shortest of short-term Treasuries). The Federal Reserve has, in my opinion, been prudent in its management of the payment system risk posed by stablecoin deposits at commercial banks already, and in multiple ways.

Markets almost got a small test of these risks in November when an unusual event, called an accidental fork, happened on the Ethereum network, which is the blockchain used by several existing U.S. dollar stablecoins. For a few hours, there was a chance that stablecoins on one fork would have to be “burned” (which means canceled and redeemed for cash), thereby raising the risk of a large and sudden withdrawal of U.S. dollar deposits at the banks holding stablecoin collateral. For a nonlending bank that invests the assets backing these deposits entirely in cash and/or T-bills, that has planned for this possibility and knows how to manage through it, this wouldn’t be a big problem.

As the volume and velocity of stablecoins grow, the liquidity risk, of course, will grow too. For this reason, it will become increasingly important for the banks managing stablecoin cash to be nonlending banks or perhaps liquid asset banks that ring-fence the investments in segregated, bankruptcy-remote accounts—and, again, invest the assets backing stablecoin deposit liabilities in 100 percent risk-free, short-term, and liquid assets. Indeed, one reason why Wyoming chose its Special Purpose Depository Institution (SPDI) charter to be a nonlending charter is precisely because leverage and digital assets do not mix. Let me pause and repeat that—leverage and digital assets do not mix. Digital assets generally settle in minutes and with settlement finality, which means leveraged financial institutions that handle them could quickly find themselves in trouble if they don’t manage the liquidity risk well—digital assets move fast. So, there’s a fundamental reason why digital assets should interface with the traditional financial system via nonleveraged banks whose demand deposit liabilities are 100 percent backed by risk-free, short-term, liquid assets.

Prediction 6

Consequently, central banks will allow nonlending banks to issue stablecoin-like instruments. For context, it’s important to note that the vast majority of payment system or money transfer innovations

historically have been driven by the private sector, including credit cards, ATMs, the SWIFT electronic transfer system, automated clearing houses, and person-to-person payment processes. Similarly, private-sector banks will likely lead by issuing stablecoin-like instruments.

But when banks issue these instruments, they will be something very different than stablecoins though—let’s call them tradable bank deposits. Bringing them into the banking system would help address the valid concerns voiced by Federal Reserve Governor Lael Brainard about the legal, regulatory, financial system stability and private money implications of stablecoins issued by nonbanks (Brainard 2020). By green-lighting tradable bank deposits, policy-makers will have a direct macroprudential view and supervisory role over all the activity—instead of the indirect view into nonbank stablecoin issuers that they have today. It’s a logical next step that creates opportunities as well, including the ability to distribute program funds such as the Paycheck Protection Program (PPP) to customers quickly. Of course, nonlending banks can’t lend, but they can distribute payments to customer wallets near instantly; and to distribute PPP loans (for example), they could have partnered with banks that do lend. So, for both offensive and defensive reasons, I predict that central banks will authorize nonlending banks to issue tradable bank deposits on a blockchain, 100 percent backed by risk-free, short-term, liquid assets including cash on deposit at central banks directly, just as FINMA has already authorized in Switzerland.

Prediction 7

The next prediction is a caution—there will be problems if the key legal and regulatory infrastructure is not yet ready for this, which it is not yet in most of the world. In the United States, it is critical to clarify two things: (1) the commercial law treatment of digital assets under the Uniform Commercial Code (UCC), which is state law in the United States; and (2) the bankruptcy regime for intermediaries handling digital assets. One of the current challenges is that all but one U.S. state—Wyoming—have not yet clarified either of these. As a result, there is no clear roadmap for how digital assets would be divvied up in the event of a bankruptcy of a digital asset custodian outside of Wyoming, such as an uninsured state trust company or state-licensed money transmitter. A bankruptcy court would have to

rely on imperfect analogies and old common law concepts. Although the UCC does provide some clarity regarding the treatment of digital assets if they are held with a bank or broker dealer (and the parties agree to treat them as “financial assets” under Article 8), only 20–25 percent of digital assets are actually held this way. The remainder—the vast majority of digital assets—are owned directly by individuals or held in a different manner, so the UCC characterization of these is far from clear. Consequently, until all this is clarified, the bankruptcy of a U.S. intermediary handling digital assets, other than a bank, broker-dealer, or futures commission merchant (FCM), would be a mess.

And even for the receivers of banks, brokers, and FCMs, which have their own separate receivership processes, the lack of a commercial law roadmap for their receiver to follow (except in Wyoming) means the receivership would almost certainly be bogged down in litigation.

Thankfully, there’s one state in the United States that has plugged every one of these holes—the state of Wyoming. It has already spent nearly three years clarifying all this and preparing to regulate banks that handle digital assets. As with any financial services regulations, first come the laws, then come the rules and then comes the supervisory exam manual. Only Wyoming has completed all three of these steps. Specifically, spanning three different legislative sessions, the Wyoming legislature has enacted 20 blockchain laws, signed into law by two different governors. Among these is Wyoming’s special purpose depository institution charter (SPDI)—a bank charter specifically tailored to enable a bank to provide custody of digital assets and U.S. dollar services around them. You’ve already heard the fundamental reasons why an SPDI is structured as a nonlending bank, but there’s more. SPDIs offer special consumer protections for digital assets, customers are protected by a statutory receivership process, and SPDIs must submit resolution plans—so-called living wills—just like SIFIs must do.

So, that’s it for the laws—let’s next discuss the rules. In early 2019, the Wyoming Division of Banking ran a process to gain input from digital asset industry experts, including technologists, attorneys, compliance experts, and a consumer advocate, and Wyoming’s digital asset rules became effective in summer 2019. This process also had a key benefit of providing important training in digital assets for the bank examiners who will be supervising Wyoming SPDIs.

The third and final step is the supervisory exam manual. The Wyoming Division of Banking hired Promontory Financial Group out of Washington, D.C., as well as outside digital asset compliance consultants to help it prepare a 750-page supervisory exam manual for SPDI and digital assets. And—here’s the proverbial cherry on top—the Wyoming Division of Banking is conducting training in early 2021 for bank regulators across the United States regarding how to supervise companies involved in digital assets. Led by Commissioner Albert Forkner, the second-longest-serving state bank commissioner in the United States, Wyoming has also worked extensively with federal regulators in all relevant agencies and has already established information sharing or joint supervisory agreements with other regulators outside the United States that also supervise institutions servicing digital assets. In other words, Wyoming has dotted its “i”s and crossed its “t”s. No other jurisdiction or regulator in the United States has all the laws, rules, examination manuals, and examiner training for digital assets in place yet.

Other states will certainly catch up to Wyoming eventually, and indeed many states are in various stages of adopting Wyoming’s laws and copying its SPDI bank charter. State commercial laws generally are being updated for digital assets through a Uniform Law Commission process, which should be finished by approximately 2022 (and thereafter the other 49 state legislatures would need to adopt the new commercial law, which adds even more time to the timeline). All this is good and will probably happen over time. But what we don’t know is whether it will happen *in time*—digital asset use is spiking *now* as more mainstream users are entering the market.

The compliance arm of the mainstream financial sector is already prepared to handle this, as digital asset companies have been registered with FinCEN for several years already in the United States, and law enforcement has been successfully working with existing stablecoin issuers for years too.

But the legal and regulatory arms of the mainstream sector, except in pockets like Wyoming, still have a *lot* of work to do!

Prediction 8

The rise of so-called modern core banking software systems will be a critical component to the smooth functioning of tradable bank deposits within the traditional financial system’s plumbing, including connectivity with FedNow when that comes online. Speaking from

the perspective of a de novo bank that intends to become an active user of FedNow, I am excited about the role of tradable bank deposits integrated into FedNow.

Prediction 9

Tradable bank deposits backed 100 percent by risk-free, short-term, liquid assets will become a new, pristine form of collateral available to help alleviate collateral scarcity in the repo and other pledged collateral markets. In other words, stablecoins can become a valuable new monetary policy tool if they are brought inside the banking system, instead of kept outside where they are building collateral silos that could grow big enough to gum up monetary policy by altering the collateral reuse channel of monetary transmission. The value of tradable bank deposits to collateral markets is not necessarily because they can be pledged (although they might be), but because they don't necessarily need to be—since they settle fast and with finality, which means they can be reused and reused and reused every day. They're also programmable and auditable, which means the length of collateral chains involving them can be measured by risk managers and prudential regulators alike.

Prediction 10

Programmable forms of the U.S. dollar will extend the dollar's reserve currency status. Here I must credit Nic Carter, a partner at Castle Island Ventures. Nic explained this in a February 2020 post called “Policymakers Shouldn't Fear Digital Money: So Far It's Maintaining the Dollar's Status,” writing: “Far from compromising the dollar's mighty advantage internationally, cryptocurrency, and the infrastructure built to support it, will most likely entrench its position” (Carter 2020). Why? Because stablecoins accelerate dollarization by “near-frictionlessly distribut[ing] dollars” across the world. A somewhat similar argument was made by monetary historian Niall Ferguson—originally a big critic of digital assets who changed his mind last year—along with author Michael Casey on the *Unchained* podcast in July 2020. They debated the financial technology race among nations, especially between the United States and China, and generally concluded it will turn on whether the United States allows the emergence of a programmable dollar to fix its antiquated payment systems, which Ferguson has called

“largely a relic of the 1970s” (Morris 2019). Well, I just looked it up and guess what—U.S. dollar stablecoins outstanding have doubled since Ferguson and Casey recorded their podcast in July 2020, and the average velocity of each stablecoin has also doubled. Thankfully, programmable dollars are already emerging—the real question is whether monetary policymakers leave them outside the banking system or bring them inside.

An Important Tool for Regulatory Transparency

Before closing, I’d like to refer back to one of the most formative speeches for me regarding digital assets and the mainstream financial system, which happened here at a Cato conference on digital assets back in April 2016. Then CFTC Commissioner, Chris Giancarlo, spoke about the “practical impossibility of a single national regulator collecting sufficient quality data . . . to recreate a real-time ledger of the highly complex, global swaps trading portfolios of all market participants.” In the Q&A afterward, he continued:

At the heart of the financial crisis, perhaps the most critical element was the lack of visibility into the counterparty credit exposure of one major financial institution to another. Probably the most glaring omission that needed to be addressed was that lack of visibility, and here we are in 2016 and we still don’t have it. The benefit of DLT [blockchain] technology is to provide a comprehensive market view so that regulators can then make recommendations to Congress and other policymakers about what to do about the inter-locking relationships. But before we can even get to the policy concerns we need to first have that comprehensive, consistent view, which we don’t have today. . . . If allowed to thrive, blockchain may finally give regulators transparency [Giancarlo 2016].

I agree 100 percent with his remarks. And it’s no accident that Commissioner Giancarlo and I are both working independently on forms of digital dollars, albeit from very different angles. Digital dollars are coming to the banking system—as well they should.

I believe the practice of delayed net settlement in payments is one major reason why securities also still settle on a delayed net settlement basis (currently T+2 days). This practice used to make sense

due to technology constraints, but it's been years since those constraints were binding anymore.

I believe that making payments programmable will ultimately drive other asset classes to become programmable too—including and especially securities and derivatives. Many of you have heard me speak previously about inherent inaccuracies in Wall Street's ledger systems, such as the 2017 Dole Food litigation example (where customers submitted their brokerage statements to a Delaware court to prove their ownership of Dole shares, and the sum of all those shares reported on the brokerage statements actually exceeded the quantity of real Dole shares outstanding by a whopping one-third). Another example is my personal experience of a top custody bank that held a pension client's securities in a nonlending, segregated custody account—but when the pension fund instructed the custody bank to deliver the securities, the custody bank had to admit it didn't actually have them all (even though, again, the pension fund's brokerage statement showed they were there). Innocent people have had their pockets picked in these situations, and that's just wrong. But these situations are tolerated because the ledger systems inherently need fault tolerance—it's simply never possible in a delayed net settlement system for all the various ledgers to be in perfect sync with each other. This is one reason why Commissioner Giancarlo was right when he said in his 2016 remarks here at Cato that prudential regulators don't have sufficient visibility into the counterparty credit exposure of major financial institutions to each other, and that—if allowed to thrive—blockchain may finally give regulators that much-needed transparency.

Conclusion

Not much has happened since 2016 to give regulators that transparency in the securities and derivatives realms, but—oh boy—a lot has happened in the U.S. dollar payments realm since then. And these advances give me good reason to be optimistic that, when digital dollars are widely adopted in financial markets—which they inevitably will be—they will finally give regulators the transparency they need to ensure financial system stability.

References

- Brainard, L. (2020) “The Future of Retail Payments in the United States.” Speech at the FedNow Service Webinar, Washington, D.C. (August 6).
- Carter, N. (2020) “Policymakers Shouldn’t Fear Digital Money: So Far It’s Maintaining the Dollar’s Status.” *Coin Desk* (February 19).
- Casey, M., and Ferguson, N. (2020) “Why Bitcoin Now: Michael Casey and Niall Ferguson on How Bitcoin Fits in the History of Money.” *Unchained Podcast* Ep. 181 (July 14).
- De, N. (2020) “Circle CEO Claims ‘Explosive’ Stablecoin Demand from Everyday Businesses.” *Coin Desk* (April 16).
- Giancarlo, J. C. (2016) “Keynote Address.” Speech at the Cato Institute Conference on “Cryptocurrency: The Policy Challenges of a Decentralized Revolution.” Cato Institute, Washington, D.C. (April 12).
- Mastercard (2018) “New Opportunities in B2B Payments: Perspectives on Creating Value for Middle-Market Companies.” Mastercard Market Intelligence Report.
- Morris, D. Z. (2019) “Financial Historian Niall Ferguson: A Big Tech Digital Dollar Would Be a Nightmare.” *Breakermag* (February 13).
- Singh, M. (2020) *Collateral Markets and Financial Plumbing*. 3rd ed. London: Risk Books.
- Singh, M., and Long, C. (2020) “How Programmable Digital Assets May Change Monetary Policy.” *Financial Times* (September 4).
- Wong, P., and Maniff, J. L. (2020) “Comparing Means of Payment: What Role for a Central Bank Digital Currency?” FEDS Notes. Washington: Board of Governors of the Federal Reserve System.
- Wyoming State Legislature. HB 74. Adopted February 26, 2019. Available at www.wyoleg.gov/Legislation/2019/hb0074.

CRYPTOCURRENCIES AND ALL THAT: TWO IDEAS FROM MONETARY ECONOMICS

Jesús Fernández-Villaverde

The monetary arrangements of societies are the result of the interplay of technology and ideas. Technology determines, for example, which coins can be minted and at what cost. For centuries, minting small-denomination coinage was too costly to induce Western European governments to supply enough small change (Sargent and Velde 2002). Only the arrival of steam-driven presses fixed this problem (Doty 1998). Simultaneously, ideas about private property and the scope of government determined whether private entrepreneurs were allowed to compete with governments in the supply of small change (Selgin 2008). Technology and ideas about money engage dialectically. Technological advances shape our ideas about money by making new monetary arrangements feasible. Ideas about desirable outcomes direct innovators to develop new technologies.

Few moments illustrate the engagement between technology and ideas as pointedly as the last decade. The combination of powerful new cryptographic algorithms (von zur Gathen 2015) and the widespread adoption of high-speed internet has allowed the appearance of cryptocurrencies, issued either by private parties (such as bitcoin and Ether) or, potentially, by central banks (also called central bank

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.10.

Jesús Fernández-Villaverde is Professor of Economics at the University of Pennsylvania, a Research Associate for the National Bureau of Economic Research and Penn's Population Studies Center, and a Research Affiliate of the Centre for Economic Policy Research. He thanks Daniel Sanches, Linda Schilling, and Harald Uhlig for many conversations regarding the issues discussed in this article. The usual caveat applies.

digital currencies, or CBDCs; Barrdear and Kumhof 2016). The revolutionary potentialities of those developments (and related advances in artificial intelligence and fintech more in general) are probably bigger than those of any other development in monetary arrangements since the collapse of the classical gold standard during the Great Depression.

Monetary economics must catch up with the new cryptocurrency landscape and help to shape it. While software engineers, financial experts, and entrepreneurs are key players in this process of change, monetary economists have a complementary perspective that can add much to the dialectic process outlined above.

In this article, I want to highlight two ideas from monetary economics that have helped me to organize my thinking about cryptocurrencies. Not only do I believe that these ideas illustrate my assertion regarding the importance of monetary economics at this crossroads of technological innovation, but also I have often found that these ideas are not sufficiently appreciated by those who look at cryptocurrencies from alternative perspectives such as computer science and the industry.

First, monetary economists are keenly aware that talking about money is talking about frictions. Societies use money because there are essential frictions to trade. Far from participating in an idealized Arrow-Debreu environment, economic agents participate in sequential trades with varying degrees of anonymity, imperfect monitoring, and lack of commitment. Money appears in societies because agents search for ways to achieve allocations that, in the presence of frictions, could not be achieved without a medium of exchange. In other words, money is essential.

The presence of frictions, however, brings a sharp implication: we cannot assume that the market allocations would be Pareto optimal in the same way that we can work with the presumption of efficiency in textbook Arrow-Debreu environments.¹ Frictions create money, but they also destroy the presumption that private arrangements can be aggregated into desirable outcomes. Therefore, public policy has a potential role to play that does not exist, for instance,

¹One can think about this point, using a legal analogy, as determining where the burden of proof lies. In textbook Arrow-Debreu economies, the rebuttable presumption is that the equilibrium is Pareto optimal. In monetary economics, the rebuttable presumption is that the equilibrium is not efficient.

in the production of pencils (Friedman and Schwartz 1986). There is no Federal Pencil System, but there is a Federal Reserve System.

The statement regarding the failure of markets in delivering efficient monetary arrangements is more nuanced than it may seem at first sight. While there is a clear role for government intervention, public policies also bring shortcomings of their own due to political economy constraints. The experience of the last 100 years of fiat money, from Weimar Germany to Maduro's Venezuela, demonstrates that governments are perfectly capable of (and often eager to) offering money that is considerably worse than monies created by private parties.

The relevant question is then: under which conditions should a government have a monopoly on money issuance (as we have now)? And, related and important for the topic at hand: has the arrival of cryptocurrencies changed the answer to the previous question?

Second, monetary economists are educated to think in terms of general equilibrium. We spend much time teaching our students that the aggregation of individuals' actions can result in outcomes that are far from those that would hold in isolated decision problems or markets. A famous example (and one particularly relevant for our discussion) is Caplin and Spulber (1987). The authors build an economy with nominal rigidities caused by menu costs in price setting by firms. And, yet, in aggregate, price stickiness disappears and money is neutral. Caplin and Spulber (1987) is a cautionary tale for the implication of cryptocurrencies. For instance, a protocol that issues a cryptocurrency at a speed that ensures its wide adoption may have adverse aggregate consequences. Hence, any answer to the two questions from the paragraph above needs to be framed within the context of a general equilibrium model.

In the next two sections, I will elaborate in more detail the relation of each of these two ideas, trade under frictions and general equilibrium monetary economics, with cryptocurrencies. I will conclude the paper with some remarks regarding the future developments of monetary arrangements, including a quick sketch of my assessment of CBDCs.

Trade under Frictions

Even the simplest human groups are built around the division of labor and, with it, of exchange. The previous observation is composed of two parts: first, the pervasiveness of the division of labor among social groups; second, the widespread existence of exchange.

The division of labor is a direct consequence of comparative advantage (i.e., our productivities while undertaking different tasks are different: I am comparatively better at economics than at playing rugby), different endowments (i.e., some people have the talents to complete some tasks while others lack those talents: I am unable to kick a drop goal even if I try for hours), and increasing returns to scale (i.e., specialization requires focusing on a few tasks: for nearly everyone, it takes at least 10 years of a university education to write a paper in economics publishable at a top journal). These three reasons suggest that the division of labor must have appeared early in hominids' evolution. See, for instance, Samuni et al. (2018) for recent evidence on the division of labor among wild chimpanzees while hunting.

The existence of exchange follows nearly directly from the division of labor. A human group based on the division of labor requires allocating the output produced by the effort of its members. If agent A specializes in hunting and agent B in cooking, agents A and B must divide the final output, the meal, between them. In simple environments, this allocation can be achieved by a centralized mechanism. After a family finishes preparing dinner, one member can allocate the food among everyone.

But as soon as the group's size grows, centralized allocations become too costly and inefficient (as anyone who has tried to manage a meal for more than 20 people has realized). Even Soviet Russia had to abandon its radical experiment with the centralized allocation of consumption goods in 1921. For the rest of the history of the Soviet Union, retail remained a partially decentralized activity whereby consumers, through the use of their rubles, could decide among different (even if often limited) options of the goods produced.

The obvious alternative to centralized mechanisms is some form of (partially) decentralized allocation mechanism. At this point, exchange appears as the easiest alternative. This explains why we have indications that exchange, even among groups of humans living far apart, appeared very early. For example, recent archeological evidence suggests the existence of maritime routes of obsidian artifacts trade in the Aegean by the Early Holocene age around 12,000 years ago, well before the arrival of agriculture to the area (Laskaris et al. 2011).

The difficulty with exchange is that completing it through barter is rarely feasible. This is particularly true of intertemporal trade: even if two agents are fortunate enough to satisfy the double coincidence of wants, each product may be completed at different times (or, equivalently, in different quantities). For example, a hunter needs an arrowhead from the artisan who produces it (a highly specialized skill in many hunter-gatherer groups) before he can complete the hunt that will yield the meat to pay for the arrowhead. If the hunter promises to pay the artisan a day after the arrowhead is delivered (so as to allow him to hunt his prey), we are suddenly dealing with credit and debt.²

A possibility to implement exchange is to use a ledger system within the group: the hunter gets a debit every time he gets an arrowhead (or some other items) from someone and a credit when he delivers meat to another party. However, keeping a ledger system is costly, prone to errors, and informationally inefficient. In particular, the group does not need to keep the whole ledger, but only the net position of each member of the group. Not only do net positions reduce the information burden of the ledger, but they also reduce input errors (you can experience this yourself if you want to keep track of transactions: the less information you carry, the easier it is to avoid mistakes) and allow for easier addition and subtraction of members of the group.

Net ledgers can be implemented in many ways and, in practice, most groups keep different net ledgers running simultaneously (with the subsequent need to accomplish transfers of net positions among ledgers). A centralized system, such as the credit/debt operations of ancient Sumerian temples, is potentially more robust, but it requires trusting the ledger keeper and it is more costly to scale up. Decentralized systems are more fragile (as they require the coordination of many agents), but they are much cheaper and more scalable.

One simple decentralized net system is the use of tokens: when the hunter gives the artisan a token to pay for the arrowhead, he is

² Parenthetically, I am always surprised that most of the examples of trade frictions in textbooks on money involve intratemporal trade and its frictions (e.g., the absence of a double coincidence of wants between Ann and Bob) when intertemporal trade and its frictions are probably a much more common case. Even when Ann and Bob enjoy a double coincidence of wants, they might not need to agree on the production level and timing of the goods to barter.

crediting one unit for the artisan and debiting one unit for himself in the decentralized net ledger of their group. When the meat is delivered, the transaction is reversed. Since this exchange of tokens is usually more secure than credit/debt relations (which are prone to defaults), tokens quickly became a common (although, as mentioned above, not the unique) implementation of decentralized net ledgers. Whether the token is intrinsically worthless is mostly irrelevant, although its intrinsic value may help to jump-start the decentralized net system, as many agents may want the token regardless of its potential use for future trade.

This long explanation has allowed us to get a working definition of these tokens (which we usually call money): an informationally efficient record-keeping mechanism that allows for decentralized trading under essential frictions to exchange. This is why Kocherlakota (1998) equates money with memory. This point was not missed in previous centuries. The Romans call coins *nomisma* (from which our word *numismatics* comes). *Nomisma* is a derivation of the classical Greek *νόμισμα*, with a root in *νομίζω* (custom, tradition, to maintain, to keep).

From this perspective, it is easy to see that a private cryptocurrency—such as bitcoin—or a token-based CBDC is nothing but one of these decentralized net ledgers. The details (e.g., whether they are run by a blockchain or not, the concrete cryptographic algorithms employed, etc.) are important in other contexts, but not for my purposes. In the end, we are returning to the same old arguments we have considered for decades and, therefore, we can employ the same class of essential models of money that put frictions at the core (Lagos and Wright, 2005). Should governments have a monopoly on the issuance of tokens? Or should governments allow the free competition of privately issued monies? How does the presence of privately issued monies impact government-issued money?

General Equilibrium

We need to remember that to explore these questions properly, one needs to consider general equilibrium. As I explained before, the individual actions of different agents aggregate in ways that can be very far away from the intuition that we have from a single market. This is particularly true when the markets are subject to frictions.

A good example of the powerful consequences of general equilibrium thinking in the area of cryptocurrencies is Fernández-Villaverde and Sanches (2019), who build a model of currency competition where money is essential and that captures some of the main mechanisms behind the current boom of cryptocurrencies.

The first main result of Fernández-Villaverde and Sanches (2019) is that, in most cases, private monies do not deliver price stability. A profit-maximizing entrepreneur will issue money to maximize the real value of seigniorage. Whether this issuance strategy would induce price stability depends on the cost associated with the minting technology. An interesting case (since it resembles the most common assumption in economics) is a cost function that is strictly convex. In this situation, the entrepreneur will always have the incentive to mint at least a marginal amount of new currency. A simple application of the quantity theory of money (which is nothing more than a straightforward general equilibrium condition) shows that this marginal amount of new currency will generate an increase in the price level.

The second main result of Fernández-Villaverde and Sanches (2019) is that, when an automaton issues money with a nonstate-contingent rule (such as the code behind bitcoin), there is no reason why the quantity of money will be compatible with price stability (except by random chance). Bitcoin decided how many new currency units were going to be issued in 2020 well before anyone had any inkling of the Covid-19 crisis. Again, let us go back to the quantitative theory of money: the health emergency has had an enormous impact on money velocity and output. An automaton would not have been able to accommodate any of those changes.³

The third main result of Fernández-Villaverde and Sanches (2019) is that even if in those situations where, because of either the cost function of minting money or the design of the automaton issuing money, we have an equilibrium with price stability, we still have other equilibria with self-fulfilling inflationary paths. These paths are closely related to the self-fulfilling inflationary paths in Obstfeld and Rogoff (1983) and Lagos and Wright (2005) in economies with

³Notice that this reasoning does not affect more complex algorithms that could look at external conditions; but none of those is behind the most popular cryptocurrencies.

government-issued money. In other words, self-fulfilling inflationary episodes are intimately associated with any decentralized ledger implemented with intrinsically useless tokens, even when those tokens are electronic and issued by private profit-maximizing, long-lived entrepreneurs. The intuition is simple: since the tokens are intrinsically worthless and only traded because of their liquidity services, we can, in general, build many paths of their values that satisfy individual optimality and rational expectations.

The fourth main result of Fernández-Villaverde and Sanches (2019), and perhaps the most important, is that private monies will not maximize social welfare (even when prices are stable). The reason is that, since private entrepreneurs take prices parametrically, there is no incentive for any of them to change the supply of money in ways that overcome the pecuniary externalities created by trade frictions. In other words: the “price” of money (the inverse of the price level) does not play a fully allocative role when trade frictions are present. But the only way we can make sense of the existence of money is by accepting the presence of trade frictions.

Therefore, Fernández-Villaverde and Sanches (2019) conclude that the case for private monies is weak and that a government-issued money can do better because a central bank, which does not need to maximize profits, can issue money to maximize social welfare. However, the conclusion is nuanced. The interesting comparison between alternative monetary arrangements is not between two ideal arrangements, but between “actually existing” monetary arrangements. Do we trust that the political-economic game will deliver good government money? Have I forgotten about the long list of hyperinflations that government monies have experienced for centuries and that I mentioned a few pages ago?

No, I have not. That is why my practical answer about private cryptocurrencies is a typical one from an economist: “it depends.” If we live in a country with an independent and sound central bank, we can run a good government-money system, and private cryptocurrencies are next to useless—although I do not see any reason to prohibit their use. If we live in a country where the central bank is out of control, private cryptocurrencies can offer an attractive alternative and even play a role as a disciplining device for central banks.⁴

⁴Fernández-Villaverde and Sanches (2019) argue this point more formally.

The Future of Monetary Arrangements

Talking about central banks: Should they also join the trend and issue their own cryptocurrencies, aptly called CBDCs? The question is more complex than it seems because, beyond eliminating physical cash, a CBDC will allow the central bank to engage in large-scale intermediation by competing with private financial intermediaries for deposits and, likely, engaging in some form of lending of those deposits.⁵ Therefore, a CBDC has implications that go well beyond creating another form of electronic payment or the much milder phasing out of physical cash as proposed by Rogoff (2014).

I have studied this possibility in two recent papers, Fernández-Villaverde et al. (2021) and Schilling, Fernández-Villaverde, and Uhlig (2020). The former deals with a real model, and the latter focuses on nominal contracts. Our main conclusion is that we are skeptical about the value of CBDCs. Fernández-Villaverde et al. (2021) argue that a CBDC will give the central bank market power in deposit holding that is likely to be abused for political gains. Schilling, Fernández-Villaverde, and Uhlig (2020) demonstrate an impossibility result that we call the CBDC trilemma: of the three goals of efficiency, financial stability (i.e., absence of runs), and price stability, a central bank issuing CBDCs can achieve at most two. In particular, Schilling, Fernández-Villaverde, and Uhlig (2020) prove that the central bank can only implement the socially optimal allocation while deterring runs if it can credibly threaten high inflation whenever nominal spending is excessive.

Conclusion

I would not recommend a move toward a system of private cryptocurrencies that controls most payments or the issuance of a CBDC. This conclusion comes with three important caveats. First, the conclusion is contingent on the current state of the technology and the research of monetary economics. As they evolve, the

⁵Proponents of CBDCs have been explicit about this point. For example, Barrdear and Kumhof (2016: 7) state: “By CBDC, we refer to a central bank granting universal, electronic, 24x7, national-currency denominated and interest-bearing access to its balance sheet.” In this article, I use these authors’ definition as the working concept of a CBDC.

conclusion may change. Second, my answer would be different for countries without sound central banks (and the ability to build them). Third, this conclusion does not preclude the endorsement of central banks building cheaper and faster electronic payment systems or closing doors to the development of new innovations from the private sector, perhaps in “sandbox” environments. These are exciting times to be a monetary economist and I am eager to see what these innovations can bring.

References

- Barrdear, J., and Kumhof, M. (2016) “The Macroeconomics of Central Bank Issued Digital Currencies.” Bank of England Working Paper No. 605.
- Caplin, A. S., and Spulber, D. F. (1987) “Menu Costs and the Neutrality of Money.” *Quarterly Journal of Economics* 102: 703–26.
- Doty, R. (1998) *The Soho Mint and the Industrialization of Money*. London: Spink.
- Fernández-Villaverde, J., and Sanches, D. (2019) “Can Currency Competition Work?” *Journal of Monetary Economics* 106: 1–15.
- Fernández-Villaverde, J.; Sanches, D.; Schilling, L.; and Uhlig, H. (2021) “Central Bank Digital Currency: Central Banking For All?” *Review of Economic Dynamics* (forthcoming).
- Friedman, M., and Schwartz, A. J. (1986) “Has Government Any Role in Money?” *Journal of Monetary Economics* 17: 37–62.
- Kocherlakota, N. R. (1998) “Money Is Memory.” *Journal of Economic Theory* 81: 232–51.
- Lagos, R., and Wright, R. (2005) “A Unified Framework for Monetary Theory and Policy Analysis.” *Journal of Political Economy* 113: 463–84.
- Laskaris, N.; Sampson, A.; Mavridis, F.; and Liritzis, I. (2011) “Late Pleistocene/Early Holocene Seafaring in the Aegean: New Obsidian Hydration Dates with the SIMS-SS Method.” *Journal of Archaeological Science* 38: 2475–79.
- Obstfeld, M., and Rogoff, K. (1983) “Speculative Hyperinflations in Maximizing Models: Can We Rule Them Out?” *Journal of Political Economy* 91: 675–87.
- Rogoff, K. S. (2014) “Costs and Benefits to Phasing Out Paper Currency.” NBER Working Paper No. 20126.

- Samuni, L.; Preis, A.; Deschner, T.; Crockford, C.; and Wittig, R. M. (2018) “Reward of Labor Coordination and Hunting Success in Wild Chimpanzees.” *Communications Biology* 138.
- Sargent, T. J., and Velde, F. (2002) *The Big Problem of Small Change*. Princeton, N.J.: Princeton University Press.
- Schilling, L.; Fernández-Villaverde, J.; and Uhlig, H. (2020) “Central Bank Digital Currency: When Price and Bank Stability Collide.” NBER Working Paper No. 28237.
- Selgin, G. (2008) *Good Money: Birmingham Button Makers, the Royal Mint, and the Beginnings of Modern Coinage, 1775–1821*. Ann Arbor: University of Michigan Press.
- von zur Gathen, J. (2015) *CryptoSchool*. New York: Springer.

CENTRAL BANK DIGITAL CURRENCY AS A POTENTIAL SOURCE OF FINANCIAL INSTABILITY

George Selgin

Various proposals for a central bank digital currency (CBDC) involve different technical solutions to as many distinct problems. My concern is with the monetary policy implications of those (e.g., Bordo and Levin 2019; Ricks 2020) that would allow anyone to place deposits in a Fed Master Account, directly or using ordinary banks as brokers.

A decade ago, I published a paper on “Central Banks as Sources of Financial Instability” (Selgin 2010) in which I argued that, notwithstanding conventional wisdom, central bank monopolization of paper money has been an important historical cause of financial instability. Here I wish to argue that central bank provision of *digital* money, and particularly of retail deposits, may also prove destabilizing.

“Old-Fashioned” Bank Runs

How could individual Fed accounts be destabilizing? Consider the case of a “classic” systemic financial crisis. This consists of a run, not on one or a small number of banks, but out of bank deposits and into central bank currency.

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.11.

George Selgin is Director of the Cato Institute’s Center for Monetary and Financial Alternatives.

As every money and banking student learns, in a fractional-reserve system, every dollar of paper currency withdrawn from the banking system can lead to a much larger reduction in bank deposits and, hence, the total money stock. In principle, aggressive central bank expansion can keep the money stock from shrinking. But because central banks generally don't lend to private-sector borrowers, the substitution of central-bank-supplied paper money for bank deposits can't preserve the private credit that collapses along with the stock of commercial bank deposits. A serious "credit channel" bust can still occur.

Because stockpiling and transacting with paper currency is both inconvenient and risky, most bank runs have been runs from banks suspected of being unsound to others people still trusted. That's especially true in banking systems with nationwide branch networks, because most sizable communities in such systems have access to more than one commercial bank. Despite their notoriety, systemic runs have been rare. Indeed, they were so even in the pre-FDIC United States, which saw more than its fair share of panics (Schwartz 1987: 271–88). Even the nearly systemic run of February and March 1933 wasn't an exception, for it was not so much a banking panic as one informed by growing fears that FDR was planning to devalue the dollar (Wigmore 1987: 739–55). In other words, what looked like a general loss of confidence in U.S. banks was in fact a loss of confidence in the government's willingness to stick to the established dollar standard.¹

Allowing for Fed Account Balances

Now let's consider the case in which, instead of facing two options—holding liquid claims against private intermediaries, or holding paper currency—people have a third option: they can place funds in their personal Fed accounts.

According to many of their advocates, private Fed accounts, besides being perfectly safe, will offer many of the advantages of ordinary bank accounts, and will be even cheaper to maintain.

¹The problem here was not devaluation per se, but the fact that it was anticipated. On the bank runs of the 1930s, see Selgin (2020).

For example, in recent congressional testimony, Morgan Ricks (2020: 4) observes that, under his “FedAccount” proposal,

The Fed would charge no fees and would not impose any minimum balance requirements. FedAccounts would also have all the special features that banks currently enjoy on their central bank accounts: real-time payments, high interest compared with ordinary bank accounts, and full government backing with no need for deposit insurance.

The FedAccount plan would, however, not allow depositors to overdraw their Fed accounts. That provision is necessary if the Fed is to avoid serving as a “lender of last resort” not just for banks but for anyone who can’t balance a checking account. In normal times, this limitation might make personal Fed accounts seem less attractive to those who can afford to keep accounts at ordinary banks, and to incur occasional overdraft fees. But it needn’t make them unattractive to those who might otherwise remain unbanked.

Ricks, Bordo and Levin, and many other proponents of individual Fed accounts assume that the Fed would pay interest on such accounts at approximately the same rate it pays on bank reserves. According to Bordo and Levin (2019: 15), for example, under their proposal,

Consumers and businesses would be able to receive essentially the same interest on checkable deposits and other current accounts that commercial banks receive on reserves held at the central bank, that is, the interest rate on reserves (IOR) less a very small margin to cover operating costs.

Even if personal Fed account balances didn’t bear interest, they would be much closer substitutes for private liquid dollar assets than paper Federal Reserve notes are. But I will follow the majority of proposals in assuming that individuals’ Fed balances yield interest at the interest on reserves (IOR) rate.

Suppose then that, when they are first introduced, Fed accounts are available, but are mostly used by persons who were previously unbanked. Such a state of affairs conforms with the outcome envisioned by many personal Fed account proponents. It’s easy, however, to imagine a general increase in rates that could widen the gap between private intermediary rates and the IOR rate enough to

promote a general “run” out of private-sector intermediaries and into Fed accounts.² Indeed, any substantial move from near-zero to positive yields might suffice, given (1) private intermediaries’ need to fully cover their noninterest intermediation expenses by paying depositors less than their return on assets, and (2) the fact that the Fed’s IOR rate is typically greater than yields on short-term Treasury securities and other low-risk, liquid assets.

The danger of a systemic run on private-sector intermediaries becomes all the more serious if Fed accounts are able, as some of their advocates claim, of “crowding out” not just ordinary bank deposits but repurchase agreements, eurodollars, and money market mutual fund shares. According to Ricks (2020: 5),

FedAccounts would likely reduce the probability of future financial crises by “crowding out” unstable deposit substitutes, such repurchase agreements or “repo,” Eurodollars, and money market mutual fund shares, which are a major source of financial instability.

Ricks’ observation begs the question: If private Fed accounts can crowd out these other private bank deposit substitutes, what’s to keep them from doing so only occasionally, and perhaps suddenly?

By providing a new harbor for funds that’s not only safe but relatively remunerative, Fed accounts could end up raising instead of lowering money market volatility, making short-term money hotter than ever. As long as private deposit substitutes are *sometimes* more attractive than Fed balances, the danger can only be ruled out by disallowing those private substitutes altogether—that is, by allowing the Fed alone to compete with banks and credit unions for depositors’ funds. And even that extreme step wouldn’t prevent banks and credit unions from falling victim to occasional, systemic transfers of funds from them to the Fed.

In commenting on this argument, David Andolfatto suggests that the Fed could rule out the sort of private disintermediation crisis I’ve

²As the IOR rate was lifted above its near-zero level after the Great Recession, private intermediary rates rose relatively little. Indeed, as Bordo and Levin (2019: 15) noted in January 2019, when the IOR rate was 2.4 percent, “most checkable deposits earn little or no interest, and even short-term savings accounts accrue interest at a rate far below that of IOR.” Bordo and Levin assert that the lower rates paid by banks are “noncompetitive.” Bill Conerly (2017) offers a different perspective.

described by fine-tuning the return it pays on individual accounts to prevent them from ever being attractive enough to beggar sound private-sector intermediaries. He's right in principle; and the Fed has already entertained the possibility of paying a lower rate on Fed balances held by private "pass-through investment entities" (PTIEs) than it pays on bank reserve balances, with the express aim of preventing them from undermining financial stability (Board of Governors 2019).

There are good reasons, however, for doubting that the procedure Andolfatto recommends would work in practice. For one thing, it would appear to handicap Fed account holders, and especially the already disadvantaged persons that Fed accounts are particularly supposed to attract, by having them settle for less favorable returns than are available to those who can afford private-market substitutes. For that reason, although prudence might recommend paying holders of personal Fed account balances less than what banks earn on their reserve balances, politics might forbid it.

The Postal Savings Precedent

The concerns I've expressed here have their historical counterpart in the experience of the Postal Savings System introduced in 1911. In their recent working paper, Jaremski, Fleitus, and Schuster (2020) report that, during the 1930s, the relatively high, bureaucratically set rates on postal savings accounts "drew desperately needed funds away from private lenders, prolonging the effects of the Depression." The Postal Savings experience is highly pertinent, as many proponents of Fed accounts would have the U.S. Postal Service partner with the Fed so as to supply it with a ready-made network of brick-and-mortar retail banking facilities. Jaremski and his coauthors conclude:

Reintroducing postal savings could have unintended consequences by drawing customers away from private lenders and reducing funds available for community lending and investment. Policymakers can learn from these lessons learned during the Great Depression by considering the broader economic effects of programs like postal savings.

Whether they actually involve the U.S. Postal Service or not, plans for having the Fed offer retail deposit accounts clearly qualify as "programs like postal savings."

The Fed Knows It

The Fed is itself aware of the risk nonbank Fed accounts pose to financial stability. The issue came up, not in connection with proposals to allow anyone to have a Fed account, but in response to the Narrow Bank's 2016 request for such an account (Selgin 2018). In their "advance notice of proposed rulemaking" (ANPR) regarding accounts for such PTIEs, Fed officials explained that they would "have the potential to complicate the implementation of monetary policy," especially by having "a negative effect on financial stability" (Board of Governors 2019). In particular,

Deposits at PTIEs could significantly reduce financial stability by providing a nearly unlimited supply of very attractive safe-haven assets during periods of financial market stress. PTIE deposits could be seen as more attractive than Treasury bills, because they would provide instantaneous liquidity, could be available in very large quantities, and would earn interest at an administered rate that would not necessarily fall as demand surges. As a result, in times of stress, investors that would otherwise provide short-term funding to nonfinancial firms, financial institutions, and state and local governments could rapidly withdraw that funding from those borrowers and instead deposit those funds at PTIEs. The sudden withdrawal of funding from these borrowers could greatly amplify systemic stress [p. 8831].

What goes for PTIEs would of course go as well for any plan to grant *all* "individuals, businesses, and institutions" the right to hold accounts at the Fed (Ricks 2020). Indeed, the case for limiting individual Fed accounts is actually much stronger than that for ruling out PTIEs: although PTIEs might pose a threat to other private intermediaries, unlike private Fed accounts, their presence would not risk altogether undermining private money markets.

The Fintech Alternative

Some proponents of individual Fed accounts may say that if my concerns are valid, one solution is to simply outlaw private monies and near monies—and as much private credit intermediation. (After hearing Martin Chorzempa speak at Cato's 2020 Monetary Conference, I'm tempted to call this the "1984" solution.)

With all due respect to those who might favor that solution, I think a more logical, and certainly a less draconian, solution is to have the Fed cooperate with both banks and nonbank (“fintech”) payment service providers so as to take the fullest possible advantage of high-tech *private* alternatives *specifically* designed to replace paper money—what Neha Nerula has called “Digital Cash”—and especially ones designed to serve the financial needs of the unbanked and underbanked. Unlike PTIEs, instead of seeking deposits by paying attractive rates, many fintech payment service providers specialize in offering low-cost, convenient and rapid payment services, including P2P payment services, which, despite offering low pecuniary returns, can be very effective in “banking” the unbanked. Such services needn’t expose established intermediaries to any serious disintermediation risk (see Kaminska 2012).

Putting out a welcome mat for private digital cash providers is essentially what the Bank of England (BOE) did in 2017, when it invited hundreds of fintechs, including many offering prepaid cash cards and prepaid online and mobile accounts, to open settlement accounts with it (Bank of England 2017). The BOE’s express aim was to allow fintechs to compete more effectively with banks and building societies that previously had exclusive access to such accounts. But the BOE’s policy also makes it easier for fintechs to more effectively compete with the BOE itself, by supplying “smart” prepaid cards and other superior digital substitutes for its paper currency, credits to and debits from which can glide along the BOE’s settlement rails.

Given our topic, it’s especially worth noting how, in announcing the BOE’s decision, Governor Mark Carney observed that, far from posing greater risks, he believed it would “support financial stability through greater diversity and risk-reducing payment technologies.” More specifically, the BOE said that its new policy will promote stability by

- creating more diverse payment arrangements with fewer single points of failure;
- identifying and developing new risk-reducing technologies; and
- expanding the range of transactions that can take place electronically and be settled in central bank money.

Note the importance the BOE assigns to promoting ongoing innovation: that’s something a central bank monopoly of *all* payments media is hardly likely to promote. Consider how long-standing central bank monopolies of hand-to-hand currency limited innovation in

that space until nonbank private market innovators finally prompted them to consider embracing alternative technologies.

Time alone will tell whether the BOE's optimistic expectations are fulfilled. But its approach seems, to me at least, a reasonable compromise between the status quo and the option of making the Fed our only source of payments media.

References

- Bank of England (2017) "Bank of England Extends Direct Access to RTGS Accounts to Non-bank Payment Service Providers." *Bank of England*. Available at www.bankofengland.co.uk/news/2017/july/boe-extends-direct-access-to-rtgs-accounts-to-non-bank-payment-service-providers.
- Board of Governors of the Federal Reserve System (2019) "Regulation D: Reserve Requirements of Depository Institutions, 12 CFR Part 204." *Federal Register* 84, No. 48 (March 12): 8829. Available at www.govinfo.gov/content/pkg/FR-2019-03-12/pdf/2019-04348.pdf.
- Bordo, M. D., and Levin, A. T. (2019) "Digital Cash: Principles & Practical Steps." NBER Working Paper No. 25455 (January). Available at www.nber.org/system/files/working_papers/w25455/w25455.pdf.
- Conerly, B. (2017) "Why Are Banks Paying So Little Interest on Deposits?" *Forbes* (October 17).
- Jaremski, M.; Fleitus, S.; and Schuster, S. P. (2020) "The US Postal Savings System and the Collapse of Building and Loan Associations during the Great Depression." Utah State University Center for Growth and Opportunity Working Paper (April 30). Available at www.thecgo.org/research/the-us-postal-savings-system-and-the-collapse-of-building-and-loan-associations-during-the-great-depression.
- Kaminska, I. (2012) "More on M-Pesa and e-Money." *FT Alphaville* (July 20). Available at www.ft.com/content/7befd715-be92-34f1-be58-df775e5677a5.
- Ricks, M. (2020) "Testimony of Morgan Ricks, Hearing before the United States House of Representatives Committee on Financial Services Task Force on Financial Technology." Available at www.congress.gov/116/meeting/house/110778/witnesses/HHRG-116-BA00-Wstate-RicksM-20200611.pdf (June 11).

- Schwartz, A. (1987) “Real and Pseudo-Financial Crises.” In *Money in Historical Perspective*, 271–88. Chicago: University of Chicago Press. Available at www.nber.org/system/files/chapters/c7506/c7506.pdf.
- Selgin, G. (2010) “Central Banks as Sources of Financial Instability.” *Independent Review* 13 (4): 485–95.
- _____ (2018) “The Skinny on the Narrow Bank.” *Alt-M* (September 10).
- _____ (2020) “The New Deal and Recovery, Part 5: The Banking Crisis.” *Alt-M* (July 18).
- Wigmore, B. A. (1987) “Was the Bank Holiday of 1933 Caused by a Run on the Dollar?” *Journal of Economic History* 47 (3): 739–55.

SOME THOUGHTS ON CENTRAL BANK DIGITAL CURRENCY

David Andolfatto

The literature examining the question of central bank digital currency (CBDC) has grown immensely in a very short time. Much progress has been made since I first learned of the idea in a blogpost authored by J. P. Koning in 2014. That modest article soon led me to openly speculate on the merits of a central bank cryptocurrency in a talk I delivered at the International Workshop on P2P Financial Systems in Frankfurt (Andolfatto 2015). My audience, which consisted mainly of entrepreneurs, seemed to receive my talk with a polite mixture of bemusement and anxiety. Surely, I couldn't be serious? To be honest, I'm not sure that I was. But then the threat of Facebook's Libra came along, and central bankers around the world suddenly began to take the idea very seriously indeed.

In this article, I will share some of my thoughts on CBDC—what it is, the rationale behind the endeavor, and how it might be implemented in broad terms. I'll also address some of the concerns expressed by skeptics—in particular, the possible impact on banks and the implications for financial stability. I discuss these issues primarily in the context of the United States.

Before I begin, let me provide a sketch of the way money and payments work in the United States today. As is well known, the largest

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.12.

David Andolfatto is Senior Vice President at the Federal Reserve Bank of St. Louis. The views expressed here are his own and do not necessarily reflect those of the Federal Reserve system.

component of the money supply by far is created and managed by U.S. depository institutions. All of this money is already in digital form; that is, as checkable deposits. But if this is the case, then what is all the fuss about digital currency in general and CBDC in particular?

As it turns out, CBDC already exists in the United States in the form of Federal Reserve accounts. These accounts are fully insured and (since 2008) bear interest. Payments across these accounts occur through Fedwire, a real-time gross settlement system operated by the Federal Reserve. This service is only available to U.S. depository institutions, the U.S. Treasury, and a select number of foreign agencies. The services often cost less than a dollar per transaction, which, for an average transaction size of about \$4M, is practically free.¹ For individuals and nonbank businesses, small-value electronic payments are typically cleared through the ACH net settlement payment system. The interchange fees faced by merchants are typically in the range of 3–5 percent and can take up to three business days to settle.

This is normally the place where one provides a laundry list of the problems associated with making payments in the United States. Instead of doing this, I want to acknowledge the tremendous advancements that have been made in the past few decades. Whatever problems and inconveniences people experience today, believe me, were much worse a generation ago. It seems likely, to me, that technological developments and competition will continue to improve the payment experience for most Americans going forward. Nevertheless, I think some version of a retail-level CBDC remains desirable, even if it is not essential.

Central Bank Digital Currency vs. Central Bank Private Currency

All the money we use today consists of bank liabilities, either private or central. As I've already mentioned, private banks provide us with digital currency in the form of demand deposit liabilities. Let me

¹This is not a subsidized rate. Since the Monetary Control Act of 1980, the Federal Reserve is required to recoup the cost of services rendered to outside agencies.

label this *private bank digital currency* (PBDC). I've also mentioned that CBDC exists in the form of reserves held in accounts with the central bank. Reserves are counted as a liability of the Federal Reserve. The third type of money takes the form of small-denomination paper bills issued by the Federal Reserve. Let me label this *central bank paper currency* (CBPC). These too are counted as liabilities of the Fed.

The way things presently stand, everyone in the world is permitted access to CBPC, the paper component of the Fed's balance sheet. However, only banks (and a few other agencies) are permitted access to CBDC, the digital component of the Fed's balance sheet. Why is this the case?

One reason has to do with the manner in which payments are cleared and settled. When two parties use CBPC, no intermediary is needed to clear and settle payments—it is all done on a peer-to-peer (P2P) basis. In contrast, debiting and crediting central bank accounts requires the aid of an intermediary—in this case, the central bank. Because central banks are not specialized in delivering retail services, the task is delegated to the private bank sector, with a limited number of banks using the central bank as their own bank.

This hierarchical banking structure is likely to prevail for some time if for no other reason than people seem to value intermediated transactions. Even in the fabled cryptocurrency space, where digital assets can be managed like cash, many people prefer to hold such assets through intermediaries. Nevertheless, with the advent of the internet and technologies that permit secure communications with electronic databases, perhaps it is time to reassess the rationale for partitioning access to the Federal Reserve's balance sheet in this manner. Online U.S. Treasury accounts are presently available to all U.S. persons at Treasury Direct, so it is clearly possible to expand access to CBDC or have the Treasury return to its old practice of issuing money.

Of course, processing a massive volume of payment requests in a secure, rapid (possibly real-time), accurate, and low-cost manner on a 24x7x365 basis is another thing altogether. In what follows, I assume that standard SQL-based relational database management systems will suffice for this task and that the important questions relate mainly to implementation. In particular, I see little reason to consider for this application database management systems based on

“blockchain” principles—where write-privileges are open and the salaries paid to self-appointed accountants are determined by the outcome of a noncooperative game (Andolfatto 2018).

CBDC for All

The underlying philosophy behind cryptocurrencies like bitcoin is to permit a digital value-transfer system to operate with minimal third-party intermediation. In this spirit, I think the most direct way to offer CBDC is to permit direct access to reserve accounts with the Fed, consistent with how direct access is permitted with CBPC. Some have called this a one-tier approach.

A two-tier approach is also possible. In this version, direct access to CBDC is restricted to a set of intermediaries—presumably banks, but possibly other entities—that essentially intermediate the communications that occur between users and the Fed. In this scenario, there is no asset transformation—deposits remain liabilities of the Fed. There is the question of why this intermediate layer is needed. It is possible that intermediaries performing this function offer a suite of complementary services that depositors find useful. But if this is the case, it seems desirable to let depositors choose whether they want to manage their accounts directly (one tier) or with the aid of an intermediary (two tier). Offering a one-tier system permits a two-tier system to develop along with the demands of the community. Restricting CBDC to operate solely as a two-tier system seems difficult to rationalize. In particular, why restrict direct access to CBDC when there are no restrictions on direct access for CBPC?

A less radical approach is to offer a so-called synthetic CBDC. This is essentially a proposal to implement the old idea of narrow banks. A version of this would entail the creation of segregated bank accounts at existing depository institutions (see Garratt et al. 2015). It is not entirely clear what benefits small depositors would realize from this setup. But as deposit insurance is limited to \$250,000 per account, it is possible that large depositors would find this arrangement of some use. For large depositors, the same thing could be accomplished today through government money market funds with access to a standing repo facility at the Fed. There is also the possibility of having money accounts set up through Treasury Direct with

designated Treasury liabilities serving as a perfect substitute for Federal Reserve liabilities.²

Before I go on, let me make a brief comment on whether the product to be offered should exist as a standard registered account or whether it should have the property of a bearer instrument. While it is true that paper bills are bearer instruments, it is worth pointing out that their maximum denomination is only \$100. Large denomination bearer instruments are no longer legal. As well, numbered accounts are largely a thing of the past. The reasons for this are well known.

A token-based CBDC is, of course, subject to the same concerns. One rationale for issuing such a product is that it would serve to discourage the competitive threat of privately issued cryptocurrencies. But it seems more reasonable and practical, to me, at least, to let private cryptocurrencies serve their niche markets, the way local nonstate currencies have done for centuries.

CBDC as a Basic Public Option

Some economists have proposed offering a one-tier CBDC as a basic public option in the manner of a basic public utility (see Ricks, Crawford, and Menand 2021). This version would feature no minimum balance requirements and no fees; at least, for retail users. There would be no overdraft privileges, but the accounts would be fully insured and payments would occur in real time. As well, the accounts could earn interest commensurate with the yield on Treasury bills or some other money market rate.

There is the question of what might justify a zero user-cost policy for retail users. A payment system has the property of a natural monopoly. That is, while a large fixed cost is needed to set up and maintain the underlying infrastructure, the marginal resource costs of receiving messages and debiting/crediting accounts in a ledger are minuscule; at least, given the technology we have available today and

²The U.S. Treasury has the legal authority to issue money and, indeed, does so today in the form of coins. But it has also issued fiat money in the form of bills in the past. For example, the U.S. Note was issued from 1862 to 1971. It would be a simple matter for the Treasury to issue digital U.S. Notes with the Fed and Treasury fixing the exchange rate between their respective liabilities at par.

what we expect to have available in the near future. An optimal pricing structure in this case would entail something like a fixed monthly fee for access to the system together with a small (close to zero) fee per transaction.

The problem here is in how to administer the fixed fee in a fair and efficient manner. It is perhaps too much to ask of private-sector agencies to consider broader social objectives in their pricing practices. Small-value accounts are money-losing propositions for banks, which explains the extensive use of minimum balance requirements. According to a 2019 survey by the FDIC, nearly half of the unbanked households in the United States cited minimum balance requirements as a reason for remaining unbanked (see FDIC 2020). The high interchange fees faced by small business owners is also a significant problem. From a social perspective, what justifies having these fees set higher than the fees charged to banks for using Fedwire?

My own view is that there are both economic and political benefits to be had with a zero user-cost policy for CBDC retail accounts. Fees associated with simple record-keeping exercises serve as a tax on economic transactions. As Senator Carter Glass once remarked, policy should endeavor to remove all toll gates set upon the highways of commerce (Glass 1917). A basic payment system is very much like a public highway system. Sure, we could erect toll booths every five miles. We might even erect toll booths on public sidewalks, public parks, and so on. At some point, the practice of attempting to recover every nickel and dime of user cost at its source seems not only impractical, but also ridiculous. The solution is to provide a basic public service for free and to finance its cost through some combination of fees on wholesale users and general tax revenue. Apart from the economic benefits that would accrue from such a facility, it would also yield political dividends. Wealthy individuals and large corporations enjoy several special privileges in the world of finance. It would be politically astute, I think, to extend some of these privileges to the broader population. Moreover, it's important to keep in mind that these privileges are designed to promote general economic prosperity.

Impact on Banks and Financial Stability

Banks can be expected to resist the adoption of CBDC for all since it is likely to increase their funding costs. But what individual banks believe to be good for themselves and what ends up being good from

the broader perspective of society (including banks themselves) are not always the same thing. As I mentioned above, it is perhaps too much to ask that individual banks internalize the societal benefits of CBDC.

It seems clear enough that CBDC, even as a public option, is likely to increase bank funding costs. But what impact might this have on the willingness and ability of banks to lend? Critics of CBDC have pointed to the prospect of diminished bank-financed capital investment. And because CBDC provides everyone with an ultra-safe store of value, there is a fear that the widespread availability of such a product is likely to promote bank runs.

For what it is worth, I have considered both of these issues in the context of (an admittedly abstract) theoretical model (Andolfatto 2020). In that model, I assumed that the CBDC rate would be set below the interest on reserves (IOR) earned by banks and that the IOR rate is a policy rate the central bank is willing to defend by manipulating the supply of reserves. I also assumed that banks possessed some market power. The introduction of CBDC in this world had the following effects.

First, because banks make a profit on the IOR–deposit rate spread, if the CBDC rate is higher than the initial deposit rate, banks are compelled to match it. In other words, deposits need not flow into CBDC if banks are willing to compete more aggressively for this cheap source of funding. And because it remains a relatively cheap source of funding even after CBDC, we should expect deposit rates to rise and for funds to mostly remain in the banking system (in reality, individuals and businesses are likely to hold both private- and public-sector accounts). Second, the effect of rising deposit rates is to attract new deposits. In the model, this occurs as individuals substitute out of physical cash into (now more attractive) digital currency (PBDC and CBDC). To the extent that cash users are outside of the banking system, this serves to promote financial inclusion. Third, there is absolutely no impact on the willingness and ability of banks to lend. This is because the opportunity cost of lending (in the model) is the IOR rate, not the CBDC rate. By the way, this latter statement continues to be true even if the CBDC rate is set above the IOR rate, but only if the central bank is willing to lend reserves to banks at the IOR rate. This latter point serves to demonstrate that the predicted impact of CBDC is likely to depend on broader aspects of central bank policy.

The concerns expressed over the potentially destabilizing effects of a CBDC also seem overblown to me. Of course, much will depend on how policy is designed. I imagine that banks will continue to possess lender-of-last-resort privileges with the central bank. If a central bank stands ready to lend against good collateral, it seems hard to imagine how a run on the banking system would have a material impact on the ability of banks to fund their assets. As well, there is the possibility of adjusting the CBDC rate in response to a run. The CBDC rate could even be sent into negative territory, effectively eliminating it as a competing store of value. In any case, I recall similar concerns being raised when the Fed introduced its overnight reverse repo facility in 2015. That facility permitted the Fed to set up a deposit facility for an expanded set of counterparties. The feared instability did not materialize. Indeed, to the extent that CBDC might disintermediate some money market funds operating in the shadow bank sector, one could make the case that CBDC is likely to have a stabilizing effect on the financial system.

Conclusion

Recent technological developments in data storage, data processing, cryptography, and communications have had a profound effect on many aspects of society. And because money and payments are all about data management and communication, it should come as no surprise to witness the pressure such developments are exerting on the banking system. While our present system and the protocols it employs have evolved over time, its basic structure is rooted in a pre-internet era. So while digital currency may not be new, it is right to take the time to reexamine our institutional arrangements and to assess whether and how they need to evolve with the changing landscape and, of course, the needs of society.

References

- Andolfatto, D. (2015) "On the Desirability of a Government Cryptocurrency: Fedcoin." Available at www.youtube.com/watch?v=WfTsVg7V31Y. Link to blogpost: <http://andolfatto.blogspot.com/2015/02/fedcoin-on-desirability-of-government.html>.
- _____ (2018) "Blockchain: What It Is, What It Does, and Why You Probably Don't Need One." *Federal Reserve Bank of St. Louis Review* 100 (2).

- _____ (2020) “Assessing the Impact of Central Bank Digital Currency on Private Banks.” *The Economic Journal* (forthcoming). See <https://doi.org/10.1093/ej/ueaa073>.
- Federal Deposit Insurance Corporation (2020) “FDIC Survey Shows 95 Percent of U.S. Households Were Banked in 2019.” FDIC Press Release (October 19). Available at www.fdic.gov/news/press-releases/2020/pr20113.html.
- Garratt, R.; Martin, A.; McAndrews, J.; and Nosal, E. (2015) “Segregated Balance Accounts.” Federal Reserve Bank of New York Staff Report No. 730.
- Glass, C. (1917) “Amending the Federal Reserve Act: Speech in the House of Representatives” (June 14). Available at <https://fraser.stlouisfed.org/title/statements-speeches-carter-glass-3773/amending-federal-reserve-act-475386>.
- Koning, J. P. (2014) “Fedcoin.” *Moneyness* (October 19). Available at <http://jpkoning.blogspot.com/2014/10/fedcoin.html>.
- Ricks, M.; Crawford, J.; and Menand, L. (2021) “FedAccounts: Digital Dollars.” *George Washington Law Review* 89 (1): 113–72.

MONETARY EFFECTS OF GLOBAL STABLECOINS

Dong He

The globalized economy now moves at the speed of electrons—and the future of money is inexorably going digital, too. New forms of digital money, such as central bank digital currencies (CBDCs) and so-called global stablecoins, are shaping the future of money and payments. CBDCs are a digital form of fiat currency issued by a central bank. Some central banks started exploring CBDCs a few years ago, and those explorations have gathered momentum since Facebook and its partners announced their intention to launch the Libra stablecoin in June 2019. Because the stablecoins issued by large technological companies or platforms (Big Techs) have the potential to be adopted by businesses and households everywhere, they are called “global stablecoins,” or GSCs, in shorthand.¹

These new forms of digital money embody recent breakthroughs in digital technology such as cloud computing; the proliferation of mobile devices; and “distributed ledger technology,” which facilitates

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.13.

Dong He is Deputy Director of the Monetary and Capital Markets Department at the International Monetary Fund. The views expressed in this article are those of the author and are not necessarily those of the IMF. This article is based on joint work with Itai Agur, Giovanni Dell’Ariccia, Vikram Haksar, Yan Liu, Tommaso Mancini-Griffoli, Soledad Martinez Peria, and the staff team that produced the IMF report (2020).

¹For the sake of convenience, stablecoins are referred to as a new form of digital money, but that does not mean that IMF staff formally considers them to be “currency” or “money.” See more discussions in IMF (2020).

peer-to-peer payments without relying on bilateral banking relationships. As compared to first-generation cryptoassets, such as bitcoin, stablecoins seek to minimize price fluctuations by pegging their valuation to nations' official fiat currencies or other existing assets. They do so by backing stablecoins' issuance with assets (including assets denominated in widely used official currencies, either individually or as a "basket" of currencies), or by managing their outstanding supply using algorithms.²

This article explores stylized scenarios of GSC adoption in order to demonstrate their possible monetary effects. This is not an effort to forecast specific outcomes or to judge their desirability. Using several scenarios as way to envision future possibilities, the analysis aims to shed light on the following questions: What is special about GSCs that could lead to scenarios where they are used extensively? What are the consequences for monetary policy transmission and financial stability? What are the potential policy responses that country authorities could consider, aiming to balance efficiency gains against the potential risks of adopting GSCs?

Adoption and Use Scenarios

The cross-border use of currencies falls into two categories: the use of a currency for international transactions, and the domestic use of a currency issued by a foreign entity. In the first category, international currencies serve as a medium of exchange, as a store of value, and as a unit of account, and they are used for international trade, international finance, and foreign exchange reserves. In the second category, a foreign currency displaces a domestic currency for domestic transactions, a situation commonly referred to as "currency substitution."

Traditionally, the economic weight of a currency's issuing country—along with its trade links, financial connections, and geopolitical stature, as well as the currency's perceived safety and liquidity—explain why some currencies are used disproportionately in cross-border transactions (Eichengreen, Meld, and Chitu 2018). In addition, strong network effects and synergies

²Stablecoins may differ from traditional e-money schemes because they do not necessarily guarantee redemption at a pre-established face value denominated in the unit of account. See discussion in Adrian and Mancini-Griffoli (2019).

across the three functions of money (as a unit of account, a means of payment, and a store of value) act as self-reinforcing mechanisms: once a currency is dominant, it has tended to stay dominant (He and Yu 2016; Gopinath and Stein 2018).

Certain intrinsic attributes of GSCs could also drive their adoption and use in ways that are distinct from the existing dynamics of currency adoption, including the following:

- Lower transaction costs: GSCs have the potential to reduce the costs of cross-border payments by bypassing correspondent banking relationships and potentially simplifying compliance procedures. The programmability of GSCs, including through the use of smart contracts, could help reduce switching costs in foreign exchange markets and reduce transaction costs in securities issuance and trading through the tokenization of assets more broadly.
- Ease of access: Access to a foreign currency can be challenging to establish, especially in rural areas in developing countries. GSCs can broaden access to financial services and promote financial inclusion through mobile devices among those who do not have access to bank accounts. Moreover, particularly if the issuer is a private company, there can be an upfront investment with the specific aim of reaching a broader set of users.
- Access to complementary services or “bundling”: Stablecoins specifically can be more than a new form of money: they can provide entry into a wider platform of services. Big Techs, such as Facebook, could follow a pattern similar to those taken by Alipay and WeChat Pay in China by bundling their existing social media and e-commerce services, respectively, with payment and other financial services through the issuance of a stablecoin.

Legal provisions will heavily influence GSCs’ use. Importantly, recipient countries may determine the degree to which the denomination and settlement of contracts in a GSC will be legally authorized. Legal certainty would be necessary for GSCs to operate as a means of payment in cross-border transactions: That would require a degree of uniformity in the legal characterization of GSCs as instruments consistent with a payment function.

Regulatory frameworks also play a crucial role in shaping the scale and scope of GSC use. In countries with exchange restrictions,

households and firms could choose to use GSCs because they can help circumvent some of those limits. At the same time, there is significant regulatory uncertainty about the treatment of GSCs, and there are concerns regarding the ability to effectively oversee and supervise the complete ecosystem involved in a cross-border GSC. As a result, there may be significant pushback by regulators against allowing GSCs to operate in their jurisdictions.

As an example of such adoption dynamics, imagine two scenarios of the global adoption of GSCs. These scenarios are not chosen because they are likely or desirable; they are instead designed as stylized examples to help analyze the macrofinancial effects of different degrees of GSC adoption.

In the first scenario, a single GSC becomes commonly adopted in many countries, and it replaces the local currency as store of value, a means of payment, and a unit of account; it is also widely used for international transactions. This scenario might arise if a Big Tech platform of global scale decides to launch a GSC to a large customer base that spans across the globe.

Such a GSC could initially be issued against assets denominated in an existing reserve currency. Given the vast scale of the customer base of the Big Tech platform, the GSC could be adopted globally at a rapid pace. The launch of a payment instrument that is catered specifically to its customer network would help strengthen its business model. As the GSC gains popularity, network effects would take over: firms and households would start invoicing contracts in the GSC, and financial intermediaries would start collecting deposits and would lend through GSC-denominated contracts.

At some stage, once the GSC's adoption reaches critical mass, the peg to existing reserve currencies may no longer be needed to generate trust in the GSC's value. Its value could be preserved by the issuer committing to a credible set of rules or principles, such as the amount and pace of issuance, the level of interest to be paid, or the amount of fees to be charged—much like central banks conduct monetary policy (albeit without necessarily the same instruments or objectives). For example, it may target a “price stabilization rule” relative to a basket of products sold on the Big Tech's platform.

In the second scenario, consider the possibility of “multipolarity,” characterized by competition among a few major fiat currencies and GSCs that represent independent units of account. Instead of one

single GSC dominantly used for international transactions and payments and for domestic use worldwide, a few GSCs would be used internationally for both domestic and international transactions.

There might be “digital currency areas,” in which the use of a stablecoin is determined not by geographical borders but by the boundaries of the e-commerce and/or social platforms that use it. Such a digital currency area could be defined as a network where payments and transactions are made digitally by using a currency that is specific to this network. In other words, either the network would operate a payment instrument that can only be used inside that area, between its participants; and/or the network would use its own unit of account, distinct from existing official currencies (Brunnermeier, James, and Landau 2019).

This scenario could be the result of strategic responses by central banks and Big Techs in a digital-era game of currency competition. Anticipating the issuance of CBDC by the central bank that controls the dominant reserve currency, or the issuance of a GSC by a globally dominant Big Tech, other central banks and Big Techs could also launch their own CBDCs and/or GSCs. This scenario of multipolarity could be facilitated by the interoperability of different networks. With interoperability, users of a particular technology or system can interact easily with those using other technologies or systems, with substantially reduced interchange costs. The first-mover advantage, and the persistence of the established, dominant standard, might no longer be so strong.

Monetary Consequences

GSCs can affect the *transmission of monetary policy* by increasing currency substitution and by reshaping patterns of business-cycle synchronization. Currency substitution reduces the monetary authorities’ control over domestic liquidity by limiting the component over which the authorities have direct influence and by reducing the stability of money demand (El-Erian 1988). Substitution into the GSC is no different from substitution into existing fiat currencies. However, the GSC could intensify currency substitution due to easier accessibility. In addition, it could facilitate economic activities and trade links organized around Big Techs, and it could help reshape patterns of business-cycle synchronization, which might reduce the ability of monetary policy to respond to shocks.

The global adoption of a GSC with an independent unit of account could subject countries to the monetary stance of a private firm. Although privately issued money has circulated in various forms in the past (Champ 2007; King 1983; White 1995), the reach of a globally adopted GSC would be unprecedented. Therefore, the impact of any potential misuse of the payment system and monetary stance for private ends could exceed that of any private money previously seen.

The issuer could adjust the volume of issuances or the level of interest rates or fees in order to maximize its own profit, instead of aiming for price and output stabilization in countries that use the GSC. The potential for conflicts of interest would be especially large if that company is also a major provider of credit, the demand for which could come to depend upon its own monetary stance.

If the GSC were to have a price-stabilization rule relative to a basket of goods sold on the Big Tech's platform, it could challenge notions of optimal currency areas based on the synchronization of national business cycles. Platform-based economic activities and other parts of an economy could experience different trends. The sectors closely associated with the platforms could become a source of shocks to other parts of the economy. Moreover, if the GSC pays an adjustable rate of return, changes to that rate of return may not be aligned with what is required to stabilize other parts of the economy.

The monetary policy implications of multipolarity depend on whether the multipolarity is characterized by country currency blocs or by currency competition within each country. If multipolarity is delineated by blocs of countries, with each country adopting one CBDC or GSC, then the monetary policy implications for countries that use it would mirror those of single-currency adoption. Each GSC currency bloc would become more similar to a currency union than to a "dollarized" economy. Nevertheless, as in a currency union, monetary policy could only be tailored to the bloc as a whole; it might not be of much help to countries whose business cycles diverge from the average bloc member.

Multipolarity could imply that each country witnesses the domestic use of multiple currencies, perhaps because the functions of money are unbundled, with different currencies preferred for different functions. The domestic monetary implications of substitution into multiple currencies resemble those of substitution into a single currency, but effective competition among GSC issuers could help alleviate to some extent the conflict of interest problems noted above

and could enhance monetary stability in the longer term (Hayek 1976).

Nevertheless, multiple currencies could complicate exchange rate anchoring, if the domestic currency is still in use. Many countries that have experienced currency substitution into a single foreign currency have geared their monetary policy toward limiting bilateral exchange rate movements to stabilize domestic balance sheets exposed to the foreign currency. But with multiple currencies, exchange rate fluctuations between the foreign currencies would complicate such stabilization efforts.

GSCs can reduce the ability of central banks to control domestic *financial conditions* and to provide emergency liquidity assistance during stressful times. Financial conditions measure the cost of funding and reflect the underlying price of risk in the economy. Changes in financial conditions could alter incentives for risk taking and could lead to vulnerabilities in the financial system, affecting both business activity and financial stability over time.

As the global financial system becomes more integrated, domestic financial conditions of individual countries have been increasingly driven by so-called global financial cycles (Miranda-Agrippino and Rey 2020). The widespread adoption of a GSC could reinforce this trend. Global financial cycles could be associated with perceived changes in the safety and soundness of the ecosystem of the GSC arrangement. They could also be driven by interest-rate changes initiated by the GSC issuer. As a result, local central banks may find it more difficult to constrain boom-and-bust dynamics.

The GSC could worsen vulnerabilities from currency mismatches among banks and retail borrowers, again due to easier accessibility. Without appropriate safeguards, GSCs could facilitate illicit flows and could make it harder for regulatory authorities to enforce exchange restrictions and capital flow management (CFM) measures. GSCs could also affect financial stability if the credibility of their peg to fiat currencies becomes doubtful.

Greater currency substitution induced by GSC adoption could also make it harder for central banks to manage “run risks” in stressful times. For many emerging markets and developing countries, a run on the banking system is often associated with a run on the currency or the country (Laeven and Valencia 2018). In such cases, depositors would be incentivized to move their wealth into foreign assets.

The degree of accessibility of foreign assets is an important factor that depositors consider when choosing whether to launch a run on the bank. Another important factor is the availability of “lender-of-last-resort” assistance from the central bank that issues the currency. If opening and transferring to a digital wallet is faster and more accessible than opening and transferring to an account in a bank abroad—and considering that emergency liquidity assistance from the GSC issuing platform may not be easily available—incentives for depositors to launch a run could increase.

Global adoption of the GSC can give rise to systemic risks due to interconnectedness. Pressures on any component of the GSC ecosystem could quickly be transmitted across borders. The failure of a service provider (e.g., resellers, wallet providers, managers, or custodian/trustees of reserve assets) in one jurisdiction may lead users in another jurisdiction to question the safety and reliability of the GSC. Ultimately, weaknesses in one jurisdiction could raise risks for the entire ecosystem. This could lead to a potential breakdown of the global payment system—a situation in which payments worldwide could be interrupted.

In the scenario of multipolarity, currency competition within a jurisdiction could make local financial conditions more volatile. Low switching costs between CBDCs and GSCs could make the participation in a currency bloc or digital currency area unstable. Although competition could foster discipline in risk management in order to maintain the attractiveness of privately issued money in the longer term (Hayek 1976), currency competition might deliver stability only under certain restrictive conditions (Fernández-Villaverde and Sanches 2019). Indeed, there is no consensus among economists as to whether historical episodes of currency competition are associated with an improvement or deterioration in financial stability (e.g., White 1995).

In addition, competition could create incentives for GSC service providers to take on higher risks to gain market share in the short term. For example, GSC service providers might seek to gain a dominant market position by providing services at a loss in the short run with a view to recouping such losses through higher margins in the long run (capturing monopoly rents), or gaining from a possible subsequent too-big-to-fail subsidy. Thus, aggressive business models could be a driver of additional risks to the ecosystem.

On the positive side, the multipolarity scenario could create more opportunities for international risk sharing (Farhi and Maggiori 2017). This would be the case if the CBDCs and GSCs are not correlated, either because the issuing countries have asynchronized business cycles, or because the units of account of the GSCs are different from the fiat currencies.

GSC adoption could also help reduce transaction costs and frictions in international capital markets. From a lender's or an investor's perspective, GSCs, if bundled with big data derived from the e-commerce and social networking platforms, might offer improved cross-border credit analytics and help lower information asymmetries. From a borrower's perspective, a reduction in search and transaction costs could help improve access to foreign capital markets and lead to higher financial inclusion of less developed countries or of small firms across the world.

Furthermore, new classes of safe assets with superior features, such as triple-A-rated bonds denominated in the GSC units of account but embedded with smart contracts that offer attractive risk hedging properties, might emerge. They could offer the opportunity of portfolio diversification and the construction of better hedges against idiosyncratic external risk that countries might confront. For example, households and small firms in commodity exporting countries could have easier access to financial instruments that might help them hedge against volatilities in the prices of the commodity they produce and export.

Policy Implications

The potential for widespread adoption of GSCs raises important questions about the welfare implications of privately issued money at a global scale.³ In both scenarios, recipient countries could find themselves effectively exposed to the monetary stance adopted by private companies. It is unclear whether the profit maximization objective of the GSC-issuing firms will be consistent with stabilizing prices in the areas that use the GSCs. Also, the GSC issuers might not have enough incentives to practice robust governance and risk

³This section focuses on implications for macroeconomic and structural policies. For a discussion of implications for regulatory policies, see FSB (2020).

management, doubts about which could lead to financial instability and volatile capital flows worldwide. These potential problems could become acute when the GSC issuers enjoy a monopolistic position globally.

For the countries that might adopt GSCs, the main challenge would be how to preserve macroeconomic and financial stability without forgoing the benefits of more efficient cross-border payments and better access to international capital markets. The balance may differ from country to country, depending on the patterns of business-cycle synchronization. In addition, fiscal policy space and the availability of other tools for stabilization will be important.

In countries whose economic activities are tightly integrated with those of the issuing country of the currency to which the GSC is pegged, macroeconomic stabilization does not necessarily require an independent monetary policy. If they have sufficient fiscal space and capital and liquidity buffers in their financial systems, fiscal policy and macroprudential policies could play a larger role in mitigating shocks, tilting the balance of benefits away from monetary independence toward those from financial integration.

Some authorities could choose to restrict the use of GSCs in their countries. Those countries that have not liberalized their financial accounts to cross-border capital flows may have no choice but to restrict the use of GSCs if they are not ready for the level of capital-flow liberalization that the unrestricted use of GFCs would imply. Even for countries with a largely open financial account, under certain circumstances—for example, during capital-inflow surges or large capital flight in near-crisis situations—capital flow management measures might still need to be considered as a tool to help deal with shocks.

If country authorities wish to restrict the use of GSCs, they would need to assess to what extent the restrictive measures can be effectively enforced. Restrictive measures on domestic transactions could encompass GSC-related services by resident entities. They could range from tight licensing rules to a total ban. Restrictive measures could be implemented on cross-border payments as well, to mirror existing restrictions on current payments or capital transactions, or to ensure that export revenues are collected in foreign fiat currency. However, circumvention outside the regulated financial sector could undermine the effectiveness of such measures. For example, services

can be provided directly by nonresident service providers to a country's resident through the internet.

The effective implementation of restrictive measures on both domestic and cross-border use of GSCs would require adequate technological support. The design of the GSC should provide for the verification of the payor, of the recipient, and of the purpose of the payment. The authorities would need to be in a position to stop the payment if the design did not comply with the restrictive measures. GSCs could, in principle, be designed to facilitate compliance, where restrictive measures are built into the design or are programmed through smart contracts. For example, the transfer of value could be rejected if the balance were insufficient or if the metadata for the transaction to succeed did not meet certain requirements.

Policies to promote contestability among Big Techs' platforms could help mitigate the risks posed by the lack of competition and the uncertain governance of potential GSC issuers. Two key options include data policy frameworks mandating the portability of user data and interoperability requirements on payments systems.

Without regulation, the GSC issuer has sole control over users' data, which makes it harder for other potential entrants to compete in the provision of data-driven financial services (Carrière-Swallow and Haksar 2019). Requiring incumbents to share customer data with new entrants could be considered. This is similar to the logic behind open-banking initiatives and would reduce the barriers to entry arising from the harvesting of customer-sourced data and the related cross-selling of financial services.

There is also the scope to consider approaches that facilitate the interoperability of payments networks. In principle, this would help counter network effects as a barrier to entry, as competitors would be able to offer tokens, including GSCs, on the Big Tech platforms without needing to build their own separate networks. This is an area that will require further consideration on implementation—and further thought about how to balance the private interests of companies that have invested in building large networks against the public interest in greater competition and stability. An important question is whether these types of requirements are enforceable on cross-border networks, and whether international cooperation would be needed.

Conclusion

As the pace of digitalization accelerates, the landscape of international finance will probably be in a state of flux. Payments and financial-services provision will probably become increasingly integrated with the digital economy organized through e-commerce and social-networking platforms. The rise of GSCs could hark back to an era when the private sector played an important role in the monetary sphere, with Big Techs not only supplying goods and services, but also payment instruments that could influence monetary policy in many countries.

Country authorities will surely face important challenges in balancing opportunities and risks associated with GSCs. Some authorities may choose to prohibit the use of GSCs in their countries. However, it may be challenging to ensure the effective enforcement of restrictive measures. This will depend, in part, on countries' level of technological capacity.

Countries that choose to allow GSCs to be adopted will have a strong interest in ensuring that the GSC arrangements have robust governance and risk management. They will need to develop mechanisms to ensure that the GSC issuers' profit-maximization objectives do not jeopardize monetary and financial stability. Policies that promote competition among Big Tech platforms and interoperability among different types of GSCs could help mitigate some of these concerns, but they would require further work.

Central banks also need to move with the times and stay in the game of the digital economy (He 2018). They will need to maintain the attractiveness of their own liabilities as the ultimate settlement assets in the digital age, including giving careful consideration to the pros and cons of issuing CBDCs.

References

- Adrian, T., and Mancini-Griffoli, T. (2019) "The Rise of Digital Money." *IMF Fintech Notes* No. 19/001.
- Brunnermeier, M. K.; James, H.; and Landau, J. P. (2019) "Digital Currency Areas." Available at VOXEU.org <https://voxeu.org/article/digital-currency-areas>.
- Carrière-Swallow, Y., and Haksar, V. (2019) "The Economics and Implications of Data: An Integrated Perspective." IMF Departmental Paper No. 19/16.

- Champ, B. (2007) “Private Money in Our Past, Present, and Future.” Federal Reserve Bank of Cleveland *Economic Commentaries* (January 1).
- Eichengreen, B.; Mehl, A.; and Chitu, L. (2018) *How Global Currencies Work: Past, Present, and Future*. Princeton, N.J.: Princeton University Press.
- El-Erian, M. (1988) “Currency Substitution in Egypt and the Yemen Arab Republic: A Comparative Quantitative Analysis.” *IMF Staff Papers* 35 (1): 85–103.
- Farhi, E., and Maggiori, M. (2017) “A Model of the International Monetary System.” *Quarterly Journal of Economics* 133 (1): 295–355.
- Fernández-Villaverde, J., and Sanches, D. (2019) “Can Currency Competition Work?” *Journal of Monetary Economics* 106: 1–15.
- Financial Stability Board (2020) “Regulation, Supervision and Oversight of ‘Global Stablecoin’ Arrangements” (October).
- Gopinath, G., and Stein, J. C. (2018) “Banking, Trade, and the Making of a Dominant Currency.” NBER Working Paper No. 24485 (April).
- Hayek, F. A. (1976) *The Denationalisation of Money*. London: Institute of Economic Affairs.
- He, D. (2018) “Monetary Policy in the Digital Age.” *Finance & Development* (June): 13–16.
- He, D., and Yu, X. (2016) “Network Effects in Currency Internationalization: Insights from BIS Triennial Surveys and Implications for the Renminbi.” *Journal of International Money and Finance* 68: 203–29.
- International Monetary Fund (2020) “Digital Money across Borders: Macro-Financial Implications.” IMF Staff Report (October).
- King, R. G. (1983) “On the Economics of Private Money.” *Journal of Monetary Economics* 12: 127–58.
- Laeven, L., and Valencia, F. (2018) “Systemic Banking Crises Revisited.” IMF Working Paper No. 18/206.
- Miranda-Agrippino, S., and Rey, H. (2020) “U.S. Monetary Policy and the Global Financial Cycle.” *Review of Economic Studies* 87 (6): 2754–76.
- White, L. H. (1995) *Free Banking in Britain: Theory, Experience and Debate 1800–1845*. London: Institute of Economic Affairs.

A RECKONING LOOMS FOR AMERICA'S 50-YEAR FINANCIAL SURVEILLANCE SYSTEM

Michael J. Casey

For all the upheaval of 2020, it's perhaps not surprising that the 50-year anniversary of a major piece of financial legislation came and went with little fanfare. But the 1970 U.S. Bank Secrecy Act (BSA) deserves much scrutiny.¹ In mandating that financial institutions maintain customer identity records and report illicit activity to government agencies, the BSA was a landmark statute by any measure. It paved the way to an ever-expanding system of international surveillance that's a cornerstone of U.S. economic power.

There have long been questions about whether this system, aimed at domestic and international money launderers, tax evaders, and other criminal financiers, provides a net benefit to global well-being. Its critics argue, for example, that the draconian rules excessively burden the poor, leaving billions excluded from vital financial services (de Koker 2006; Isern and de Koker 2009). Even so, in the years since the BSA's founding, the regime created in its wake has only become more pervasive.

Now, for the first time, a real alternative is emerging, courtesy of digital currency technology. This is empowering people, businesses,

Cato Journal, Vol. 41, No. 1 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.14.

Michael J. Casey is Chief Content Officer at CoinDesk.

¹For the full text of the Bank Secrecy Act (BSA 1970), also known as the "Currency and Foreign Transactions Reporting Act," see <https://fraser.stlouisfed.org/title/bank-secrecy-act-1025>.

and, most importantly, foreign governments to bypass intervention in their financial affairs. The situation poses a real threat to U.S. international power and creates avenues for other states, such as China, to boost their foreign influence. There is an urgent need to reassess U.S. regulatory priorities. Though rarely discussed, it is arguably the biggest of the many challenges facing President Joseph Biden.

A Leviathan Grows

Signed into law by President Richard Nixon and amended and expanded over time as concerns grew, first about international drug trafficking and, later, over terrorism, the BSA requires financial institutions to monitor and keep records of their clients' transactions, identities, and personal information. It obliges them to report total daily purchases of negotiable instruments exceeding \$10,000 and to file suspicious activity reports (SARs) when transactions suggest potential money laundering, tax evasion, or other criminal activities. In the wake of the September 11 attacks of 2001, the BSA was amended under the USA PATRIOT Act. Since then, it has required the entities covered by the act to employ a pervasive identifying system known as "know your customer" (KYC) and to create formal anti-money-laundering (AML) programs with clear policies, procedures, and controls to put compliance officers in place, to hold ongoing employee training, and to conduct independent audits of the program. Those amendments also greatly expanded the act's definition of "financial institution" to include nonbank entities such as securities broker-dealers, casinos, money-service businesses, and insurance companies.

The BSA's founding fostered a variety of related agencies at home and abroad that together formed an increasingly complex, pervasive financial surveillance network. The Financial Crimes Enforcement Network (FinCEN), founded in 1990, receives the customer reports that banks generate and turns them into actionable intelligence against money laundering and other illicit financial activity. Upon its founding, FinCEN joined the Financial Action Task Force (FATF), a multilateral body created by the Group of Seven nations the previous year amid growing concerns about the international drug trade. Five years later, FinCEN became a founding member of the international Egmont group of Financial Intelligent Units (FIUs), which in compliance with the FATF's guidelines, has enforced an

interlinking, cooperative, KYC-based international system of record-keeping and monitoring.

Over time, FinCEN rule updates and “guidance” have expanded the umbrella of AML-KYC principles. Since 1999, the agency has explicitly required operations deemed as money-service businesses (MSBs) to register with it (Treasury 1999: 4). In 2013, the increasing popularity of bitcoin and other cryptocurrencies led FinCEN to expand its definition of those MSBs to include businesses involved in exchanging what the agency called “virtual currencies” (Treasury 2013). Since then, it has tweaked and adjusted its rules to expand its oversight of the sector. And in consultation with its fellow FATF members, many of these rules have essentially been internationalized as other FIUs follow FinCEN’s lead.

While the FATF and the Egmont group are set up as equal-weight deliberative bodies, this international alphabet soup of agencies and monitoring programs has evolved to become an indirect, but effective mechanism for the United States to exercise significant influence over foreign businesses and governments. For example, this authority to monitor and curtail financial flows affords Washington broad sanctioning power under the Office of Foreign Assets Control—which, along with FinCEN now falls under the U.S. Treasury’s Office of Terrorism and Financial Intelligence—and it forces foreign companies to comply with other U.S. laws such as the anti-Cuba Helms-Burton Act. This unique power derives from the dollar’s status as the world’s reserve currency, which leaves non-U.S. banks wishing to conduct cross-border transactions no choice but to create correspondent banking relationships with U.S. banks—typically Wall Street-based money-center institutions. As institutional “customers,” those foreign banks must comply with those U.S. banks’ KYC requirements, which in turn means they too must make similar demands of the smaller domestic banks they deal with, dictating how *they* monitor *their* customers.

In this article, I will discuss whether this hierarchical system of KYC and KYCC (know your customer’s customer) has delivered a net benefit in terms of criminals caught and lives saved and whether or not U.S. and international peacekeeping interests have ultimately been served by tracking terrorists’ and other violent actors’ funds. But even if we assume a positive effect, let’s describe it for what it is: an *all-pervasive, globe-spanning surveillance system*. This is important when addressing legitimate concerns over China’s invasion of

privacy as it rolls out a centrally controlled digital currency that has the potential, privacy advocates warn, to become a “panopticon.” I say this not to grant Beijing’s supporters a chance for “whataboutism,” but to point out that with America’s enemies and competitors actively building technologies that get around Washington’s financial gatekeeping powers, its own moral standing can be challenged.

But Is It All Worth It?

So, after 50 years of the BSA, let’s try to measure its effectiveness. Little is known about how much money laundering and illicit financial activity goes uncaught. After all, it’s an immeasurable counterfactual. A 2011 UN Office on Drugs and Crime study estimated that in 2009, criminals laundered \$1.6 trillion, or 2.7 percent of world GDP (UNODC 2011). (Tellingly, no international accounting of the problem has occurred in the decade since.) More recently, a trove of leaked FinCEN documents revealed that banks had flagged around \$2 trillion worth of suspicious transactions to authorities between 1999 and 2017, and in many cases, they continued to do business with those entities (Leopold 2020). Many of those transactions were likely legitimate, and even for those recognized as illicit, there are often legitimate enforcement reasons for maintaining and monitoring these criminals’ activities before shutting them down. Nonetheless, when combined with the UN report and other accounts of widespread financial fraud, the leaks are a reminder that for all this surveillance infrastructure, policing illicit money movements is extremely difficult. The global AML-KYC dragnet has gaping holes in it.

On the other hand, the system’s pervasive identifying, tracking, and reporting of transactions imposes very real costs on the global economy. It adds friction to finance, hindering people’s capacity to engage in exchange, especially in countries with underdeveloped record-keeping systems and excessive corruption, where IDs don’t rise to U.S. banks’ standards. Although lightweight mobile banking solutions and other initiatives helped lower the proportion of the world’s adult population without a bank account from 49 percent in 2011 to 31 percent in 2018, some 1.7 billion adults still fell into the World Bank’s “unbanked” category (Demirgüç-Kunt et al. 2018). Amid the lifestyle constraints imposed by Covid-19 restrictions and

an aversion to using physical cash, a lack of access to online banking has since put these people at an even greater disadvantage.

Beyond mere access to a transactional bank account, financial services in general remain prohibitively expensive for far too many. In the United States itself, some 66 million adults, or 22 percent of the population, were considered “unbanked” or “underbanked” in 2018, according to the Federal Reserve (Federal Reserve 2019). Too few people of low income can obtain credit or other financial services because compliance-burdened banks find it unprofitable to service them. Even though the FATF recommends exemptions from customer reporting on transfers of less than \$1,000 and the United States sets a threshold of \$3,000, banks’ strict application of KYC-AML rules across all customer and interbank relationships has fostered widespread risk aversion among bankers. Engaging with the poor is just not worth the risk for them. This has left billions of people in the world’s informal economies as bystanders to the global economy and unable to break free of poverty.

Meanwhile, the bad guys that the laws are intended to catch find the means to get around them. They have all sorts of methods for obscuring money flows and identities through a maze of shell companies and complex netting and laundering procedures. There have long been bankers who are willing, for a fee, to turn a blind eye. And as shown by the Panama Papers revelations about the law firm Mossack Fonseca, services exist to actively create ownership and reporting structures that allow money of suspect origin to find a resting place in untouchable, offshore accounts (ICIJ 2016).

Beyond the moral inequity of the system, it can also be viewed as a barrier to self-determination in non-U.S. jurisdictions, breeding anti-American sentiment—often among the kinds of people the United States should be cultivating. In 2014, I met a small group of young bitcoin entrepreneurs in Hong Kong, some of whom would a few years later use their technology to help anti-Beijing student protesters avoid surveillance by authorities. Each told me their biggest hurdle lay in opening a company bank account. Their local banks had told them they held no concerns of their own about cryptocurrency service providers but that their U.S. subsidiaries worried about meeting their U.S. banking counterparts’ compliance demands and that they might look unfavorably on a Hong Kong sister institution dealing with this little-understood industry. With the Sword of Damocles hanging over bankers’ heads, these entrepreneurs had become

victims of a fear of what *might* happen. It's a system of control by uncertainty.

Entire countries and regions have been ravaged by this financial “de-risking” trend, which grew as regulations tightened after, first, the September 11 attacks in 2001, and, later, the financial crisis of 2008. Expanded AML-KYC regimes have seen U.S. banks pull back on lending or on processing payments to and from banks in small foreign economies because the compliance costs and legal risks outweigh the payoff from doing business on a small scale. A 2017 survey by the Caribbean Association of Banks found that 21 of 23 banks in 12 countries had lost at least one correspondent banking relationship (De Souza 2017). The upshot is that the cost of credit and of sending and receiving money has risen for Caribbean islanders even as their countries' offshore banking and insurance industries have welcomed massive financial inflows from foreign institutions. It's a tale of two entirely divergent island economies, their divisions accentuated by fallout from U.S. laws—one a purely legal construct for foreign corporations to exploit, the other a real-world community of striving human beings.

In these and other ways, America's obsession with financial snooping erects barriers around the world, hindering the ability of entrepreneurs of all sizes to innovate and bring valuable new ideas and businesses to market. The opportunity cost of all of that missed production and progress is incalculable. And while financial regulators would have us believe it's the price we must pay for staying safe, the view from 2021 makes it hard to see anything but a terrible deal. What solutions to the world's mounting challenges might have arisen if it weren't too expensive for so many people to build them? What acts of violence, crime, or terrorism might never have occurred if their perpetrators didn't find fertile recruiting grounds among the desperately poor who are cut off from remittances and other financial life bloods?

Despite all these barriers, one extremely important innovation has broken through them to pose a serious disruptive threat to this U.S.-centric financial surveillance regime. Cryptocurrencies and blockchains, which have also spawned new ideas in traditional fiat money such as central bank digital currencies (CBDCs) and “stablecoins,” enable direct peer-to-peer transfers. They have the potential to bypass the surveillance system's gatekeeping institutions. They also portend a very real, geopolitical battle. President Biden will have to confront the challenge. Dealing with it will require some

outside-the-box thinking and a willingness to give up on some, if not all, of that gatekeeping power.

Toward Greenback Obsolescence

For now, much of the governments' attention on new financial technology's supposed threat to security has focused on decentralized cryptocurrencies such as bitcoin. They justify their concerns on frequent headlines about criminal enterprises using cryptocurrencies to move money around undetected. We recently heard European Central Bank President Christine Lagarde decry bitcoin's "funny business" and "reprehensible money laundering" trends (Reuters 2020). Citing similar concerns, India and Nigeria recently moved to ban cryptocurrencies outright (De 2021a). And in late December 2020, outgoing Treasury Secretary Steven Mnuchin delivered a draconian anti-crypto proposal at the 11th hour of the Trump administration (De and Nelson 2020). It would require cryptocurrency custodial businesses such as exchanges and hosted wallet providers to not only report their own customers' identities to FinCEN but also those of the third-party holders of so-called self-custody wallets with whom those customers often transact. The proposal, which had its public comment period extended twice such that it now closes March 29, had by late-February attracted a record 7,500 comments. A great many were critical, calling it a barrier to innovation, a breach of people's right to privacy, and a blow to the liberating potential that such wallets offer to people living under authoritarian regimes in China, Venezuela, Iran, or other such places.

Even setting aside these powerful civil liberty arguments, there are two big problems with regulators' kneejerk anti-crypto posture. The first is that while it's true that bitcoin is used by criminals, who need not provide identifying information when moving money between self-hosted wallets, innovative regulators in some jurisdictions are equally finding they can use the system to monitor flows and aid enforcement. Even though transaction data is pseudonymous, the system's permanent, public blockchain ledger means payments can be easily traced from origin to exit point. Criminals are seeking out technologies that obscure those flows, but savvy enforcement agents are right there with them, using similar disguising technology to infiltrate these illicit networks and break them up. Recent successes in

using blockchain technology to trace criminal interactions and apprehend perpetrators include the arrests of participants in the mid-2020 Twitter hack (Chainalysis 2020). The jury is still out on whether, on balance, bitcoin hinders police work or actually aids it.

The second big problem with this cryptocurrency obsession is that it leaves regulators blind to a far bigger technological challenge to their enforcement model: the one being developed by governments. Different countries will soon easily build interoperability across their respective central bank digital currencies' protocols (BIS 2020: 7) so that a user of one CBDC, such as a Russian importer, can directly transfer value to someone using the other, such as a Chinese exporter. This creates a secure cryptographic information channel that negates the need for the current cumbersome, bank-led model run by the Society for Worldwide Interbank Financial Telecommunication (SWIFT). Also, if they employed a blockchain-based escrow system that neither party could manipulate, the importer and exporter could establish a smart contract that protects both sides from currency volatility without needing to protect their positions via an intermediating reserve currency such as the dollar (Casey 2019). We could soon see the intermediation of correspondent banks all but removed from global commerce, saving trillions of dollars in financial fees.

China, the United States' main economic rival, is well ahead of pretty much every country in developing CBDC technology, with its Digital Currency and Electronic Payments (DCEP) system now rolling out. While the DCEP project is currently focused on domestic retail use cases, its forthcoming integration into decentralized supply chain solutions and other blockchain systems with the potential to cross borders has broad international implications. China could leverage its deep investments in Africa, for example, where Chinese technology lies at the heart of the continent's information infrastructure to seed widespread use of the digital yuan there. And among the 65 countries within the Chinese-sponsored Belt and Road project, at least one is already signaling interest in developing interoperability capacity with the DCEP. (During a World Economic Forum panel discussion that I moderated in January, Singapore Senior Minister Tharman Shanmugaratnam indicated as much in an exchange with Zhu Min, a former People's Bank of China governor and deputy managing director of the IMF who is now chairman of China's National Institute of Financial Research.)

All this will be game changing for the United States, which as we've described has built a model of surveillance and power around its dominance of international banking. For now, it might seem the dollar is stronger than ever, given the surging demand for greenbacks unleashed by the Covid-19 crisis and the Federal Reserve's willingness to act as the world's liquidity provider of last resort. But in reality, the international imbalances fostered by this global dependency, which has generated massive dollar-denominated bank assets and liabilities in Europe and Asia, is stirring talk in international circles about how digital currencies might help the world exit the dollar standard.

In a bombshell speech at the Federal Reserve's annual Jackson Hole conference in 2019, for example, former Bank of England Governor Mark Carney proposed a new multilateral digital currency to replace the dollar (Carney 2019). Many others believe we are more likely to move to a less orderly, multicurrency world of interoperable CBDCs and cryptocurrencies, one that no longer needs the U.S. banking system (see Birch 2020; 187–215). Either way, both scenarios spell the end of what former French Finance Minister Valéry Giscard d'Estaing once described as America's "exorbitant privilege" (Eichengreen 2010: 4).

Biden's Moment

What is the Biden administration to do about this? Well, the first thing needed is awareness. Thankfully, the new president appears to be building on some of the Trump administration's more change-embracing approaches to this field while adding expertise to areas where it was lacking. Christopher Brummer, Biden's pick for chairman of the Commodity Futures Trading Commission (CFTC), is a fintech specialist whose knowledge of cryptocurrencies and other disruptive financial technologies suggests a continuation of the CFTC's recently acquired reputation as Washington's most innovation-friendly regulatory agency.

Meanwhile, the Biden administration might drive a more forward-looking position among some of the Trump era's more reactionary factions. New Treasury Secretary Yellen has cautiously recognized cryptocurrencies' potential to "improve the efficiency of the financial system," offering a contrast to Mnuchin, who industry insiders described as openly hostile to

the crypto industry (De 2021b). There's also real hope that Gary Gensler, the new chairman of the Securities and Exchange Commission, will soften Jay Clayton's heavy-handed opposition to cryptocurrency exchange-traded funds and will generally take a more pro-innovation view of the potential for cryptocurrencies to reduce rent seeking by intermediaries. Gensler, who served as chairman of the CFTC in President Obama's challenging first term, spent the past few years teaching cryptocurrency and blockchain courses at MIT.²

It's noteworthy also that before his nomination, Gensler headed Biden's financial regulatory transition team, a group that included fellow MIT professor Simon Johnson, a former IMF chief economist who became a prominent critic of Wall Street's excessive powers during the financial crisis. As a founding member of MIT's Digital Currency Initiative (where I also worked), Johnson was instrumental in stoking Gensler's interest in this technology's potential. It's also worth noting that in November 2019, Gensler joined other leaders of past Democratic administrations, including former Treasury Secretary Lawrence Summers and former Defense Secretary Ash Carter, in a simulated "currency war game" at Harvard. The simulation explored how digital currencies might affect the United States' capacity to pursue its international interests. CoinDesk's Nikhilesh De captured the group's concerns in a summary of their hypothetical game scenarios: "China's central bank digital currency (CBDC) has undermined the dollar's dominance of the global financial system. North Korea has used the digital yuan to build and test nuclear missiles, safely evading financial sanctions imposed by Washington. And malicious actors are stealing funds from the SWIFT communications network to prove a point." (De 2019).

Openness is the Solution

Awareness is one thing. The bigger challenge is the policy response. To paraphrase Clayton Christensen, the new government faces the ultimate "innovator's dilemma" (Christensen 2016).

²Full disclosure: I co-wrote a paper on the potential and pitfalls of blockchain technology with Gensler and other MIT researchers during my tenure at that institution (see Casey et al. 2018).

For the United States to fully embrace the efficiency and competitive opportunities that digital currencies and related technologies offer the world economy, it must ultimately abandon the century-long hegemony afforded to it by the current system. This would mean giving up on the Federal Reserve's almost consequence-free capacity to print money, set low interest rates, prop up financial assets, and spur debt-fueled consumption. It would also mean surrendering the surveillance and political influence powers that arise from the gatekeeping dominance of U.S. banks. It would spell the end of Wall Street as a global powerhouse.

At the same time, doing nothing is a recipe for disaster. We can make analogies here to the fate of countless once-dominant industries that were disrupted by new technologies—from steam engines to video rental stores—although the stakes are magnitudes higher. Hemmingway's maxim about bankruptcy occurring in two ways—"first slowly, then all of a sudden"—seems apropos here. Once the world's business leaders realize they now have a programmable medium of exchange that allows them to lower the risk of transacting with each other without paying gatekeeping fees or submitting to the controls of American banks, the dollar will first slowly lose ground as a part of global commerce then suddenly drop to irrelevance. In the end, the United States will have no option but to cede the intoxicating power of the old regime and invest in generating as much benefit as possible from this new technology.

That might sound like the government is between a rock and a hard place. But there's another way to look at this, one more finely attuned to the traditional idea of American "soft power." If, as many a U.S. statesman has declared, the country's interests are best served by promoting open markets and free societies, then there is a big opportunity to seize the moral high ground in the battle for the future of money. The best way to conceive of that is to think of the dilemma the authoritarian Chinese President Xi Jinping faces with regard to the privacy and transactional freedom of his countrymen versus the more open position that the United States, at least ostensibly, is supposed to represent. By that idealistic standard, at least, President Biden has less of a dilemma and more of an opportunity.

Former CFTC Chairman Christopher Giancarlo has founded his Digital Dollar Foundation on this very idea. He argues that the U.S. Constitution's embedded privacy protections would give a

future digital dollar a powerful advantage over both the digital Chinese yuan, which is burdened with state surveillance, and the Facebook-founded Diem project (formerly known as Libra), where users fear commercial surveillance (Giancarlo 2020). The counterpoint to this, of course, is that for the past 50 years, as we've discussed, the United States has been surveilling everyone's transactions. And more recently, as Edward Snowden's revelations revealed, it has shown a deep willingness and capacity to apply that to our internet transactions, be they monetary or otherwise. Admirably, the Digital Dollar Foundation's prototype for a digital dollar deliberately limits such interventionist state powers. But for a new monetary model to truly serve U.S. global interests, it must take an even more pro-innovation posture than merely creating a digital dollar. For inspiration, we can look to the openness principles that drove the first round of internet regulation under the Telecommunications Act of 1996 (FCC 2013).

At that time, in a moment of unique, post-Cold War American power, the logic of U.S. interests in the expansion of disruptive internet technology was clear: open everything up. You saw it in the move to force the regional Baby Bell telecom companies to provide access to their existing telephone wires to startup digital competitors. You saw it in the United States giving support to multi-stakeholder transnational institutions such as ICANN and the IETF to govern disputes over internet real estate in ways that contained vested interests. And you saw it in then Federal Communications Commission Chairman Reed Hundt's trips abroad, where he actively sold the idea that if other countries would adopt a similarly laissez-faire approach to internet startups and access to infrastructure, we'd all be better off.

That was a moment of consummate American power, wrapped in a proactive internationalist agenda, when there was a clear view that big opportunities would arise if free trade and open development were allowed to flourish. It paved the way for a new, internet breed of U.S. corporate behemoths in Amazon, Facebook, and Google.

Cryptocurrency technology is the next decentralizing phase of the internet, in this case attacking the gatekeeping powers of both Wall Street and the aforementioned post-1996 internet titans. As such, it offers a similar American opportunity as the one that arose 25 years ago, with even more potential to disrupt the political status quo. Rather than simply creating another digital dollar in the hope the world will fall for the myth of its superior privacy protec-

tions, Biden's Washington needs to find some of its Clinton era groove and set an international example for openness. That means taking a more proactive, less constraining approach to regulation so that new forms of decentralized and private cryptocurrency and stablecoin payments can arise and compete with each other, and with the dollar itself. The Chinese Communist Party government, with its capital controls and its "social score" system for surveilling its citizens, simply can't afford to promote such a model. If open-system alternatives exist with American backing, it's hard to see how a digital yuan could compete.

Conclusion

If the United States were to treat money less as a means of controlling everyone and more as a field of opportunity for creative start-ups to provide channels of creativity and financial access for billions of excluded people, we might just get to live through another American century. Sure, there'd be no more Wall Street, and Silicon Valley would see its piece of the rapidly expanding global innovation pie shrink. But in the place of that international dominance would come the ultimate victory: a global financial system built on core American values that burnish free societies and breed prosperity worldwide.

References

- Birch, D. G. W. (2020) *The Currency Cold War: Cash and Cryptography, Hash Rates and Hegemony*. London: London Publishing Partnership: 187–215.
- BIS (2020) "Central Bank Digital Currencies: Foundational Principles and Core Features." Bank of International Settlements. Available at www.bis.org/publ/othp33.pdf.
- BSA (1970) "Bank Secrecy Act." Federal Reserve Bank of St. Louis, Fraser: <https://fraser.stlouisfed.org/title/bank-secrecy-act-1025>.
- Carney, M. (2019) "The Growing Challenges for Monetary Policy in the Current International Monetary and Financial System." Speech given at "Challenges for Monetary Policy," a symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming (August 23). Available at www.bis.org/review/r190827b.htm.

- Casey, M. J. (2019) “A Crypto Fix for a Broken International Monetary System.” CoinDesk. Available at www.coindesk.com/a-crypto-fix-for-a-broken-international-monetary-system.
- Casey, M. J.; Crane, J.; Gensler, G.; Johnson, S.; and Nurala, N. (2018) “The Impact of Blockchain Technology on Finance: A Catalyst for Change.” *Geneva Reports on the World Economy* 21. The International Center for Monetary and Banking Studies. Available at www.sipotra.it/wp-content/uploads/2018/07/The-Impact-of-Blockchain-Technology-on-Finance-A-Catalyst-for-Change.pdf.
- Chainalysis (2020) “Chainalysis in Action: How Law Enforcement Used Blockchain Analysis to Follow Funds and Identify the Twitter Hackers.” *Chainalysis Blog*. Available at <https://blog.chainalysis.com/reports/chainalysis-doj-twitter-hack-2020>.
- Christensen, C. (2016) *The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail*. Cambridge, Mass.: Harvard Business Review Press.
- de Koker, L. (2006) “Money Laundering Control and Suppression of Financing of Terrorism: Some Thoughts on the Impact of Customer Due Diligence Measures on Financial Exclusion.” *Journal of Financial Crime* 13 (1): 26–50.
- De, N. (2019) “In Wargaming Exercise, a Digital Yuan Neuters U.S. Sanctions and North Korea Buys Nukes.” CoinDesk. Available at www.coindesk.com/in-wargaming-exercise-a-digital-yuan-neuters-us-sanctions-and-north-korea-buys-nukes.
- _____. De, N. (2021a) “Janet Yellen Offers US Senate a More Nuanced Take on Crypto,” CoinDesk. Available at www.coindesk.com/janet-yellen-offers-senate-a-more-nuanced-take-on-crypto.
- _____. (2021b) “State of Crypto: India and Nigeria’s Crypto Crackdowns Continue Old Trends.” CoinDesk. Available at www.coindesk.com/india-and-nigerias-crypto-crackdowns-continue-old-trends.
- De, N., and Nelson, N. (2020) “US Floats Long-Dreaded Plan to Make Crypto Exchanges Identify Personal Wallets.” CoinDesk. Available at www.coindesk.com/fincen-proposes-kyc-rules-for-crypto-wallets.
- Demirgü-Kunt, A.; Klapper, L.; Singer, D.; Ansar, S.; and Hess, J. (2018) “The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution.” World Bank Group 19–22.

- Available at <https://openknowledge.worldbank.org/handle/10986/29510>.
- De Souza, I. (2017) “Correspondent Banking and De-Risking in the Caribbean.” Caribbean Association of Banks. Available at http://cab-inc.com/wp-content/uploads/2016/07/Correspondent_Banking_and_Derisking_IDS_3.docx.
- Eichengreen, B. (2010) *Exorbitant Privilege: The Rise and Fall of the Dollar and the Future of the International Monetary System*. Oxford: Oxford University Press.
- FCC (2013) “Telecommunications Act of 1996.” Available at www.fcc.gov/general/telecommunications-act-1996.
- Federal Reserve (2019) “Report on the Economic Well-Being of U.S. Households in 2018.” Available at www.federalreserve.gov/publications/2019-economic-well-being-of-us-households-in-2018-banking-and-credit.htm.
- Giancarlo, C. (2020) “The Digitization of Money and Payments.” Testimony before the U.S. Senate Committee on Banking, Housing and Urban Affairs. Available at www.banking.senate.gov/imo/media/doc/Giancarlo%20Testimony%206-30-20.pdf.
- ICIJ (2016) “The Panama Papers: Exposing the Rogue Offshore Finance Industry.” Available at www.icij.org/investigations/panama-papers.
- Isern, J., and de Koker, L. (2009) “AML/CFT: Strengthening Financial Inclusion and Integrity.” *CGAP Focus Note* 52.
- Leopold, J. (2020) “The FinCEN Files.” BuzzFeed News. Available at www.buzzfeednews.com/article/jasonleopold/fincen-files-financial-scandal-criminal-networks.
- Reuters Staff (2020) “ECB’s Lagarde Calls for Regulating Bitcoin’s ‘Funny business.’” Reuters. Available at www.reuters.com/article/us-crypto-currency-ecb/ecbs-lagarde-calls-for-regulating-bitcoins-funny-business-idUSKBN29I1B1.
- Treasury Department, FinCEN (1999) “Amendment to the Bank Secrecy Act Regulations: Definitions Relating to, and Registration of, Money Services Businesses. 31 CFR Part 103 RIN 1506-AA09.” *Federal Register* 64.
- _____ (2013) “Application of FinCEN’s Regulations to Persons Administering, Exchanging, or Using Virtual Currencies.” FIN-2013-G001. Available at www.fincen.gov/resources/statutes-regulations/guidance/application-fincens-regulations-persons-administering.

UNODC (2011) "Estimating Illicit Financial Flows Resulting from Drug Trafficking and Other Transnational Organized Crimes: Research Report." Available at www.unodc.org/documents/data-and-analysis/Studies/Illicit_financial_flows_2011_web.pdf.

CHARTERING THE FINTECH FUTURE

Charles W. Calomiris

What we use as our medium of exchange is subject to dramatic change over time, and sometimes bank regulation has accelerated such changes. The national banking system, founded in 1863, envisioned the creation of a uniform medium of exchange in the form of national bank notes, which replaced the preexisting system of state bank note issuance. But the creation of the national banking system soon resulted in the diminished importance of bank notes as a medium of exchange. Under the new system, state banks faced a prohibitive tax of 10 percent per year on any notes they issued, and national banks had to maintain collateral at the Treasury for their outstanding national bank notes equal to 111 percent of their outstanding notes, and also had to maintain an additional 5 percent in required government-currency (“greenback”) cash reserves on hand. That meant that if a bank wanted to make loans, it had to find an alternative to bank notes as a funding source for those loans.

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.15.

Charles W. Calomiris is the Henry Kaufman Professor of Financial Institutions at Columbia Business School, Director of the Business School’s Program for Financial Studies Initiative on Finance and Growth in Emerging Markets, and a professor at Columbia’s School of International and Public Affairs. He wrote this article during his tenure as Chief Economist and Senior Deputy Comptroller for Economics at the Office of the Comptroller of the Currency. The opinions expressed are those of the author and not necessarily those of the OCC or the U.S. government. He thanks the members of the OCC Economics Working Group on Fintech and Financial Inclusion for assistance, including Chau Do, Kristoffer Jackson, Sean Lewis-Faupel, Irina Paley, and Chris Reynolds. He also thanks Peter Stella, Stephen Karolyi, Chau Do, Murillo Campello, and Bryan Hubbard for helpful comments on earlier drafts. The usual caveat applies.

Deposits had been growing in importance leading up to the National Banking Act of 1863, but the act accelerated the growth of deposits markedly, and they became the primary funding vehicle for loans. As Comptroller Eckels remarked in 1896: “And thus it has come about that deposit taking is now the feature, and the issuing of circulating notes but the incident, in national banking, instead of, as in the early history of the system, the note-issuing function being the feature and *deposit banking but the incident*” (Eckels 1896: 565; emphasis added).

Furthermore, bank notes were not issued by all banks prior to the 19th century. Bank notes were a 17th-century innovation, and they were not the primary medium of exchange or the main liability for many important banks in the 18th and early 19th centuries. For many transactions, bankers’ acceptances, and bills of exchange were both the primary vehicle of credit and the medium of exchange, and banks like Amsterdam’s famous Wisselbank functioned primarily as a clearinghouse for such bills.

Clearly, the history of successful bank chartering informs us that banking has always been defined by the *core functions* that banks engage in—lending funds or clearing payments, or both. In fact, the word “bank” has been linked to both of those functions, and scholars debate whether payments transfers (initially accomplished on a “bench”) or the creation of a portfolio of loans (a “mound,” or bank, of loans) has the greater claim to the origins of the word. The particular means banks use to lend or transfer payments changes over time as a function of technological and regulatory changes. In particular, transfers can be made via bills of exchange, bank notes, deposits, credit cards, electronic balance transfers, or exchanges of cryptocurrency tokens via blockchain. History also teaches us that banks don’t always provide both lending and payments services. Some banks specialize in one or the other. Indeed, I will show that it requires some rather complicated and specialized economic modeling assumptions to explain why banks sometimes choose to bundle lending and payments services within one intermediary. Those assumptions do not always hold, which explains why bundling is not always a good idea.

Sometimes changes in banks’ structures and functions are predictable. The rise of deposit banking in the mid-19th century United States was predictable as a matter of arithmetic if one recognized that banks would continue to act as lenders (given that notes could no longer serve as a funding source for loans after the passage of the

National Banking Act). The rise of nationwide universal banking in the United States after 1980 was also predictable, given the evident inefficiencies of the preexisting U.S. banking system (Calomiris 2000; Calomiris and Haber 2014).

Similarly, the demise of traditional models of banking today (including nationwide universal banking provided by today's too-big-to-fail banks) has similar elements of predictability based on clear trends that are driving change. In this article, I consider why current changes are occurring and consider what the new structure of chartered banks likely will be in the future. I don't offer a single forecast of that future, but rather a conditional set of forecasts. If special interests, many of which already are currently struggling hard to preserve the status quo, fail to halt the path of progress, then I believe that technology will lead us down a path of substantially increased efficiency and stability and the expansion of chartering to encompass novel banks. But the evolution of banking has never been entirely determined by technology or economic logic. Politics is at least equally important in shaping the chartering of banks. If special interests are successful in blocking progress (as our history shows they often have been), then a very different path—one of persistent inefficiency and instability designed to preserve the status quo—is also possible, at least for the foreseeable future.

The article is organized as follows. First, I consider the post-1980 emergence of a nationwide universal banking system and explain how and why technological changes now favor “unbundling” and the ascendance of new fintech banks capable of providing services that threaten that status quo.¹ A detailed analysis of how fintech banks are improving financial inclusion, not just improving efficiency, for existing bank customers is provided. Second, I describe how the chartered banking system could and would evolve over the next decades if special interests fail in their attempt to preserve the status quo. In the near term, this evolution could see substantial numbers of fintech shadow banks becoming chartered national banks, including many that do not rely on deposits as a source of funding. As part of that analysis, I show that there may be substantial advantages from the

¹Throughout this article, I use the term “fintech bank” to mean a fintech firm engaged in lending or payment services, or both. I use the term to apply to both chartered and shadow banks, where I define “shadow banks” as those operating without a state or national bank charter.

standpoint of efficiency, convenience, and stability to encouraging the creation of a chartered national bank network of stable-value coin banks issuing nondepository liabilities. Finally, I identify the powerful special interests that are attacking, or may oppose, the chartering of fintech banks.

From Bundling to Unbundling

In the 1980s and 1990s, the United States moved from a system in which banks were fragmented by location, and in which financial services were provided by specialist firms (bank lenders, insurance companies, broker/dealers, and asset managers) to a system dominated by nationwide universal banks. By 2000, a handful of large banks operating throughout the country provided an unprecedentedly wide range of services. Based on the evident historical shortcomings of the U.S.'s fragmented financial system (see Calomiris 2000; Calomiris and Haber 2014), the new banking structure made sense as a means of achieving greater portfolio diversification through geographic integration across bank locations, reusing customer relationship information, and taking advantage of advertising and marketing economies of scale. After two centuries of regulation-induced geographic and service fragmentation, by 2000, it seemed that we finally had arrived at what some of us imagined would be a new nirvana of stable and efficient nationwide universal banking.

But only 20 years (and one major financial crisis) later, the bloom of efficiency and stability is off the rose of nationwide universal banking. We experienced one of the worst financial crises in history in 2007–2009. Since then, the traditional chartered banking system wallows in a state of unprofitability and inefficiency. For the first time in history, new entry into chartered banking has been virtually nonexistent for over a decade. Banks' services remain expensive (and some have become more expensive since 2009), and more than 60 million Americans are still described as “unbanked” or “underbanked.”

As has always been the case in banking history, the drivers of these facts are regulation and technological change, which are themselves interdependent. With respect to regulation, the merger wave of 1980 to 2005, which produced the integrated nationwide banking system, occurred as part of a political bargain that drove merging banks to increase their real estate risk exposures, thereby also increasing systemic risk (Calomiris and Haber 2014: chaps. 6–8). The Card Act of

2009 and the Dodd-Frank Act of 2010 did little to remedy those incentives (banks' exposures to real estate risk remain very high), but instead added to the already heavy compliance burdens and other costs banks bear (Calomiris 2017; Calomiris and Campello 2018).

With respect to technological changes, new methods for providing loans and payment services by “shadow banks,” especially by fintech banks over the past several years, are accelerating the long-term trend of financial disintermediation from chartered banking by providing more attractive alternatives to customers (Jagtiani and John 2018; Thakor 2020). According to Statista, the chartered banks' share of personal loans granted fell from 40 percent in 2013 to 28 percent in 2018 while fintech banks' personal loans rose from a 5 percent market share in 2013 to 38 percent in 2018. Interestingly, these new competitors are structured very differently from traditional banks. They tend to focus on one or two lines of business, and typically provide either loan services or payments services, but not both. In sharp contrast to the pre-2000 trend toward universal banking, fintech providers are demonstrating a new model of financial intermediation “unbundling.” The new wave of innovative, low-cost, unbundled fintech providers are making behemoth universal banks look as necessary as buggy whips. Such providers are gaining market share in both the payments and lending side dramatically over the past several years, are out-competing traditional banks for talent, and are attracting huge amounts of new investor capital owing to their extremely high profit rates. What is driving the new unbundling trend?

First, it is worth noting that there have always been profitable examples of unbundled banking. The famous *Wisselbank* of Amsterdam, chartered in 1609, revolutionized the clearing of payments associated with international trade by clearing bills of exchange but made almost no loans during its first century of operation. In the United States in the late 20th century, narrowly focused credit card banks specialized in this type of loan and payments service, which replaced deposits for executing many transactions, and some chartered banks still specialize in providing credit card-based loans and payments. Initially, banks funded their credit card receivables with deposits, but, subsequently, many banks replaced deposits with securitization as the funding source for credit card lending, finding it cheaper to fund their credit card receivables with securitized debt offerings. Academic research explaining that change pointed to the cost savings from securitization, which among

other advantages, provided a better and more disciplined means for the timely processing of information about the evolving risks of credit card receivables, which also permitted risk to be managed better. This was accomplished through a novel securitization intermediation process involving rating agency tracking of receivables performance, early amortization triggers (that punish excessive surprises in defaulting receivables), and the spread of new information technologies in the 1990s that made such tracking possible. Securitization also segmented risk into various pieces to better align debt risks with debt-holders' differing risk preferences, further reducing funding costs (Calomiris and Mason 2004).

Second, there is no overarching economic theory that generally favors bundled banking. Indeed, it requires some rather complicated and specialized assumptions to motivate bundled banking. That is not to say that those assumptions rarely hold. On the contrary, until recently, I would argue that the assumptions necessary to explain bundled banking have been more the rule than the exception historically. Until now.

In any business, absent a strong advantage to bundling, there are good managerial reasons to avoid it. Businesses that combine multiple lines of business suffer from a lack of strategic managerial focus. And large, multiline organizations can be too tolerant of poor performance; underperforming business segments sometimes avoid making hard but necessary changes because they ride on the coattails of successful business segments. Absent a strong advantage from bundling, unbundled service providers generally will be more efficient and profitable.

In theory, bundling of payments and lending generally is understood to reflect *informational* advantages from combining both within the same intermediary. Tracking a borrower's payments history may provide timely information to a lender about how their business is doing (Mester, Nakamura, and Renault 2007). Or a bank engaged in opaque lending may find it advantageous to fund itself with demand deposits because of the discipline that comes from exposing itself to sudden withdrawal risk. Such discipline may ensure that the bank behaves honestly and manages credit risk more efficiently (Calomiris and Kahn 1991; Calomiris, Heider, and Hoerova 2018). In both of these theories, the informational challenges of screening and monitoring bank borrowers underlie the advantages of bundling deposit taking and lending.

Such bundling advantages become less relevant as new screening and monitoring technologies provide alternative approaches to reducing information costs associated with lending. Banks have new data resources they can use to screen and monitor borrowers, making the need to bundle a borrower's deposits and loans less necessary. And those same informational improvements may allow banks to convey information about their own lending practices, thus reducing the need to use the discipline of deposit withdrawal risk to reduce their funding costs.

Consider, for example, the information services provided by OakNorth, which collects information about small and medium-sized businesses, which it packages for lenders. OakNorth developed its system in the United Kingdom, where it also used the system as a lender. In the United States, OakNorth provides informational services to other lenders. It draws real time information about borrowers from thousands of databases and makes that information conveniently accessible to lenders. Not only do these data assist lenders in screening borrowers, they flag potential problems in loans early, often before there are any delays in payments or other traditional indicators of potential loan losses. These sophisticated monitoring procedures have made many of the traditional screening and monitoring procedures used in the past less important, including the need to gather information from observing a borrower's checking account.

Furthermore, the efficiency improvements from unbundling credit from payments often includes the ability—demonstrated decades ago in credit card securitization—to match specific sources of funding to their preferred portfolio risks. For example, at least one innovative fintech mortgage provider allows competing mortgage purchasers to express their preferences by bidding for mortgages whose characteristics fit their portfolios.

Some of the gains from universal banking had resulted from other cost savings from the reusability of information across banking services. For example, a lender that has served a firm for many years may more easily be able to underwrite securities for the same firm (Calomiris and Pornrojngkool 2009). Or a consumer lender may be in a better position to offer insurance to its borrower. But now big data systems permit all would-be lenders or insurance providers to access information that allows them to compete to provide a service without a prior history of providing other services; the advantages of bundling thus are reduced.

Another advantage that drove nationwide banking was the portfolio diversification that came from a larger geographic footprint (i.e., bundling across different geographies). Being able to branch across state lines meant that banks could pool risks related to different industries or crops to the extent that those industries or crops had locational specificity (as they often do). And nationwide banks also could expand their branch networks to gather lower-cost deposits from new locations. But fintech providers are able to make loans and raise funds on the internet without having to maintain costly physical branches or loan offices. Furthermore, a local geographical presence is not nearly as important as it used to be for lenders who need to gather soft information about borrowers, as the example of OakNorth illustrates.

Unbundled fintech enterprises that can customize loan portfolios to meet the specific preferences of loan funders, that can take advantage of state-of-the-art information processing when screening and monitoring borrowers, and that can avoid the physical costs of maintaining branch networks, will increasingly win the competitive struggle to serve customers.

Given the regulatory and technological changes in recent years, it is no wonder that unbundled fintech providers are increasing their market shares in payments and lending dramatically. Of course, some customers still find bundled relationships more convenient, or they are less comfortable with internet-based banking. But others may dislike or distrust traditional banks and feel more comfortable transacting with fintech banks on the internet. Indeed, some fintech banks have modeled their business precisely to attract such customers.

Fintechs and Financial Inclusion

Not only are new unbundled fintech providers more profitable and efficient than traditional banks, their technologies are proving to be very promising for improving access to financial services for many people who have not been served well by traditional banks, especially lower-income people. The U.S. banking system serves about 80 percent of American families' needs to make payments, save, and borrow. But what about the other 20 percent, the so-called unbanked and underbanked?⁹ What barriers explain why the normally reliable pressure of market competition has not led

banks to compete for the business of such a large fraction of the population? How are fintech banks breaking down some of those barriers?

Historically, the barriers that have kept the unbanked or underbanked from becoming fully integrated into the formal financial sector consist of several supply-side and demand-side factors. On the supply side, these include challenges lenders face in differentiating borrowers' risks, the high transaction costs of serving small-dollar customers, and the costs of regulatory uncertainty (which are often defined on a per-customer basis, and therefore, disproportionately disadvantage small-dollar customers). On the demand side, factors such as the limited financial resources of low-income customers, their limited experience with financial service providers, and their preferences for particular kinds of products can limit access.

With respect to demand-side factors, how have fintech banks improved financial access for the unbanked or underbanked? According to an FDIC survey, 13 percent of unbanked households state that banks do not offer products or services that they need. For example, a majority of unbanked or underbanked households live paycheck to paycheck, cannot afford the high standard minimum balances or account fees banks require, and do not live near branches.² To meet some of these demands, fintech banks have developed different products that may be particularly attractive to unbanked or underbanked households. In particular, fintech banks provide novel products with low-cost fees and smaller minimum-dollar loans. For example, some offer free overdraft protection (typically limited to up to \$100)³ or 0 percent APR cash advance that requires no credit check and no monthly fee (limited to \$250).⁴ Many now offer bank accounts with no monthly fees, no overdraft fees for limited overdraft protection, and no minimum balance fees, as well as no ATM fee access for in-network ATMs.⁵ The common denominator of these products is that physical cost savings from operating as a fintech provider make it more economical to serve

²Indeed, about 9 percent of unbanked household cite inconvenient locations or inconvenient hours as the reason for not having a bank account.

³Chime.com; Varomoney.com; Dave.com.

⁴Moneylion.com.

⁵Chime.com; Varomoney.com; Dave.com; Moneylion.com.

small-dollar amount customers, which is particularly advantageous to low-income customers.

Other fintech banks have designed products to smooth spending in the face of high-frequency fluctuations in customers' incomes. Because there is a lag between the days wages are earned and the day that employees are paid, some fintech banks have attracted unbanked and underbanked customers by offering "paycheck deposits."⁶ Instead of depositing paycheck funds into a customer's account with the traditional delay (waiting for the funds to clear from the employer's bank), these fintech banks deposit the funds as soon as the transfer instructions are received, taking on the minimal risk that the employer's bank is unable to fund the transaction. This decreases the customer's waiting time by two days. Other fintech banks offer customers access to their wages in advance of the payday on terms that are generally far superior to payday lenders or to the costs of paying traditional bank overdraft fees.⁷

Fintech banks also cater to unbanked and underbanked customers' demands by designing innovative and convenient means for customers to access services through mobile phones, therefore obviating the need to be near a branch. Because the majority of unbanked and underbanked households have mobile phones, fintech banks have been able to attract many low-income customers by offering mobile phone access.

Consumers with limited financial experience sometimes make financial decisions that damage their credit record and leave high-cost lenders as their only option. Financial education and counseling services can reduce these costly mistakes. While academic evidence regarding the impact of financial education and counseling has been mixed, there is evidence that certain approaches provide benefits. In particular, education appears to be most effective when it is targeted to a particular borrower's needs and is delivered at the time the knowledge can be used.⁸ For example, research has shown that mortgage counseling conducted at the time a mortgage is originated can reduce default rates.⁹

⁶Chime.com; Varomoney.com; Dave.com; Moneylion.com.

⁷Even.com and Payactiv.com.

⁸See Fernandes, Lynch, and Netemeyer (2014).

⁹See Agarwal, et al. (2020).

Many fintech banks provide precisely this form of financial counseling as part of the loan products they offer. They use a wide range of educational services to build relationships with customers that have limited experience with financial transactions. One online lender offers lower rates for completing their online courses on managing debt,¹⁰ while another online lender prominently advertises “community support,” whereby borrowers are connected with free and trusted financial counselors.¹¹ Other fintech banks produce free content for customers or potential customers to help explain when and how their products fit into a well-managed financial plan or to instruct customers on managing finances and debt more generally.¹² Finally, many comparison shopping fintech banks provide free tools for consumers to evaluate alternative debt scenarios, such as debt consolidation, or to create a plan to reach a savings goal.¹³ To reduce confusion or misunderstandings that can undermine trust, some fintech providers have developed products that alert customers when they are at risk of being charged a fee, thus helping to reduce fees and improve their decisionmaking.¹⁴

With respect to supply-side factors, many innovative fintech business models are reducing the costs of serving customers. These costs consist of physical costs and information costs. Physical costs are lower for fintechs because they avoid the high overhead costs of traditional banks, which is especially beneficial to small-dollar account customers.

With respect to information costs, many unbanked and underbanked customers are “credit invisibles”—people without formal credit scores. That lack of information makes it challenging to lend to them. For an estimated 26 million Americans, traditional credit products remain out of reach because they lack a credit score.¹⁵ These “credit invisibles” often turn to payday lenders, pawn shops,

¹⁰ Lendup.com.

¹¹ Oportun.com.

¹² Personifyfinancial.com; Saverlife.org.

¹³ Nerdwallet.com; Lendingtree.com.

¹⁴ See Burhouse, Navarro, and Osaki (2016).

¹⁵ https://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf.

or auto-title lenders, or end up paying high overdraft fees at traditional banks. Such borrowing is expensive, with APRs as high as 300 percent.¹⁶ What's more, repayment of these loans often doesn't establish a credit score, so experience in these markets brings borrowers no closer to cheaper credit. Instead, they end up in cycles of accumulating debt. Such borrowing amounts to over 280 million transactions per year and roughly \$78 billion in revenue.¹⁷

An important aspect of fintech banks' ability to provide improved access to credit for consumers comes from their use of new sources of information (Jagtiani and Lemieux 2017). By using information not traditionally found in a credit report, lenders are able to safely and affordably lend to customers with little or no credit history. Fintech banks such as Oportun and Upstart have advertised that using alternative data has allowed them to successfully provide credit to households who lack the formal credit scores required by most financial institutions. Some fintech lenders have started to use consumers' cash flow history—how much income flows into the person's bank accounts and how much spending draws out of them—to underwrite credit, while other fintech lenders use utility and telecom payment data to inform their risk scoring. One study finds that roughly half of credit invisibles interested in obtaining credit have stayed current on all of their bills in the past 12 months.¹⁸ By using such alternative credit data to approve loans, fintech lenders can offer lower prices than their traditional counterparts. A LexisNexis study finds that of the 24 percent of consumers in their sample without a credit bureau score,¹⁹ 86 percent became scorable using RiskView, a credit score that uses alternative data. However, the proportion of unbanked and underbanked consumers who would benefit from such a score or other applications of alternative data is hard to estimate precisely.

¹⁶<https://www.urban.org/sites/default/files/publication/57871/410935-analysis-of-alternative-financial-service-providers.pdf>.

¹⁷<https://www.urban.org/sites/default/files/publication/57871/410935-analysis-of-alternative-financial-service-providers.pdf>.

¹⁸<https://www.fdic.gov/householdsurvey/2017/2017report.pdf>.

¹⁹Consumers who did not have enough credit history to be scorable because they either did not have recent activity on their credit, only nontradeline data, or no credit obligations open for a long enough duration.

From Chartered Fintechs to Stable Value Crypto Banks

We are seeing only the beginning of what fintech banks can do to improve the efficiency of the financial system and promote financial inclusion. The industry continues to evolve as new and better approaches enter the market. As with traditional lending, fintech lending entails safety, soundness, and fairness risks. But the financial services industry and its regulators are well equipped to handle these risks. And agencies like the OCC are encouraging fintech banks to reach their full potential by coming out of the shadows and joining the chartered banking system.

In particular, some fintech banks may be able to deepen their resource base and broaden their customer reach by becoming national banks. Additionally, an OCC charter carries with it a thorough and strict examination process that can create value for member banks. Examination creates value by providing critical analysis of business strategies and operations, which can enhance a member bank's credibility in the market (Calomiris 2020). The OCC has made it clear that it welcomes innovative financial service providers to apply for national bank charters. Given the evolving banking landscape, it makes no sense to restrict bank charters to bundled providers, or to banks offering one kind of payment product, such as deposits. Unbundled banks that execute payments through means other than deposits, or those that confine themselves to lending rather than payment services, should be free to become chartered banks, if they so choose.²⁰

I emphasize that I am not arguing in favor of requiring all fintech shadow banks to become chartered banks. For some firms, the benefits of the charter outweigh the costs of the charter, while for others, the benefits may not outweigh the costs. For that reason, forcing all fintechs to become chartered banks could reduce the supply of banking services.

The OCC has come to recognize that new technologies and consumer preferences, not regulators, will decide the future of banking

²⁰ For some, but not all, fintech business strategies, access to Fedwire is also a potential source of value creation related to becoming a chartered national bank. That is especially true for fintech shadow banks that currently rely on partnering with chartered banks to gain access to that system.

and will determine what combination of novel and traditional banking businesses will evolve over time. Government or court decisions on chartering, however, can decide how much of that future occurs within the chartered banking system. Allowing fintech shadow banks to bring their novel approaches to applying technological changes to the needs of customers' preferences into the chartered banking system will help those banks by giving them access to the value-creating aspects of bank charters.

Some have questioned how the OCC can apply prudential standards to novel banks whose cash flows may not arise from traditional intermediation practices, and whose balance sheets may contain only small amounts of tangible assets. In fact, the OCC has been setting prudential regulatory standards for many years for lines of business within traditional banks for which substantial cash flows arise without a connection to tangible assets on the balance sheet. Such prudential standards take into account the volatility of the bank's cash flows and the ability of the bank to meet its expenses, including operating costs and debt service. There is no legitimate cause for concern about the ability to establish effective prudential standards for banks with small amounts of tangible assets. Capital ratios on novel banks with only intangible assets (present values of future cash flows) can be determined to achieve the same safety and soundness criteria as for banks with mainly tangible assets (such as loans).

Chartered Banks and Stable Value Cryptocurrencies

Recently, the OCC has clarified the regulation of national banks with respect to transactions involving some crypto assets. The OCC clarified that national banks may act as custodians of crypto assets and also may hold the reserve balances of certain stable value cryptocurrency providers. These actions reduce regulatory uncertainty and simply recognize the fact that crypto assets are a significant and growing part of the global financial system.

What about chartering cryptocurrency providers? The state of Wyoming has been among the most progressive authorities in establishing state chartering of banks involved in producing cryptocurrencies. The United Kingdom and European Union also seem willing to pursue similar initiatives. Whether and how other U.S. states or the OCC might follow suit remains unclear. The question of how to properly charter stable value coin providers as banks is an open one.

Which business models should be considered within the scope of chartering for the OCC? How should algorithms set by crypto coins be regulated and examined? What prudential capital and cash asset standards should be applied? In my discussion here, I do not mean to suggest that the OCC has decided the answers to these questions. I do, however, believe that there are several identifiable advantages from chartering stable value cryptocurrency providers with safe and sound business models as national banks. In what remains of this section, I consider the prospective advantages of chartering stable value cryptocurrency providers as national banks. I first identify several advantages from permitting stable value crypto coin providers (whether as shadow banks or chartered banks) to eventually develop a new nondepository payments network separate from the existing central bank-based network. At the end of that analysis, I also consider some reasons why it may be desirable to permit such banks to become chartered banks.

For the purpose of my example, to be concrete, I will consider a particular form of a stable value crypto coin-issuing bank. But my conclusions about the potential advantages of this arrangement apply more broadly than to just this model, although it would not apply to all potential business models for stable value coins. The point of this example is to show that a nondepository stable value crypto coin can be issued in a safe and sound manner, and that it could have substantial efficiency, convenience and stability advantages, if it were designed properly.

Imagine a bank that sells a total number of S coins, selling each coin it issues for \$1. The coins can be used to transact in goods and services through blockchain clearing (i.e., through gross real-time settlement at nearly the speed of light). The bank maintains a secondary market in its coins. Specifically, it commits contractually to buying coins whenever their value falls to \$0.99 at that price and selling coins whenever their value rises to \$1.01 at that price. It does so automatically as long as it possesses sufficient cash on hand to buy or sell coins at those prices. If it is unable to purchase coins at \$0.99 (due to a lack of cash), then its financial claims are revised, as described below. The secondary market purchase and sale policy is contractually credible and executed automatically by an algorithm. There is no redemption option for the coins and they never mature. The coins are effectively a kind of perpetual preferred stock in the bank.

The only claims on the bank are coins and common shares. If the bank is unable to purchase coins in the secondary market due to a lack of cash, its financial claims are revised as follows: coins enjoy a strict prior claim on the assets, and this is implemented by setting the value of preexisting common shares owned by the bank stockholders to zero in this state of the world. In that eventuality, the quantity of preexisting coins is reduced (written down) in amount by 5 percent. This avoids any need for a liquidation of assets or other bankruptcy proceedings. Coin holders then receive pro rata amounts of new common shares that give them the remaining residual interest in the bank. If, after this initial write-down, the bank is still unable to meet its secondary market purchase obligation, then a second 5 percent write-down occurs, and so on, until the bank has deleveraged sufficiently so that the value of its assets exceeds the value of its coins.²¹

I reiterate that this is only one model for how a nondepository stable value coin provider might operate in a safe and sound manner. I do not mean to suggest that it is the best model, but I find this example simple to analyze, and it allows one to see some advantages that arise from a liability structure different from typical depository banking. I now proceed to consider the services and risks entailed by this banking model.

Because the bank operates in a competitive environment (and has near zero physical costs) I assume that the bank contractually commits to paying interest on the coins equal to the U.S. Treasury bill rate. I initially assume that the bank's tangible assets consist of cash assets (\$C) in the form of U.S. Treasury bills. I later consider deviations from that assumption. I also assume that the bank possesses an intangible asset equal to the present value of fees it expects to earn from executing payments (\$F). To simplify our discussion, but without loss of generality, the amount of transaction fees expected to be

²¹ Notice that, although in the model presented here, stable value coins always maintain their \$1 value in equilibrium, the stable coin algorithm provides for a case where the stable value coins decline in value below \$1. Why might this happen? Fraud, processing errors, or other operational errors are practical considerations that apply in reality even though they are not modeled here explicitly. The bank's design permits those risks to be borne by equity holders to a certain extent, but if equity proves inadequate for that purpose, the coins will be written down automatically, which avoids the inconvenience and delay associated with a receivership, as would occur under traditional depository banking.

earned in each period is not expected to grow over time. $\$F$ is the discounted value of that constant expected stream of earnings. But $\$F$ is stochastic; the arrival of news about changing transactions demand can affect $\$F$. The lower support (lowest dollar value) of $\$F$ is $\$F'$. The value of the bank's equity ($\$E$) at any moment in time, owned by its common shareholders, is given by $\$E = \$F + \$C - \S .

If the bank sets $S < \$C$, what will be the value of each of its coins, and in that case (where $S < \$C$), will it ever fail to be able to honor its promised secondary market purchase policy?

So long as the bank is known to operate credibly under the above set of rules (i.e., its holdings of cash assets are deposited in a safe place and are observable to its coin holders, and its commitment to purchase and sell at the specified prices in the secondary market are contractually binding on it), then in equilibrium, each coin will trade at a value of \$1 and the bank will never have to write down its coins. The bank can arrange a line of credit from another chartered bank collateralized by its Treasury bills that will allow the stable value coin bank to draw an amount of cash equal to its Treasury bill holdings, if needed.

No coin holder has an incentive to sell coins in the secondary market because it is not possible to profit from selling them at \$0.99. The coins are riskless and useful for transacting in the market for goods and services, and the bank is always able to pay the contractual interest rate (the market interest rate on riskless cash assets). Therefore, the bank will never need to actually draw upon its line of credit. In equilibrium, the coins will be valued \$1 each.

Can the bank reduce the amount of tangible assets it holds (by paying a dividend to its stockholders) without creating the possibility of a failure to maintain this riskless stable coin equilibrium?²² Yes, if there is a known lower bound to $\$F$ equal to $\$F'$, then the bank can pay out some of its cash assets as a dividend. To maintain a riskless commitment that keeps stable coins at the value of \$1, the bank just has to maintain cash assets $\$C$ such that $\$C + \$F' = S$. The bank will maintain a line of credit equal to $\$C + \F' , and as before, it will never have to draw on that line of credit because coin holders never

²²In this model, the bank can also pay all of the transaction fees it earns per period out as dividends without running the risk of failing to maintain the \$1 value of its stable coins.

have an incentive to sell coins below the price of \$1 in the secondary market. Note that this implies a form of riskless fractional reserve banking. The bank can also pay all of the transaction fees it earns per period out as dividends without running the risk of failing to maintain the \$1 value of its stable coins.

Note that because the bank does not rely on deposit funding and does not offer a first-come, first-served rule for redeeming its coins, it cannot experience a run. Coin holders see no advantage to being first in line to sell their coins in the secondary market.

Is it realistic to imagine that coin holders would demand these stable value coins rather than deposits in a conventional bank? Yes, for several reasons. First, this bank has zero overhead costs (more realistically, its overhead costs are much lower than for a conventional bank) so it is able to offer a higher interest rate on coins than depository banks can offer on deposits, which are similarly riskless. Second, the coins are more useful than deposits. A payment can be made with instant finality and can be accompanied by a message that assists in executing the transaction, which is the service that account for the fees charged for payments. Stable value coin producers already are creating novel services that facilitate transactions, which will further increase demand for their coins as media of exchange. For example, if the purchaser wishes to convey selective information about himself during a transaction, that can be done credibly by using verification procedures through the blockchain. A purchaser may wish to convey that he is older than 18 years so that he can engage in gambling online, or may want to convey his state of residence so that he can pay sales taxes on the transaction.

Furthermore, the coin holders gain from the fact that a blockchain payments network is much less vulnerable to cyberattack or hacking than the existing centralized payments network operated by the Fed. That advantage also has positive systemic risk consequences. Eisenbach, Kovner, and Lee (2020) argue that a cyberattack on a member of the existing centralized network will disrupt payments throughout the network, with large spillover effects on other banks and their customers. But because blockchain clearing occurs through a decentralized network, it offers an environment that is much more secure from hacking, and coin holders throughout the blockchain-based network bear less risk from hacking or cyberattacks.

How should governments react to this type of stable value coin issuing bank? Its existence adds to systemic stability for several reasons. First, coin holders bear no risk of default and there is no possibility of a run. Second, the systemic risk from cyberattack would be lower. Third, an additional systemic risk advantage comes from the absence of insured deposits and the unbundling of lending and clearing. The current bundling of lending with insured deposits has been shown to be a substantial source of systemic risk. Insuring the deposits of banks that engage in risky lending encourages banks to increase their lending risk,²³ as evidence across many countries' and more than a century of experience has demonstrated.²⁴ For example, Brewer (1995) shows that insurance of the deposits of savings and loans in the United States substantially increased the risk taking of those institutions during the 1980s. Gorton and Pennacchi (1992) propose a solution to the problem of deposit insurance funding of loans: banks that provide transactions accounts backed by riskless assets can give consumers the ability to hold riskless balances for payments without creating the systemic risks associated with insuring the deposits of lenders. The stable value coin bank modeled here is an example of such an intermediary.

Fourth, because transactions are executed via blockchain, which permanently records every transaction, regulation can credibly require the bank's transacting algorithm to contain protocols that minimize the possibilities of money laundering and tax avoidance (which could be required by law and enforced by examination *ex post*). That could substantially reduce such criminal activities.

So far I have only considered bank policies that result in a riskless stable value coin-issuing bank. Could a risky version of this bank arise in equilibrium (where the stable value coin bank would convert a significant fraction of its cash assets into risky assets)? This seems unlikely. It is hard to see why that would appeal to coin holders.

²³ An alternative policy of providing conditional lender-of-last-resort assistance in lieu of unconditional deposit insurance would permit the government to deal with the risks attendant to financial crises without contributing so much to systemic risk (Acharya and Thakor 2016).

²⁴ See, for example, Demirguc-Kunt and Detragiache (2002); Demirguc-Kunt and Huizinga (2004); Kane (2010); Calomiris and Jaremski (2016); and Calomiris and Chen (2020).

The stable value coin-issuing bank has no obvious comparative advantage in lending or stock picking, so it is not clear why it would seek to substitute loans or stock holdings for Treasury bills. If the bank were to buy a diversified portfolio of stocks with some of its cash assets, that would make coin balances riskier with no obvious gain to consumers given that the coin holders can purchase shares on the same terms if they so desire. Most importantly, people generally like to keep low-risk transaction balances separate from their long-term risky asset holdings (this is a defining characteristic of payments-related balances held by firms and consumers throughout the ages).²⁵ Furthermore, setting up a risky stable value coin bank likely would not appeal to the bank's organizers either; note that my model assumes that if the bank is unable to meet its contractual commitment in the secondary market, the preexisting shareholders of the bank would forfeit all of their common stock.

Even if I am missing some reason why a risky version of a stable value coin bank might appeal to coin holders and bank organizers, such a bank would not create any new risks for the rest of the economy from losses it incurs. In contrast, traditional depository banks *do magnify risk* in the economy when they suffer losses on their portfolios, especially through withdrawal pressures as a consequence of those losses (Calomiris and Wilson 2004), which can lead them to curtail the supply of lending, liquidate risky assets, and reduce the prices of the risky assets being liquidated. Recall that the stable value coin bank modeled here operates under a coin write-down protocol that automatically converts preexisting coins into new coins (of lower value). Thus, even if a risky stable value coin bank were created for some reason I cannot fathom, given that it does not rely on redeemable deposits, it would not contribute to systemic risk in the way that standard depository banks do.

If transactions balances are withdrawn from traditional banks and converted into stable value coins, will that undermine the ability of banks to lend? For example, Calomiris and Kahn (1991) show that lenders might need to establish traditional banking structures funded with the discipline of redeemable or short-term debt. First, as discussed earlier, improvements in information technology may have

²⁵ Gorton and Pennacchi (1990) explain why this is true, in theory. Calomiris and Wilson (2004), among others, show empirically that even when banks are uninsured, market discipline forces them to offer very low-risk deposits.

mitigated the theoretical motivations that drive this contracting structure of bundled intermediation. Second, if lenders still need the discipline from borrowing short-term funds in the market, then that is best provided by *risky* debt, not insured deposits. Lenders can rely on commercial paper or repo, as many finance companies and hedge funds have done since the 1960s. Here again, efficiency is served by unbundling lending from payments, and stable value coins offer a means of improving transacting. I see no gain to be had from preventing that.

In summary, a payments system founded on sound business models for stable value coins, operating via a decentralized blockchain network, would reduce transaction costs, increase payment speed, reduce hacking risks, raise interest paid on accounts, and allow new services (such as the communication of information about the payer) to be provided efficiently. That decentralized network would also lower systemic risk and reduce criminal activity.

Should the OCC and state banking authorities charter stable value coin banks like those that are modeled here? Although the details of the OCC's chartering policy remain a subject for study and ongoing debate as they gather all the facts about appropriate business models and ways of regulating and supervising these banks, my analysis contributes to the argument in favor of the view that it would be desirable to allow such banks to obtain national bank charters. Chartering them would allow banks' customers to gain from credible examination of their algorithms and accounting and managerial skills. By encouraging shadow banks of all kinds (including stable coin banks) into the chartered system, examination can ensure that consumers are not taken advantage of by unscrupulous, dishonest, or misleading practices. The government would also gain because examination would ensure that the bank's algorithms comply with laws against money laundering and tax evasion and that its accounting is honest.

Will some stable value banks be willing to join the ranks of chartered banks? I think so. First, they would reap the advantages from having examinations help them build market credibility for their algorithms and managerial practices. And a national bank charter, in particular, helps banks to expand their market reach across state lines. Finally, stable value coin banks, like other novel banks whose business models do not require that they borrow deposits, will be able to reap those advantages while avoiding some of the regulatory

apparatus that makes traditional banking more costly. For example, a national bank that avoids issuing deposits does not have to be regulated by the FDIC or obtain deposit insurance (which is superfluous to it). A nondeposit bank also can be owned by a holding company without having to face the regulatory burdens of Fed oversight (which in many cases also would be superfluous, given the simple business models of stable value coin banks). It would be regulated by the OCC, but some of the costs of OCC regulation would be reduced for nondepository banks. For example, nondepository banks are not subject to the Community Reinvestment Act. The gains from avoiding those various regulatory burdens largely would accrue to consumers (recall that regulatory costs are one of the barriers that prevent traditional banks from serving small-dollar bank customers affordably). I conclude that stable value coin bankers, their customers, and the government all stand to gain from chartering stable value banks. The same logic that favors the chartering of unbundled fintech banks today likely also applies to stable value coin banks in the future.

But Misery Loves Company and Power Is Addictive

Not everyone welcomes a future in which unbundled fintech banks become an important part of the chartered national and state banking systems. The idea that today's unbundled fintech banks, and possibly tomorrow's stable value coin banks, should become chartered banks is anathema to the special interests that profit from keeping progressive financial intermediaries in the shadows. And some powerful entities may be especially threatened by the idea that a banking system could arise to accomplish payments transfers without needing to maintain liabilities in the form of deposits. After all, powerful special interests possess huge economic rents that are conferred on them as a consequence of preserving the status quo. Who are those special interests and how likely are they to be successful in preventing a chartered fintech future?

State authorities that license shadow banks are one special interest group that has already identified itself as hostile to the chartering of fintech banks. The state of New York is suing to prevent the OCC from chartering nondepository fintech banks (*Lacewell v. OCC*). In 2019 alone, New York State earned over \$100 million in licensing fees. Not only would chartering fintechs move fees out of

the state coffers for the banks that migrate to the national system, the state licensing authorities would likely lose from the consequent decline in the fortunes of other financial service firms that they license because those firms may find themselves in a less competitive position. For example, payday lenders are entirely state licensed and regulated. Chartering fintech banks as national banks (including those with financial inclusion strategies discussed earlier) could substantially reduce the market share of payday lenders. That would benefit consumers throughout the country by reducing the cost of small-dollar loans, but state licensing fees from payday lenders likely would fall.

Traditional banks, especially the least efficient among them, should and do see chartered fintechs as a threat that would likely accelerate their declining market shares and profits. Traditional banks are struggling. With few exceptions, their business models are antiquated. Net interest margins for traditional banks today are at historic lows, and branch networks have become highly unprofitable owing to the low-interest rate environment that has prevailed since 2009. With the wholesale interest rate near zero, the interest savings from attracting core deposits (the primary purpose of bank branches) are also near zero, which means that noninterest expenses associated with operating branches are a source of value destruction for the banking enterprise. This effect is visible in the declining values of core deposits to banks' enterprise values (Calomiris and Nissim 2014).

The bundled, universal, too-big-to-fail banks already are waging a battle to discredit progressive fintech banks. They wage this battle mainly through their policy advocacy arm, known as the Bank Policy Institute (BPI). Articles published by BPI economists either stoke fear that new technologies will be destabilizing, or argue that it is unfair to allow unbundled banks to provide services to consumers with lower regulatory costs than the too-big-to-fail banks are forced to bear.²⁶ It is somewhat astounding to see these large banks asking regulators to preserve their businesses from more efficient competitors. It never seems to occur to them that they might change

²⁶ See Rosenthal and Court (2020) and the references therein to other BPI policy papers.

their business models instead, by taking to heart the trend toward unbundling, by becoming more focused in their strategies, and by making more efficient use of resources. Sometimes traditional bank advocates even join the state licensing authorities in making the self-serving and contra-historical argument (as the introduction to this article showed), that the very definition of a chartered bank requires a reliance on deposit funding.

This is no surprise given that the too-big-to-fail banks have reason to be concerned about their future. Their business models are not doing well, and their size and complexity make it especially challenging for them to conceive of ways to adapt to the new competitive environment. Not only are they displaying low profitability, two of the largest four bank-holding companies in the United States have total common shares worth less in market value than the value of their tangible common equity, which implies that the present value of their nontangible assets is *negative*.²⁷ In other words, their business models destroy value rather than create value.

It is likely that traditional banks—especially the large banks and their advocates—will continue to lose market share to fintechs, whether or not fintechs become chartered national banks. Inefficient banks would do more for their shareholders by improving their business models than complaining as the future of financial services unfolds before them.

There are other potential losers from the chartering of fintech banks who may also join the buggy whip coalition. The Federal Reserve is a very powerful organization that stands to lose its monopoly over the payment system as blockchain-based networks develop. The Fed's political power is closely linked to the centralized payment system that it controls, and it has always been mindful of expanding and preserving its power (Calomiris 2019). Furthermore, some fintech firms are choosing to structure their chartered banks in ways that will not require Federal Reserve Board oversight of their holding companies, implying another potential decline in Fed power. Finally, Fed digital currency is a possibility being discussed by many economists. Advocates of a Fed cyber

²⁷ Note that bank accounting treatment sets tangible asset book values at market value, which is why market-to-book measures are so informative of value creation or value destruction (Calomiris and Nissim 2014).

dollar see its creation (alongside the abolition or restriction of the use of paper dollars) as a means of empowering the Fed. A cyber dollar could pay negative interest, thereby removing the zero lower bound on interest rates as an obstacle to the Fed's ability to pursue expansionary policy. Fintech banks, especially stable value crypto coin producers of the future operating via blockchain, are an important prospective source of competition that could limit the Fed's ability to impose negative interest rates on consumers and firms.²⁸

Given that the Fed could lose substantial power as the result of the chartering of nondepository fintech banks, it may oppose them. One can hope that the Fed will be guided more by public interest than a desire to preserve its own power. As far as I know, the Fed has not taken an official position on the question of fintech chartering. Time will tell.

What about community organizations, such as the members of the National Community Reinvestment Coalition (NCRC)? One would hope that these organizations, too, which have given themselves the mission of helping to advance the lives of America's poor and underprivileged, would see the advantages for financial inclusion of chartering fintech banks, as described in detail above. On the other hand, the heads of these organizations make large salaries and have gained substantial power by serving as poverty

²⁸ It would be possible for the Fed to set the yield on Treasury bills at a negative nominal value through open market purchases. It could at the same time also pay a negative interest rate on cyber dollar reserves to its member banks. Banks would be forced by competitive pressure to pass on the negative interest rate to their depositors. If a stable coin bank pegged its currency to the cyber dollar, and held Treasury bills as reserves, it too, would be forced to pass on a negative interest rate to its coin holders. In that case, however, consumers and firms could decide to shift holdings to stable value coin providers that peg to something other than the cyber dollar. For example, some stable value coins already are backed by foreign currency assets. Another possibility would be to adopt a commodity standard (which could be done relative to gold, or to a broader basket of commodities). If gold were used as the unit of account, then gold holdings would serve as reserves. If a broader commodity standard were chosen as the unit of account, then a basket of futures contracts could serve as reserves. Stable value coin-chartered national banks conceivably could participate in noncyber dollar denominated coin issuance too. There is precedent for national banks to avoid using the legal tender dollar as their unit of account. National gold banks issued notes redeemable in gold rather than legal tender dollars in the late 19th century. These banks were created under the Currency Act of July 12, 1870. Ten national gold banks were chartered, nine in California and one in Boston.

intermediaries. As agents of the poor, they (like all agents) can be conflicted. In particular, NCRC members have gained a great deal personally (in salaries and power) from the regulation of traditional depository banks under the Community Reinvestment Act, which entailed transfers of *trillions* of dollars (either in the form of grants or targeted lending) to their organizations (see Calomiris and Haber 2014: chap. 7). As with the Fed, it is too early to know how these organizations will greet the chartered fintech future. Will they prioritize improving the lives of the poor, even if doing so weakens their own control over resources? Again, time will tell.

I conclude that, although the chartering of fintech banks as national banks would promote efficiency and inclusion, there are powerful vested interests that either have already expressed hostility to the idea (the too-big-to-fail banks and state licensing authorities) or that may do so in the near future (the Fed and NCRC members). These are all powerful players in what Stephen Haber and I call the political “Game of Bank Bargains,” and it would be naïve to think that the chartering of fintech banks is a foregone conclusion as the result of its compelling economic logic. Politics has its own logic, and it isn’t always pretty.

Conclusion

I have shown that the chartering of fintech shadow banks as national banks is a desirable development. In the near term, this will occur in the form of unbundled, novel providers of payments or lending services. Some of their business models entail borrowing deposits, but some do not. All of them are banks. They and their consumers stand to benefit greatly from coming out of the shadows and becoming chartered banks. For many shadow banks, the advantages of greater geographic reach and enhanced market credibility from OCC examination will outweigh the new costs of regulations they will bear. That is especially so if they are able to avoid unnecessary regulatory burdens on their organizations.

I emphasize that I am not arguing in favor of *requiring* fintech banks to obtain national charters. This would impose new regulatory burdens on banks, some of which would be less able to meet customer needs as a consequence. I also emphasize that the externality argument often used to justify forcing traditional intermediaries that issue deposits to be chartered does not apply to

unbundled nondepository fintechs. Traditional banks that use deposits to fund loans can magnify recessions as the result of the combination of deposit taking and lending. Losses on loans create credit crunches when banks facing loan losses cut lending to maintain a low risk of default on deposits, and such banks can face a risk of runs if they are unable to keep deposit risk low (Calomiris and Wilson 2004). Unbundled banking does not create these sorts of externalities, and therefore, there are no obvious arguments for forcing fintech shadow banks to obtain charters unless doing so creates value for their enterprises.

The point of chartering fintech banks should be to allow them to reap the net gains of a charter, if those gains are positive for them. This approach ensures chartering only occurs when the charter creates value. Furthermore, by permitting, but not requiring, fintech banks to obtain charters, society reaps a further benefit: technology serves as a check on excessive regulation. If chartering authorities know that excessive regulatory burdens will discourage fintech banks from coming out of the shadows, then regulators will be more mindful of the costs of regulation.²⁹

Consumers stand to gain dramatically from allowing fintechs to obtain national bank charters. Chartered fintechs, in many cases, could offer lower costs, better service, and greater access to financial services, especially for the unbanked and underbanked. Consumers will also gain from improved supervision of these banks, which will help to ensure that their customers are treated fairly and that the banks are run on a safe and sound basis. For all these reasons, the OCC is welcoming novel fintech banks to apply for national bank charters.

Does it make sense to extend the national bank charter to encompass stable value crypto coin providers? I show that doing so could have some important advantages. The OCC is currently considering this possibility, although the policy framework that would guide

²⁹ Some might argue that fintech banks should be forced to obtain charters because of the reduced systemic risk externalities that come from the regulation of chartered banks. I don't find this argument convincing when applied to fintech shadow banks. As I pointed out in my discussion of stable value crypto banks, because they avoid issuing deposits, and because they do not combine deposits with lending, they do not generate the sorts of negative externalities related to systemic risk (credit crunches or stock market value declines) that traditional banks can create.

national bank chartering of stable value coin providers remains a topic of study and ongoing debate.

When considering whether fintech shadow banks, including stable coin providers, will eventually become an important part of the chartered banking system, it is crucial to take into account the political power of the special interests who stand to lose from doing so. Whether consumers are able to realize the gains of a chartered fintech future ultimately will depend as much on politics as it will on economics.

References

- Acharya, V. V., and Thakor, A. V. (2016) “The Dark Side of Liquidity Creation: Leverage and Systemic Risk.” *Journal of Financial Intermediation* 28: 4–21.
- Agarwal, S.; Amromin, G.; Ben-David, I.; Chomsisengphet, S.; and Evanoff, D. (2020) “Financial Education versus Costly Counseling: How to Dissuade Borrowers from Choosing Risky Mortgages?” *American Economic Journal: Economic Policy* 12: 1–32.
- Brewer, E. J., Jr. (1995) “The Impact of Deposit Insurance on S&L Shareholders’ Risk/Return Tradeoffs.” *Journal of Financial Services Research* 9: 65–89.
- Burhouse, S.; Navarro, B.; and Osaki, Y. (2016) *Opportunities for Mobile Financial Services to Engage Underserved Consumers*. Washington: Federal Deposit Insurance Corp.
- Calomiris, C. W. (2000) *U.S. Bank Deregulation in Historical Perspective*. New York: Cambridge University Press.
- _____ (2017) *Reforming Financial Regulation after Dodd-Frank*. New York: Manhattan Institute.
- _____ (2019) “How To Promote Fed Independence: Perspectives from Political Economy and History.” *Journal of Applied Corporate Finance* 31: 21–42.
- _____ (2020) “Value Creation from the National Bank Charter: Historical Reflections on the Complementarity of Examinations and Market Discipline.” Working Paper, Office of the Comptroller of the Currency.
- Calomiris, C. W., and Campello, M., eds. (2018) *Assessing Banking Regulation during the Obama Era*. *Journal of Financial Intermediation* 34: 1–119.

- Calomiris, C. W., and Chen, S. (2020) “The Spread of Deposit Insurance and the Global Rise in Bank Asset Risk since the 1970s.” *Journal of Financial Intermediation* (forthcoming).
- Calomiris, C. W., and Haber, S. H. (2014) *Fragile by Design: The Political Origins of Banking Crises and Scarce Credit*. Princeton, N.J.: Princeton University Press.
- Calomiris, C. W.; Heider, F.; and Hoerova, M. (2018) “A Theory of Bank Liquidity Requirements.” Working Paper, Columbia Business School.
- Calomiris, C. W., and Jaremski, M. (2016) “Deposit Insurance: Theories and Facts.” *Annual Review of Financial Economics* 8: 97–120.
- Calomiris, C. W., and Kahn, C. M. (1991) “The Role of Demandable Debt in Structuring Optimal Banking Arrangements.” *American Economic Review* 81: 497–513.
- Calomiris, C. W., and Mason, J. R. (2004) “Credit Card Securitization and Regulatory Arbitrage.” *Journal of Financial Services Research* 26: 5–27.
- Calomiris, C. W., and Nissim, D. (2014) “Crisis-Related Shifts in the Market Valuation of Banking Activities.” *Journal of Financial Intermediation* 23: 400–35.
- Calomiris, C. W., and Pornrojngkool, T. (2009) “Relationship Banking and the Pricing of Financial Services.” *Journal of Financial Services Research* 35: 189–224.
- Calomiris, C. W., and Wilson, B. (2004) “Bank Capital and Portfolio Management: The 1930s ‘Capital Crunch’ and Scramble To Shed Risk.” *Journal of Business* 77: 421–55.
- Demirguc-Kunt, A., and Detragiache, E. (2002) “Does Deposit Insurance Increase Banking System Stability? An Empirical Investigation.” *Journal of Monetary Economics* 49: 1373–406.
- Demirguc-Kunt, A., and Huizinga, H. (2004) “Market Discipline and Deposit Insurance.” *Journal of Monetary Economics* 51: 375–99.
- Eckels, J. H. (1896) “Protection of Bank Depositors.” *North American Review* 163: 564–72.
- Eisenbach, T. M.; Kovner, A.; and Lee, M. J. (2020) “Cyber Risk and the U.S. Financial System: A Pre-Mortem.” Working Paper, Federal Reserve Bank of New York.
- Fernandes, D.; Lynch, J. G., Jr.; and Netemeyer, R. G. (2014) “Financial Literacy, Financial Education and Downstream Financial Behaviors.” *Management Science* 60: 1861–83.

- Gorton, G., and Pennacchi, G. (1990) “Financial Intermediaries and Liquidity Creation.” *Journal of Finance* 45: 49–71.
- _____ (1992) “Financial Innovation and the Provision of Liquidity Services.” In J. Barth and D. Brumbaugh (eds.), *Reform of Federal Deposit Insurance*. New York: HarperCollins.
- Jagtiani, J., and John, K. (2018) “Fintech: The Impact on Consumers and Regulatory Responses.” *Journal of Economics and Business* 100: 1–6.
- Jagtiani, J., and Lemieux, C. (2017) “Fintech Lending: Financial Inclusion, Risk Pricing, and Alternative Information.” Working Paper No. 17–17, Federal Reserve Bank of Philadelphia.
- Kane, E. (2010) “Redefining and Controlling Systemic Risk.” *Atlantic Economic Journal* 38: 251–64.
- Mester, L. J.; Nakamura, L.; and Renault, M. (2007) “Transactions Accounts and Loan Monitoring.” *Review of Financial Studies* 20 (3): 529–56.
- Rosenthal, M., and Court, J. (2020) “Is It OK for Fintechs to Use Regulatory Arbitrage to Avoid Consolidated Supervision?” Washington: Bank Policy Institute.
- Thakor, A.V. (2020) “Fintech and Banking: What Do We Know?” *Journal of Financial Intermediation* 41 (January).

WHICH TYPE OF DIGITAL CURRENCY FOR FINANCIAL INCLUSION?

Diego Zuluaga

When the Libra Association first announced its plan to launch a private digital currency for domestic and cross-border payments—then consisting of a single token backed by a mix of stable fiat currencies—financial inclusion was a big part of its business case. With 1.7 billion people globally lacking a bank or mobile money account, Libra thought it was imperative for some of the world’s largest companies, including the leading social media platform, to join forces and bring cheap payments to the world’s “unbanked.” And while this project has faced a rocky reception from central bankers and regulators—for reasons good and bad—even they often frame the case for their own, public digital currencies (CBDCs) in terms of bringing cheap and fast electronic payments to the greatest possible number of people, as cash use and cash acceptance decline.

Neither Libra’s promoters nor central bankers are wrong. With smartphone penetration having long outpaced bank account ownership in many countries, digital wallets offer greater promise for bringing people into the mainstream financial system than analog approaches such as postal banking or a Canada-style public mandate. But to appeal to unbanked households, digital wallets must address the reasons why the unbanked are so. Ubiquity and minimal fees are

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.16.

Diego Zuluaga is a Principal at Fingleton, a management consulting firm in London. Before joining Fingleton, he was Associate Director for Financial Regulation Studies at the Cato Institute.

important—as CBDC proponents suggest in making their case—but so are privacy, reputation, and simple interfaces that help customers understand their financial position and solve their questions and complaints without jargon or bureaucracy.

In what follows, I will define financial inclusion as more than just giving everyone a bank account. I will then examine public and private digital currencies according to their ability to foster inclusion in this deeper sense. Because many central banks—including the Federal Reserve Board—are seriously considering CBDCs in the medium term, I will outline some principles that should guide the development of public digital currencies, if the goal is not simply to give people a bank account, but to give them an account they want to use. These principles should generally also apply to private initiatives. I will conclude with some comments regarding whether “peaceful cohabitation” might be achieved between CBDCs and private digital currencies.

Defining Financial Inclusion

America’s financial inclusion problem is usually expressed as the percentage of households—5.4 percent at last count, according to the Federal Deposit Insurance Corporation (FDIC 2020: 1)—who lack a bank account. This percentage is considerably higher than those of other rich countries, such as Britain, Canada, and Germany, where account ownership is near universal. The absolute number of unbanked U.S. households is staggering, at 7.1 million, and while the FDIC’s biennial surveys chart an encouraging trend of decline since 2011, the pace of that decline is unsatisfying to many people, myself included.

But I am also unhappy with the conventional definition of financial inclusion. It assumes that, were someone to open an account on behalf of each unbanked household, the problem would be solved. Some experts whose commitment to help the unbanked I do not doubt advocate just that: a mandate for the Federal Reserve to create retail deposit accounts—“FedAccounts”—on demand (Ricks, Crawford, and Menand 2021). But I think the merits of this intervention as a financial inclusion policy are questionable, as there is no assurance that the unbanked want such accounts.

When the FDIC last asked the unbanked why they are so, just over a third cited minimum balance requirements and high fees as

the main reason. If “FedAccounts” carried no such fees, one might expect these households to welcome them and move from cash to electronic money. But that leaves two-thirds of the unbanked who might still eschew FedAccounts. Why? Because their chief reasons for being unbanked did not involve cost but privacy, trust, and the lack of a credit history or adequate documentation to open an account. Besides, 56 percent of the unbanked told the FDIC that they are “not at all interested” in having a bank account.

Two reasons come to mind for why so many unbanked would rather remain so than get a conventional bank account. The first is that financial services providers often described as “non-mainstream”—check cashers, pawnbrokers, payday lenders—serve the unbanked better than many of us think. They have convenient locations that are open most of the time, their fees are transparent if high, and the people who work there look like the unbanked: young, minority, immigrant, often Spanish speaking. The second reason is that bank accounts have become commoditized, their offerings indistinguishable from each other, and innovation minimal in comparison with other consumer financial products. Given the available alternatives, bank accounts just do not appeal to a majority of the unbanked.

The challenge of financial inclusion policy is to encourage the growth of bank account substitutes that do appeal to the unbanked. With that in mind, the definition of financial inclusion that I would propose is “access to deposit, credit, and payment options that meet consumers’ diverse needs and reflect their varied economic circumstances and life plans.” Only by taking account of the specific needs of unbanked consumers, and how these needs might change as they grow older and more affluent, can policymakers help to change the regulatory environment to better serve the unbanked. I believe digital currencies belong in the solution set.

Private Digital Currencies vs. CBDCs

It is no secret that—with the possible exception of the People’s Bank of China—central banks’ interest in issuing digital liabilities directly to households and nonfinancial firms was spurred by the Libra project. Many of them found the original Libra white paper half baked and the prospect of several large multinational firms releasing a private currency potentially dangerous and destabilizing.

Some also worried that Libra could push central banks to the sidelines by displacing national currencies, thereby blunting the effects of monetary and credit cycle policy. But, while Libra might compete with the currencies of small and unstable jurisdictions, it would have been highly unlikely ever to challenge the U.S. dollar, the euro, or the pound sterling—not least because all of these formed part of the original hybrid Libra “basket.”

Yet, just 18 months after Libra was first proposed, the pace at which major central banks have made public their intention to launch CBDCs in the medium term is impressive. In March, the Bank of England (2020) published a discussion paper on the topic. The European Central Bank (2020) followed suit in October. The Bank for International Settlements, which brings together the world’s central banks, is both monitoring and assisting its members in this endeavor (Auer, Cornelli, and Frost 2020). And while the Federal Reserve has not yet publicly outlined its CBDC plans, the Boston Fed is running an experiment with MIT’s Digital Currency Initiative, which senior Fed executives such as Governor Lael Brainard consider serious enough to merit mention in their speeches (McSweeney 2020).

These CBDC developments have somewhat taken the wind out of the sails of private digital currency projects. Global financial institutions such as the International Monetary Fund and the Financial Stability Board have continued to issue guidelines for the effective regulation of what they call “global stablecoins” (GSCs), but it is CBDCs and not private digital currency projects that have recently caught the imagination of policymakers and many private-sector players in the payments ecosystem. This is not entirely surprising: central bank-issued instruments have characteristics—ubiquity, risklessness, legal tender—that most private-sector competitors could not quite match. But some private-sector players do have the scale, reputation, and financial resources to elicit broad acceptance by households and businesses. What is more, these private multinational projects might achieve cross-border interoperability, whereas domestically focused central banks have failed to do so in the past.

But it is not just the international character of private digital currency projects that makes them competitive with CBDCs. Read any of the central bank publications I listed earlier, and you will find that they discuss in some detail the implications of CBDCs for monetary policy and financial stability but spend comparably little time on their

customer-facing features. Yet, far from a trivial sideshow, this aspect of CBDC development is all-important, if CBDCs are indeed to promote financial inclusion. And in this regard, private-sector players have a leg up on central banks because many of them interact with customers daily, online and offline. Some even operate their own digital wallets.

It is not enough for central banks to declare—as, for example, the ECB has done—that they favor an “intermediated” CBDC model in which they would run the core infrastructure and stand behind every CBDC unit, with private-sector firms competitively supplying the platforms through which customers would manage their CBDC balances, make payments, and transfer relevant data. The slow progress of FedNow, despite relying on well-established real-time gross settlement (RTGS) technology that other central banks have had for years, shows that even limited-access innovations can challenge a large bureaucracy. Because of their novelty and retail features, CBDCs would pose additional challenges of interoperability with third-party applications, cross-border exchange, and cybersecurity, issues with which central banks are largely unfamiliar.

Principles for Digital Currency Development

Whether public or private, digital currencies should be built with several principles in mind, if their goal is to reach households that currently lack a bank account. The first principle is to avoid fixed fees as much as possible, as they fall disproportionately on low-income households that keep low balances and regularly overdraw their accounts. Banks used to minimize fees by cross-subsidizing low-balance accounts with debit interchange fee income, until the 2010 Durbin Amendment capped these fees (Sarin and Mukharlyamov 2019). Libra proposed to avoid them by relying on interest income from the short-term government securities in which it would invest customer funds. Central banks have suggested that they too will refrain from charging fixed fees, though quite how they could finance the CBDC infrastructure and running costs, while also paying interest on CBDC balances like they currently do on bank reserves, remains unclear (Zuluaga 2020).

Privacy is the second principle that should guide digital currency projects. The fear of losing it is the second-biggest reason why the unbanked prefer not to open a bank account. Central banks have vowed to protect privacy in a CBDC system, but durable protection

can only be achieved by deliberately designing CBDCs to be private. This is why some experts have called for CBDCs to take the form of digital bearer tokens, which anyone who held them could use, rather than intermediated accounts, to which central banks or third parties could bar access (Green and Van Valkenburgh 2020). A bearer token would most closely resemble the properties of physical cash and is therefore the most appropriate substitute as cash use declines. Private digital currencies could also be designed to protect user privacy, but as regulated financial intermediaries, issuers and hosted wallet providers could not easily refuse to make transaction data available to government authorities. Therefore, the extent to which digital currencies, whether publicly or privately sponsored, protect privacy will ultimately be up to policymakers.

The third principle that digital currency projects should follow is competitive provision. Card networks and other multisided markets have successfully implemented the model of “coopetition,” whereby market participants set common standards for interoperability and mutual acceptance, while also distinguishing their individual offerings in order to attract customers to their products. The Libra project would follow a similar model. Central banks have likewise expressed a preference for competition between customer-facing private-sector providers, even as they would remain the exclusive guardians of the core CBDC infrastructure. But, at the same time, central banks should tolerate competition from private digital currency ecosystems like Libra. Not only will competition prevent future abuses by any one gatekeeper, but it is also more likely to bring about a range of digital account options that cater to the needs of the unbanked.

Prospects for “Peaceful Cohabitation”

Will central banks allow competition on equal terms from private-sector projects? Their swift and overwhelming response to Libra might cause some people to think they will not. After all, many central bankers thought digital currencies an irrelevant sideshow before the prospect of a real competitive threat materialized. Nor did their objections to Libra always rest on well-founded concerns about monetary and financial stability. But if their goal is to promote financial inclusion domestically and abroad, central banks should tolerate competing ecosystems, as these could help to enfranchise groups whom central banks are particularly ill-equipped to serve.

Immigrants are one example. Policymakers often point out that, even as the cost and speed of domestic payments have recently improved in many countries, senders of small remittances continue to pay high prices. And while central banks pay lip service to cross-border interoperability, they have still not achieved it, and the commercial banks they regulate tend to be among the more expensive suppliers of foreign-exchange services. Auspiciously, much private-sector digital currency innovation has focused on the remittance market, although these efforts are largely yet to bear fruit and domestic regulation has sometimes acted as a barrier to their growth.

Young consumers, who account for a disproportionate share of the unbanked, are another group private-sector providers might be better placed to serve, as these consumers are “digital natives,” active on social media, and more trusting of new brands than they are of legacy institutions like the U.S. Postal Service (Morning Consult 2020). To be sure, private user interfaces on the CBDC infrastructure might manage to entice many young consumers just as well, but why rely on just one payments system when private firms are happy to supply another?

While the primary focus of financial inclusion policy will rightly be on the domestic population that is presently unbanked, policymakers and central banks should also consider the welfare of foreign underserved consumers, as policy in the leading economies—the United States, Europe, and the United Kingdom—is likely to have spillovers for less developed countries. Allowing private digital currency projects to flourish could even benefit the leading central banks, by shifting foreign demand for stable exchange media from CBDCs to private digital currencies, thereby letting central banks focus on their domestic policy objectives.

Conclusion

I think it likely that, within the next five years, many major central banks will either launch or begin the process for launching retail CBDCs. In justifying their decision, these central banks will undoubtedly cite financial inclusion. And rightly so: CBDCs designed to address the chief concerns of the unbanked—high fees and privacy—could hold strong appeal to them, especially if central banks rely on private firms to competitively deliver user interfaces such as digital wallets, mobile applications, and customer service.

But even if CBDCs prove attractive to many unbanked households, there will be some groups whose needs CBDCs cannot satisfy. For example, those who make heavy use of cross-border money transfers may find CBDCs to be of little help, as central banks have struggled to achieve interoperability with each other. For those groups, private digital currencies may be a helpful supplement. Private options would also put competitive pressure on CBDCs to meet consumer needs, just like foreign and private currencies already discourage central banks from behaving recklessly with the money supply.

Technology is helping to bring down the number of unbanked households around the world. But this progress is not automatic. If financial inclusion is a priority for policymakers deciding digital currency policy, they should encourage as many competing projects as possible.

References

- Auer, R.; Cornelli, G.; and Frost, J. (2020) “Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies.” BIS Working Paper No. 880 (August 24). Available at www.bis.org/publ/work880.htm.
- Bank of England (2020) “Central Bank Digital Currency: Opportunities, Challenges and Design.” Discussion Paper (March 12).
- European Central Bank (2020) “Report on a Digital Euro.” Available at www.ecb.europa.eu/pub/pdf/other/Report_on_a_digital_euro~4d7268b458.en.pdf (October).
- Federal Deposit Insurance Corporation (2020) *How America Banks: Household Use of Banking and Financial Services, 2019 FDIC Survey* (October 2020). Available at www.fdic.gov/analysis/household-survey/2019report.pdf.
- Green, M., and Van Valkenburgh, P. (2020) “Without Privacy, Do We Really Want a Digital Dollar?” *Coin Center Blog* (April 30).
- McSweeney, M. (2020) “Boston Fed, MIT Partner on Central Bank Digital Currency Research Project.” *Yahoo Finance* (August 13).
- Morning Consult (2020) “Most Trusted Brands 2020.” *Special Report: The State of Consumer Trust*. Available at <https://morningconsult.com/wp-content/uploads/2020/01/Morning-Consult-The-State-of-Consumer-Trust.pdf>.

- Ricks, M.; Crawford, J.; and Menand, L. (2021) “FedAccounts: Digital Dollars.” *George Washington Law Review* 89 (1): 113–72.
- Sarin, N., and Mukharlyamov, V. (2019) “The Impact of the Durbin Amendment on Banks, Merchants, and Consumers.” Available at https://scholarship.law.upenn.edu/faculty_scholarship/2046.
- Zuluaga, D. (2020) “E Pluribus, Unum? Federal Reserve Provision of Retail Accounts.” *Alt-M* (December 1).

LESSONS FOR THE FED FROM THE PANDEMIC

John A. Allison

The Covid-19 pandemic greatly increased the scope and power of the Federal Reserve. The Fed created a number of new emergency lending facilities, which allowed it to make off-balance sheet loans and buy the debt of corporations and municipalities through special purpose vehicles backstopped by the Treasury under the CARES Act. Meanwhile, the Fed's large-scale asset purchase program, known as quantitative easing (QE), was put on steroids after the pandemic struck in March 2020. The Fed has been purchasing longer-term Treasuries and mortgage-backed securities amounting to \$120 billion per month, pushing the size of its balance sheet to an astonishing \$7 trillion.

Of course, the pandemic and lockdowns, which put the economy in a downward spiral, justified pumping liquidity into the financial system. But the shift toward allocating credit and the drift into fiscal policy have put the Fed's independence and credibility at risk. Indeed, those actions have set a precedent for the future, making it difficult for the Fed to normalize monetary policy and adhere to its primary function of providing sound money and a stable growth of nominal income.

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved. DOI:10.36009/CJ.41.2.17.

John A. Allison is an Executive in Residence at the Wake Forest School of Business. He has served as President and CEO of the Cato Institute, and Chairman and CEO of BB&T Corporation. This article expands on his closing remarks at Cato's 38th Annual Monetary Conference on November 19, 2020. He thanks Nicholas Anthony, Research Associate with Cato's Center for Monetary and Financial Alternatives, for assisting in the preparation of this article.

This conference's focus is on digital currency. In my remarks today, I will paint with a broader brush and briefly discuss the lessons I think the Fed can learn from the pandemic, including why it is important to leave entrepreneurs free to experiment with digital currencies and why any credible monetary system ultimately needs to be based on a genuine rule of law. I shall begin by arguing that while Covid-19 has been costly, both in terms of human and economic losses, it has provided for deregulation and innovation that will benefit society.

The Pandemic's Costs and Opportunities

The human costs of the pandemic have been high, with more than 550,000 deaths in the United States alone, a huge disruption to family life and schooling, and a sharp rise in uncertainty. Economic costs are evident in high unemployment, the closing of tens of thousands of small businesses, the loss of human capital in terms of lost or delayed schooling, and the major disruption to the travel industry. While the growth of output and income will resume, the level of real income per capita will take some time to recover. In part, because the massive debt incurred by the federal government is not a free lunch.

In 2020, the federal government borrowed more than \$4 trillion compared to about \$1 trillion in 2019. More importantly, the majority of the new debt is being financed by the Fed (see Cochrane 2020). With the tap of a few computer keys, the central bank is creating new base money to buy government debt. Although inflation expectations are still relatively low, continued monetization of government debt could generate higher inflation—especially since it is a key aim of Fed policy to push the average level of money prices upward.

Despite the serious costs of the pandemic, the responses to it have reduced costly government regulations and speeded up the development of vaccines via the private sector and encouraged new technologies. These developments provide important lessons that relate directly to Fed policy, especially with regard to digital currencies.

Lesson 1: The Value of Reducing Onerous Regulations

If reducing government regulations can have such undeniable success, shouldn't one ask where else this lesson can be applied? The Fed is certainly a contender and the application is quite clear.

Let markets operate, let people operate, and you'll get much better results, much faster than government alternatives.

Earlier in the conference, Tobias Adrian noted this idea when he argued, "The private sector is better at innovating. So whatever the central bank is going to do, it's going to be outdated at some point." Central banks across the world, not just the Fed, would be wise to heed these words if they wish to enter the digital currency space. Rather than restrict private firms to a corner of an unknown frontier, the government should be praising entrepreneurs for paving the way forward.

This is a lesson that is as old as money itself. Private entrepreneurs have offered countless solutions throughout the history of money. It would be a great mistake not to learn from the past and present experience when facing the current challenge of digital currency. Just as reducing regulatory barriers has aided the pandemic response, it can also aid progress and innovation in the digital currency space.

Lesson 2: The Benefits of Embracing Technological Change

Another important lesson for the Fed from the pandemic is how technological change has provided new opportunities for consumers and businesses to adjust to the pandemic. The shift to online commerce and remote learning has accelerated during Covid-19. Zooming, for example, has become commonplace in a short time span. It is likely that nongovernment digital currencies will increase in popularity as the technology becomes more accessible and the companies behind each currency become more competitive.

As private-sector options for digital currencies increase, there will be further pressure on the Fed to issue its own digital currency. Congress should welcome competitive currencies while ensuring that the Fed maintains the dollar's long-run purchasing power.

The Fed may have a significant advantage in introducing a digital dollar. However, that advantage may lessen as technological advances decrease the cost of experimenting with nongovernment digital currencies. An apt example of this can be seen in the current state of bitcoin. At one time, it took highly specialized knowledge to purchase a coin and then know how to use it. Today, anyone can download an app to their phone in order to buy and sell bitcoin—as easily as making a purchase off of Amazon. Even though digital currencies

are still very young, it would be a mistake to overlook this technological transformation.

Lesson 3: The Need for Clear, Enforceable Rules

In addition to the value of reducing onerous regulations and the benefits of technological progress, there is a third lesson for the Fed: monetary policy would be more certain under a rules-based regime. The monetary measures introduced during the pandemic have given the Fed wide discretion to allocate credit and engage in off-balance sheet (“backdoor”) lending. This shift in focus—from pure monetary policy to credit/fiscal policy—risks making the central bank a piggy bank for Congress to implement programs that may not have sufficient votes to pass the legislative process. George Selgin (2020a) has called this process “fiscal QE.”

To avoid the risks of further politicizing the Fed, Congress needs to seriously examine the case for clear, enforceable rules—rather than wide discretion—in the conduct of monetary policy (see Dorn 2020 and Selgin 2020b). Under a rules-based monetary regime, market participants would no longer need to guess what the Fed can and cannot do. And the Fed itself would be constrained such that it too would have a clear understanding of the tools it can and cannot use. Without such a clear distinction, there is a risk that one will blur the line between monetary and fiscal policy

Conclusion

The private sector should be commended for the speed at which a vaccine was developed, and the government should be commended for pulling down the restrictions that would have blocked that from happening. However, it should not take a global pandemic to recognize the value of reducing undue government regulations and embracing technological change. More so, it should not take a global pandemic to recognize why there is a need for clear, enforceable rules.

If the Fed does not reverse the drift into fiscal space and the allocation of credit, it will become more politicized and less independent. The Fed was never meant to have unlimited powers or wide discretion. It is a creation of Congress and needs to be subject to the rule of law. There must be a bright line between monetary and

fiscal policy. The aim should be to establish a sound monetary policy to provide long-run price stability and let markets be free to provide alternatives to government fiat money.

The pandemic has taught us that removing barriers to experimentation and innovation speeds up the discovery process, whether for vaccines or new ways of doing business. Private digital currencies are yet one more example of how markets find ways to lower costs and provide a wider range of choices open to individuals.

References

- Cochrane, J. (2020) “Debt Denial.” *The Grumpy Economist* (December 9): <https://johnhcochrane.blogspot.com/2020/12/debt-denial.html>.
- Dorn, J. A. (2020) “Maintaining Distance between Monetary and Fiscal Policy.” *Pandemics and Policy*. Washington: Cato Institute. Available at www.cato.org/publications/pandemics-policy/maintaining-distance-between-monetary-fiscal-policy.
- Selgin, G. (2020a) *The Menace of Fiscal QE*. Washington: Cato Institute.
- _____ (2020b) “Holding the Line: Maintaining Fiscal and Monetary Policy Boundaries in the Midst of a Crisis.” *Alt-M* (March 18). Available at www.alt-m.org/2020/03/18/holding-the-line-maintaining-fiscal-and-monetary-policy-boundaries-in-themidst-of-a-crisis.

BOOK REVIEWS

Information Wars: How We Lost the Global Battle Against Disinformation and What We Can Do About It

Richard Stengel

New York: Atlantic Monthly Press, 2019, 368 pp.

In *Information Wars*, Richard Stengel offers a compelling first-person account of his tenure as Undersecretary of State for Public Diplomacy during President Obama's second term. The book recounts his attempts to turn the State Department's sprawling public diplomacy apparatus toward countering Russian and ISIS (Islamic State of Iraq and Syria) messaging. His experience illustrates that American government institutions cannot move rapidly enough to effectively respond to the digital messaging of more nimble adversaries. This lesson largely fails to influence his proposed policy solutions, however, which embrace media regulation rather than civil-service reform and the elimination of bureaucratic veto points.

From the start, Stengel takes a clear-eyed view of disinformation's effects. He highlights its ability to muddy the epistemic waters, rendering truths unbelievable, while rejecting the popular shibboleths of malleable minds and a disinformation-borne 2016 Trump victory. He writes:

I absolutely hate the phrase, so often used to describe PD [public diplomacy], "winning hearts and minds." Everything we've learned in the last 50 years from social science and psychology suggests that changing someone's mind is a nearly impossible task.

Cato Journal, Vol. 41, No. 2 (Spring/Summer 2021). Copyright © Cato Institute. All rights reserved.

Russian messaging had a lot of reach but hardly any depth . . . the ads themselves were not very successful . . . what had a more significant effect was the false and deceptive content . . . but in the end, disinformation tends to confirm already held beliefs; it's not really meant to change people's minds. Disinformation doesn't create divisions, it amplifies them.

After a year-long confirmation process, Stengel was dropped into the State Department, where he found himself almost totally at the mercy of foreign-service officers in scenes that feel drawn from the British political satire *Yes Minister*: “Nobody would openly oppose something, but then people would work behind the scenes to undermine it. Sometimes you discovered that actions you had signed off on were still not done months or years later.”

He describes the “infantilization of Principals,” a process by which political appointees are kept overscheduled and dependent on staff for information such that they lose any real agency, never making “any decision or choices other than the ones baked in for them by staff.” Time and time again, Stengel recounts how bureaucratic red tape, office politics, and a careerist mentality delayed or outright prevented the presentation of an official countervailing narrative to disinformation. Early in his tenure, the State Department’s Center for Strategic Counterterrorism Communications (CSCC) attempted to answer Boko Haram messaging on social media. Stengel found the proposed graphics bland but approved them immediately “because I didn’t want to delay our efforts.” Soon after, Michele Obama’s #BringBackOurGirls hashtag placed kidnappings by Boko Haram center stage in American politics. Ten days after this deluge of viral support, Stengel discovered that the CSCC graphics hadn’t been published, held up by concerns from the African and Intelligence and Research bureaus. As he adroitly notes, “This was insane. A ten-day-old tweet might as well not exist.”

As time passed, he was frustrated by internal leaks from rival branches of the State Department and longstanding misallocations of resources. “As hard as it was to start something new at State, it was almost impossible to end something old. When I arrived, the two countries that received the most public diplomacy money were Japan and Germany—a continuing legacy of WWII.”

At his first meeting with the Board of Broadcasting Governors (BBG), which oversees Voice of America and a host of other, less

well-known American-backed foreign outlets, Stengel discovered that, despite its budget of \$750 million, Board publications' support of U.S. foreign policy goals is limited to editorials from the U.S. State Department, isolated from organic content.

As he struggled to deploy effective counter messaging, Stengel recognized our enemies' strengths in digital information warfare. The Russian Internet Research Agency and other state disinformation organs were willing to fail quickly and cheaply and learn from the experience. ISIS messaging was decentralized—anyone could create ISIS propaganda, and a legion of online fans selected and promoted the most compelling content. As America hesitantly waited for tweet approval, our foes ran circles around us.

Stengel's most striking example of this mismatch is personal and came in the wake of Russian-backed separatists downing of Malaysian Airlines flight MH17. Using Twitter to demand a "credible and unimpeded investigation" of the "crash," Stengel accidentally appended the hashtag #UnitedforGaza rather than #UnitedforUkraine. Facing mockery and claims of anti-Israeli bias, he follows up on the mistake by tweeting, "Earlier tweet with wrong hashtag was a mistake. My Bad," which elicited further mockery and advice from his chief of staff to do nothing. Stengel recounts, "that was her usual advice in a crisis. Her attitude was, anything you do is likely to make it worse."

While further response has its risks, simply retreating from the mistake cedes control of the narrative entirely. This is not to mock Richard Stengel. He is not terribly familiar with the norms of social media or Twitter in particular, and he received poor advice. When drawing lessons from the incident, however, Stengel appreciates only its illustration of Russia's use of disinformation, ignoring the role his anemic response played in delivering a Russian win:

The point wasn't really to mock a mistake or an individual, it was to divert attention from the actual issue: Russian culpability in the shooting down of a civilian airliner. I don't think I saw one tweet, in the back-and-forth over my mistake, that had anything to say about how Russia had been responsible for the murder of 298 innocent people. That was their goal all along. Mission accomplished.

By treating this loss of narrative control as inevitable, Stengel abdicates responsibility for his own failure to respond appropriately to his

mistake and Russian attempts to seize upon it. Stengel himself could have easily provided the tweet he pines for. Indeed, while his weak apology was followed by prompt critical media coverage, a stronger response might have inspired favorable coverage. It needn't be rude, the insult-laced "wolf-warrior" diplomacy of Chinese officials does little to establish a trustworthy brand. Imagine if, instead of simply apologizing, Stengel had tweeted the following: "Picking the wrong hashtag is a mistake. Downing a civilian airliner is the predictable consequence of giving advanced SAMs to untrained proxies."

In a fast moving and ephemeral information environment, taking your ball and going home is not an option. As any teenage influencer could no doubt explain to Stengel, "tweeting through it" was essentially his only option. As Stengel himself experienced, while one mistake may be seized upon, it is far harder to respond to a deluge of content. There is no reason the United States cannot attempt to "flood the zone" with transparently sourced, officially endorsed truth.

Indeed, investigative institutions such as Bellingcat have proven effective at countering disinformation with granular, reader-verifiable truths, explicitly conducting their analysis using publicly verifiable information. A better organized, more mission-focused BBG might support this work. Past proposals to agglomerate it into a cable "Freedom News Network" would, as Stengel notes, provide an inferior version of market offerings. Merely appointing a viceroy, as per the organization's late-2016 restructuring as the U.S. Agency for Global Media, produced an agency at war with itself under the disastrous tenure of Michael Pack. The organization must be more explicitly, perhaps legislatively, directed to develop and deliver credible, well-sourced examinations of internationally contested topics. An expanded Global Engagement Center, an all-purpose counter-disinformation center conjured by executive order from the CSCC, might also be a home for these efforts.

We must also be willing to recognize when America's allies are better positioned to realize our narrative goals. ISIS spoke to a Suni audience in Suni terms. The Sawab Center, a partnership effectively outsourced to the UAE, was therefore better able to offer culturally fluent responses to ISIS messaging than anything America brought to the table.

Workplace culture and career trajectories within the State Department should also be a focus of reform. Any healthy institution, but particularly one that aims to shape rapidly evolving internet

narratives, should be able to enthusiastically launch new projects without creating bureaucratic “turf.” If participation in new ventures is viewed as a career risk, rather than an opportunity, ambitious talent will be channeled away from the most pressing problems.

It is disappointing then, that the section of the book titled “What to do About Disinformation” offers only blunt legislative solutions aimed at limiting the spread of disinformation. Rather than attempting to apply the lessons learned throughout the prior sections to improve the American government’s ability to respond to false narratives spread by rival nations and nonstate actors, Stengel embraces illiberal and outmoded media regulation, rejecting the inevitability of easily accessible false speech.

Stengel states that he “tried to show throughout the book,” that “democracies aren’t very good at fighting disinformation.” But what he has shown is that the sclerotic State Department bureaucracy is incapable of turning our society’s natural advantages in narrative production and deployment toward foreign policy goals. To the extent that authoritarian societies are more resistant to foreign influence, it is because they abandon the pursuit of truth, embracing ambivalence and uncertainty to nourish demand for a strong state. Cultivating stultifying cynicism at home comes with myriad costs and puts a low ceiling on government legitimacy.

Proposing sweeping internet regulations destined to upend social media platforms is a poor response to disinformation when foreign platforms are waiting in the wings. The fact that the information war is conducted via American platforms should be seen as an advantage. They demonstrate our commitment to free expression while forcing others to play on our cultural terrain.

In late November 2020, Chinese Foreign Ministry Spokesman Lijian Zhao tweeted a photoshopped image of an Australian soldier slitting a Muslim girl’s throat. The Australian government asked Twitter to remove the tweet but had no power to force a removal. Australian Prime Minister Scott Morrison responded to the image on WeChat, where his comments were removed for involving “content that incites, misleads, has non-objective facts” or “fabricates societal/historical issues.”

While some question why autocratic governments are even allowed on Twitter, there are clear advantages to meeting them on friendly terrain. Chinese Communist Party (CCP) diplomats mostly use twitter to incite and offend, pleasing domestic audiences while stoking

resentment abroad, making it far from clear that their public presence actually benefits China. Furthermore, every one of Zhao's tweets is flagged as coming from a "China government account," explicitly binding his vulgar speech to the government that employs him.

Indeed, modifying Section 230 as Stengel suggests, or repealing it wholesale, as former President Trump demanded as part of the National Defense Authorization Act, would undermine our ability to respond to foreign disinformation. Section 230 gives the platform internet an American flavor—its most dominant actors are American firms, playing by American rules that prioritize speech and property rights. These firms are usually friendly to American values, at least in respect to foreign adversaries. In late February, Twitter removed a network of Russian accounts for "undermining faith in the NATO alliance and its stability." Silicon Valley firms are subject to American cultural and regulatory levers and tend to take a dim view of Islamist propaganda and CCP subterfuge. The same cannot be said of WeChat, Viber, VKontakte, or any of the other foreign platforms to which conversation might flow if American firms faced a newly hostile regulatory environment.

More broadly, an American approach to combatting disinformation must not treat the First Amendment as an outdated "design flaw" to be circumvented by AI-assisted moderation or the regulation of tech firms. Instead, it will require government to move more quickly, dispense with internal veto points, and embrace an agenda-setting role for American civil society.

Although his suggestions miss the mark, *Information Wars* offers a lively report of Stengel's two-front battle against Foggy Bottom bureaucracy and foreign propaganda. Unable to set his background as a journalist aside, Stengel's account of his own tenure offers a more institution-centric perspective than most Washington tell-all's.

Will Duffield
Cato Institute

A Question of Power: Electricity and the Wealth of Nations

Robert Bryce

New York: Hachette Book Group, 2020, 322 pp.

"Electricity has transformed humanity like no other form of energy," says Robert Bryce. A bold statement? Perhaps, yet he

presents a convincing, fact-driven case in his latest book. He argues that electricity is the fuel of the 21st century and the largest source of global carbon dioxide (at 25 percent). Moreover, the global economy's leaders are found in countries where electricity is abundant and reliable. The electricity-generating industry, behind the oil and gas sector, is the world's second largest industry, with total global electricity sales of nearly \$2.4 trillion.

The author of *Power Hungry: The Myths of "Green" Energy and the Real Fuels of the Future* (2010), Bryce was formerly a Senior Fellow at the Manhattan Institute, and is currently a Visiting Fellow at the Austin, Texas-based Foundation for Research on Equal Opportunity. While the author presents an interesting historical and journalistic background into the development of electricity and its infrastructure, this review will focus on the public policy aspects of his thesis.

In Part One ("Electricity Means Modernity"), Bryce notes that in 2000 the National Academy of Engineering chose "electrification" as the number one engineering achievement of the 20th century, with 13 of the top 20 achievements *directly* dependent on electrification—such as general electronic goods, computers, and air conditioning, as well as health technologies, laser and fiber optics, and household appliances. He cites several scholarly studies (including one by the U.S. government's Energy Information Administration) verifying that increased electricity use supports economic growth. Economic growth, in turn, improves living conditions for humanity, he argues, by making lighting "cheap, abundant, and reliable," thus fundamentally changing how people spend their days and nights. Additionally, electricity provides "instant power" that has transformed everything from manufacturing to urban transportation. Lastly, electricity gives humanity the ability to concentrate energy flows that have "shaped everything from the height of our cities to the productivity of our factories and microprocessors." Bryce also recognizes the New Deal legislative reforms that increased energy competition and expanded access into rural, heartland America, offering consumers (and farmers) an affordable electricity grid which contributed to building America's post-World War II economic super-power status.

In Part Two ("Why are Billions Still Stuck in the Dark? And What Are They Doing About It?"), Bryce illuminates the great disparity in electricity usage globally and why billions are trapped in

“energy poverty.” The author uses his refrigerator (running on 1,000 kilowatt hours of power) as a benchmark and creates a database of the world’s countries. He then compares per capita electricity use data with population data, gross domestic product, mortality rate, life expectancy, and religious affiliation for 2012. Next, he trifurcates the world into three categories: unplugged countries (less than 1,000 kilowatt-hours per year electricity use); low-watt countries (between 1,000 and 4,000 kilowatt-hours per year); and high-watt countries (exceeding 4,000 kilowatt-hours per year). Bryce uses 4,000 kilowatt-hours per year as the minimum level for the high-watt countries because it is considered the minimum standard for living a long, high-quality life (78 years for high-watt countries, 73 years for low-watt countries, and 62 years for unplugged countries).

The unplugged countries (such as India and the Philippines), have 3.3 billion people (or 44.6 percent of the world’s population) who are nearly a century behind people residing in the high-watt locations. The low-watt countries consist of about 2.7 billion people (or 36.7 percent of the world’s population), which include Poland, Chile, and China. The high-watt countries have the remaining 1.4 billion people, or 18.7 percent of the world’s population, and include places like the United States and Sweden.

Noteworthy, says Bryce, is that very little electricity crosses international borders. In 2013, only 308 terawatt-hours travelled between countries, while about 23,000 terawatt-hours were generated. This means that each country or region is responsible for building, financing, and managing their own electric grid. Yet, for unplugged and low-watt countries that must choose between energy poverty and increased access to electricity, both consumers and policymakers, says Bryce, will inevitably choose the least expensive form of energy available to provide the maximum available electricity to the greatest number of people, regardless of the environmental impact. This “iron law,” as explained by the University of Colorado’s Roger Pielke, is “we’re (poor countries) not going to reduce emissions by willingly getting poor. Rich people aren’t going to want to get poorer, poor people aren’t going to want to get poorer.”

Bryce argues that the world’s primary source of energy for electricity remains coal, as it is both abundant and cheap, regardless of concerns about climate change. By 2017, over 6,600 coal-fired plants with a combined capacity of 2,000 gigawatts of electricity were operating globally, with about 209 gigawatts of new coal-fired capacity

under construction by early 2018. Coal-fired power accounts for one-third of all global electricity generation, and its share of global electricity production has remained nearly constant at about 40 percent since the mid-1980s.

In Part Three (“The View from on High-Watt”), Bryce focuses on the “electricity rich,” revealing the how and why electricity demand continues to increase. Electricity is the fuel driving the “Information Age,” and the Giant Five—Alphabet, Amazon, Apple, Facebook, and Microsoft—cannot operate in Bryce’s “New (Electric) Economy” without it. In recent years, the Giant Five have spent billions of dollars building private, blackout proof electric grids for their ever-larger data centers. “The bigger your network, the more valuable it is to those who own it and use it,” says Bryce. Recent data supports this assertion. Between 2012 and 2017, the Giant Five’s combined electricity use jumped 146 percent, while over the same time period their combined market share rose by 228 percent to \$3.4 billion. In turn, this has led to the Giant Five becoming so valuable and politically powerful that many commentators argue that governments around the world are struggling to effectively regulate and tax them.

There is increasing vulnerability for this expanding demand for electricity in the United States, and specifically the grid system it operates on. This threat from blackouts, says Bryce, takes the form of squirrels gnawing on power lines; sabotage at electric utility substations; natural disasters, whether from weather or from solar flares shutting down electric generation at medical facilities lacking adequate backup systems; cyberattacks on an electricity grid; and the threat of electromagnetic pulse (EMP) attacks generated from a detonated nuclear weapon.

In Part Four (“Twenty-First-Century Terawatts”), Bryce evaluates the future of electricity generation and how this global demand will be met. Global electricity demand increased by 4 percent in 2018. At that growth rate, consumption will double in 18 years (from 6 terawatts today to 12 terawatts in 2036), resulting in significant impacts on national prosperity and global climate change. Further, by 2050, 70 percent of the world’s population (up 2 billion to a projected 9.7 billion people) will be living in high-electricity-demand urban environments. Bryce makes a strong case that renewable energy alone is insufficient (“not by a long shot”) to meet the electricity demands (“terawatt challenge”) of the world’s population over the next three decades. He argues that there are four insurmountable

factors that prevent renewables from taking over our energy and power systems: cost, storage, scale, and land use.

The cost of shifting to renewable sources of energy for electricity generation in recent years has resulted in escalating electric bills for consumers in Germany, Canada, Australia, and California. For example, German residential customers have some of the highest-priced electricity in Europe (\$0.37 per kilowatt-hour), while residential electricity rates in Ontario, Canada rose 71 percent between 2008 and 2016. In addition, the intermittent nature of renewables, particularly solar and wind, requires electric grid operators to have sufficient backup generation capacity or large amounts of storage. What would it take to scale up solar energy for anticipated growth in global demand? Bryce estimates that the world would have to install 14 times as much solar capacity as now exists in Germany, and it would have to do so annually. What about wind-generation capacity? It would take as much wind-energy generating capacity as in China today, and this capacity replicated annually. As to land use, to achieve an all-renewable scenario would require paving over state-sized amounts of land with wind turbines and solar panels. There is also growing political, grass-roots resistance by citizens at the local government level throughout America, Australia, and Europe to this type of renewable technology.

The author is emphatic on what electric energy sources—natural gas, solar, and nuclear—are the right mix for the next three decades or more. Natural gas is low cost and low carbon and can be produced from a small footprint. Moreover, enormous gas fields have been discovered in the United States and offshore in Israel and Africa, and, between 1997 and 2017, proved global gas reserves increased by more than 50 percent. Those reserves now stand at about 193 trillion cubic meters, enough to last for 52 years at current production rates, and which can be transported internationally as liquefied natural gas (LNG). Bryce believes that solar energy will become an increasingly significant portion of the future electricity grid, but the issue of solar energy storage and cost-effective, environmentally friendly disposal of lithium-ion batteries is a barrier to growth. In 2017, global solar-energy production amounted to slightly more than 0.5 percent of global energy demand.

Bryce further argues that if you are anti-carbon dioxide and anti-nuclear, you are pro-blackout. He insists there is no feasible way to reduce carbon dioxide emissions without major increases in

humanity's use of zero-carbon-emission nuclear energy, as there is growing land-use conflicts associated with solar and wind energy projects. The International Energy Agency (IEA), as recently as 2019, declared that without a doubling in nuclear generating capacity by 2050, global carbon dioxide emissions will surge and will become increasingly more costly to control. If the use of nuclear energy continues to decline, IEA reports that \$1.6 trillion in additional electricity sector investment would be required in advanced economies from 2018 to 2040. The result will be \$80 billion higher annual electricity supply costs for the world's advanced economies.

Bryce concludes that the three main criticisms of nuclear energy, radiation, waste, and cost are, respectively, exaggerated (based on empirical studies), political (rather than technical in nature), and issues related to commercialization and permitting. A solution to the cost issue for nuclear energy generation lies with small nuclear reactors (SNR), light-water or molten salt reactors designed to prevent accidents and releases of radioactive materials. Moreover, these SNR designs have smaller reactors (NuScale, a U.S. based company, starts with 60 megawatts), are less expensive to build (as many of the components can be fabricated in a factory rather than on the construction site), and capacity can be added, for example, in 60 megawatt increments to meet increasing power demands.

Bryce has written a compelling book on the 21st century public policy realities of balancing national economic growth, energy choices, and environmental protection. I question whether enough of the population in high-watt countries are open to listening to his thesis. In these countries, voters are generally choosing renewable energy sources, such as solar and wind power, over Bryce's low carbon dioxide (natural gas) and no carbon dioxide (nuclear) alternatives, despite renewables' cost disadvantages, inconsistency for continuous power generation, and associated negative environmental impacts.

In addition, U.S. nuclear energy's track record for new construction since Three Mile Island has been sparse, with only two 2,200 megawatt reactors now under construction in Georgia, the first major nuclear reactor project projected to be completed on U.S. soil in the last 40 years (and project construction cost rising to \$25 billion, up from the original project cost estimate of \$14 billion). Unfortunately, the very real potential for multi-billion-dollar cost overruns for large nuclear reactor projects in the United States is

a major barrier for similar endeavors. However, this high potential for major project cost overruns may provide an opportunity for lower cost, more easily managed, no-carbon-footprint SNR projects to be undertaken on U.S. soil in the next decade. Where Bryce's energy source choices may succeed is with unplugged and low-watt countries, where economic growth is paramount, but natural gas and SNR furl facilities could be a winning combination that trumps the anti-hydrocarbon "green" ideology in the coming years.

A further example of the rush to renewable energy sources can be found in President Joe Biden's plan for a "Clean Energy Revolution," which includes installing 500 million solar modules in the United States over the next five years at a cost of \$40 billion per year. In Biden's world of "Clean Energy," hydrocarbons (including natural gas) and uranium need not apply for federal government support. The next four years could be a turning point for how electricity is to be fueled in America, if not all high-watt countries, over the coming decades.

Thomas A. Hemphill
University of Michigan-Flint

First Principles: What America's Founders Learned from the Greeks and Romans and How That Shaped Our Country

Thomas E. Ricks

New York: Harper, 2020, 415 pp.

Classics, the study of the ancient Greek and Roman civilizations, is today a niche subject studied by a diligent yet small circle of people. The ancient world is increasingly alien to the modern mind. But this was not always the case. For a long time, classical thinkers were revered as excellent sources of wisdom on both political and moral subjects. Classical writings were studied for centuries within the Western world, but few places could match the intense adoration of the ancient world that the American revolutionaries cultivated in the 18th century.

After the election of Donald Trump in 2016, stunning pundits and statistical gurus alike, the Pulitzer Prize-winning author Thomas E. Ricks contemplated the same question many generations of Americans have grappled with: What are our values as a nation? To answer this question, mirroring the American revolutionaries,

Ricks returns to first principles by examining the classical sources from which the Founders gleaned some of their most hallowed ideas about our duties toward our fellow citizens and our nation as a whole.

First Principles offers an important corrective to a common narrative of the American Revolution. When libertarians and classical liberals discuss the American Revolution's intellectual blueprints, John Locke often dominates the discussion. Locke's *Second Treatise on Government* informed the Founders on questions of resistance to tyrannical authority, the principles of natural law, and the justification of private property. But Locke was not the only thinker in the Founder's intellectual arsenal. At times, this intense focus on Locke and Enlightenment thought, in general, obscures the classical tradition's role in providing both moral and political models to follow. The writings of Thucydides, Tacitus, Livy, Sallust, Polybius, Plutarch and, above all other ancients, Cicero, were constantly cited by the Founders to argue in favor of an Enlightenment-informed republicanism. In tandem with political writings, figures of moral exemplarity were often praised as models to emulate. Larger-than-life figures such as Cato, Brutus, Epaminondas, Aristides, Phocion, and Cincinnatus all loomed in Americans' minds. Though these names might not be familiar to the educated modern American, there is no question 18th-century Americans were acutely aware of the ancient past, or at least the chunks of it they found particularly pertinent.

Scholars such as Caroline Winterer, Carl Richards, and Michael C. Hawley have done a great deal to illustrate just how pervasive the example of Rome and Greece was in the revolutionaries' minds. Their works are of an academic nature, however, while Ricks focuses on the interested layperson. Ricks' main goal is not to argue for a radically new interpretation or particularly novel vision of the Founding and classicism. Instead, he aims to raise the awareness of the average American of ideas, attitudes, and even vocabularies that have fallen out of fashion but ought to be revived to rejuvenate and improve our understanding of the ideas that form the moral core of America today.

Ricks shows the pervasive influence of the ancient world on a huge variety of revolutionary figures, but *First Principles* focuses mainly on the first four presidents of the republic, Washington, Adams, Jefferson, and Madison. At a time when the future seemed desperately uncertain, each of these figures returned to the wisdom of the ancients to try to make sense of the rapidly changing world in which they lived.

Schools and colleges mirrored their colonial counterparts in Britain by focusing heavily on classical writings and ancient languages. Children at a young age were expected and required to understand the classical world by reading a wide variety of classical authors. College entry requirements often required an applicant to translate passages of authors like Cicero. School and college curricula contributed toward what the scholar Carl J. Richards calls “the classical conditioning” of the Founders. Throughout the early chapters Ricks shows us how each president came into contact with thinkers and ideas that would change their lives.

But not every American had years of schooling. Many, such as George Washington, did not have the privilege of spending their youth studying the ancients. Despite this, the ancient Greek and Roman worlds were familiarized, discussed, and interrogated by those without formal education like Washington. The culture of classicism had such pervasive influence that even those without formal schooling could conjure a few parallels and references.

Washington was one of the least educated among the Founders. Ricks recounts a story in which John Adams even pondered if he was illiterate because he was so unimpressed by his intellect. Despite these barbs to his lackluster education, Washington, like many others, was enamored with the greatest classical heroes transmitted through Plutarch. In his youth, he was inspired by Julius Caesar’s skill as a commander. But after experiencing the harsh realities of war and defeat, Ricks argues that Washington opted for the strategies of the Roman general Fabius during the Revolutionary War. When Rome was invaded by the famed Carthaginian general Hannibal Barca in the 3rd century BCE, the Roman army experienced numerous defeats. Fabius opted for a strategy of harassing the Carthaginian forces and avoiding open battle. This strategy whittled down the Carthaginians, essentially nullifying the gains they had made after three astounding victories. In the same manner, Washington did not give the British an open battle, opting for harassment and skirmishing as he knew the limitations of his army’s capabilities.

Later in life, Washington would yet again be moved by classical example to yield the continental army to Congress. Washington was consciously casting himself in the mold of Cincinnatus, another famous Roman general from the 6th century BCE, who, after being granted dictatorial power by the Roman Senate to deal with an invading force, quickly relinquished his power and returned to his humble

farm. In much the same manner, Washington consciously followed in the footsteps of Cincinnatus. Ricks makes it clear that in a hypothetical world without classical examples such as Cincinnatus, Washington's life and legacy would likely have been drastically different.

Unlike Washington, who learned in part through cultural osmosis, John Adams was an extraordinarily studious and well-learned person. But Adams did not have the military mind or attitude of Washington. Instead, his classical hero was Cicero, the Roman statesman, orator, lawyer, and philosopher who struggled to preserve the dying Roman republic of the 1st century BCE. Both Adams and Cicero were new men to the political scene and could not rely upon a lofty legacy. In Cicero, Adams found a lifelong partner he could constantly revisit at times of great turmoil. Throughout his life, Adams would not only quote and cite Cicero but even mimic his strategies while practicing law and defending clients such as the soldiers of the Boston Massacre. Ricks shows how Adams returned to Ciceronian principles and narratives throughout his life, writing that "when we seek to understand John Adams, it always helps to look to Cicero."

Unfortunately, Ricks crucially neglects to cover in much detail Adams's *A Defence of the Constitutions of the Government of the United States of America*, an admittedly unwieldy and awkward three-volume work refuting the unicameralism of the French thinker Anne Robert Jacques Turgot. *Defence* is mostly made up of quotations from a plethora of authors in the Western tradition. Because of its cumbersome nature, few read it today besides scholars. But Adams's *Defence* was a rare extensive and complete expression of republican values that the erratic pamphlets of the era could rarely match. Eminent historian Gordon Wood even refers to it as "the finest fruit of the American Enlightenment." *Defence* did a great deal to solidify bilateralism as a staple of American politics. Today, of all the states, only Nebraska has a unicameral legislature, a testament to Adams's influence. It is hardly surprising that Ricks only briefly deals with *Defence* in favor of discussing Adams's presidency. Still, it is a missed opportunity to bring a seminal yet almost forgotten work to prominence.

Many Americans prioritized Rome's example over Greece, but Thomas Jefferson stood out because of his unique commitment to Greek ideas, rejecting the Ciceronianism of people like Adams. Though Jefferson was enamored with Roman historians such as

Tacitus, he stands out for his thorough commitment to the Greek philosopher Epicurus, who developed a philosophy premised on the avoidance of pain. Similar to the romanticists of the 19th century, Jefferson was inspired by the Greeks to affirm the importance of feelings, emotion, and passion. As Ricks aptly points out, however, this often led to Jefferson ignoring reality, especially his hypocrisies.

Ricks argues that Jefferson's Epicureanism could have both positive and negative outcomes. On the one hand, Ricks shows how Jefferson's Epicureanism animates the Declaration of Independence, one of the most important documents of the Revolution but also an inspiring affirmation that "all men are created equal." Ricks explains that the Declaration, despite being considered deeply Lockean, also represents "a garden of Epicurean belief." Yet Ricks argues that Jefferson's Epicureanism and Romanticism allowed him to advocate for equality yet practice and benefit from slavery, the most extreme form of inequality imaginable. Ricks ponders that Jefferson's Epicureanism gave him the justification of receding into oneself to find happiness, allowing him to ignore or at least rationalize his political contradictions.

Almost a generation removed from the previous three presidents, of all the Founders James Madison boasts possibly the most complex and nuanced engagement with the ancient world. From a younger generation and educated at the comparatively cosmopolitan College of New Jersey (Princeton), Madison had a respect for the ancients but was not as enamored as Washington, Adams, or Jefferson. He saw that the ancients, just like the moderns, are susceptible to error. Madison did not merely cite the ancients as a hallowed authority but also questioned and probed classical virtue's fundamental limits.

In his speeches at the Constitutional Convention and in the *Federalist Papers*, Madison displayed a deep understanding of Greek and Roman political institutions. During the Constitutional Convention, when discussing the importance of a strong central government, Madison buttressed arguments with examples of the Greek leagues and federations of the 4th century BCE. In the *Federalist Papers*, Madison made many references to the classical world, and with good reason, he saw a direct parallel between the failure of Greek leagues such as the Amphictyonic League and America's situation. Madison accepted the limitations of human nature and worked toward synthesizing classical political models with emerging accounts of self-interest provided by authors like Adam Smith and Bernard

Mandeville. As Ricks points out, the word virtue appears more often than even liberty in Founding era writings. Madison breaks with his contemporaries and classical predecessors by building a system that did not rely upon the often shaky foundations of virtue.

Ricks explains that, although the 1780s represent the zenith of classical influence, this position was starting to rapidly erode by the 1790s. The dynamic and pluralistic society America became meant elites lost their sway and ability to influence how the average citizen felt. Industrial society made educating children in classics seem to be an elitist and ultimately ornamental practice that was to be subsumed by more practical curricula. By the 1800s, classicism began to manifest itself not on the side of freedom but on the side of slavery as Southern plantation owners used the classical past to justify contemporary chattel slavery. And from that point onward, studying the ancients would never regain the cultural sway and status it held during the Revolutionary period.

A minor gripe is that Ricks, at times, sacrifices extensively discussing the ancients in favor of a historical narrative that, while very readable and enjoyable, can often lose sight of the book's original aim: to illustrate the level of influence that the ancients had on the leaders that founded the nation and the type of nation that they founded. This is probably most prevalent in the chapters about Washington, which are mostly based around military history, Rick's home turf as a writer. Though fascinating, sections such as these often veer somewhat from the main thrust of the book.

But despite any criticisms, Ricks must be commended. He has successfully adapted what is usually a niche and highly academic subject into a highly readable and compelling illustration of the Founder's most hallowed heroes. For libertarians and classical liberals who admire the ideas of the Founding, there is a great value in reading *First Principles*. While Ricks corrects the overreliance on Locke to explain the intellectual milieu of the Founders, he also impressively never falls into the trap of overemphasizing the classics. At all times, he tempers the classical influence by discussing the importance of Enlightenment thinkers, especially those of Scottish extraction. Ricks points to figures like Thomas Paine and Alexander Hamilton, who were much more skeptical of the applicability of principles derived from a long-gone age. And Ricks doesn't overvalorize the ancients, writing that "the more we grasp the influence of the Greco-Roman world on the Revolutionary generation, the better we

will understand them and their goals, problems, fears, and mistakes.” The classical world brought with it much baggage, for example how the slavery of the Greeks and Romans helped the Founders rationalize their holding of slaves while speaking of the virtues of liberty.

Today, public buildings are classical in style, but within them, the principles that animated the American Republic’s creation are often lacking. For anyone who wishes to understand not only how America came to be but also where it may be headed, *First Principles* is an excellent start on this pilgrimage.

Paul Meany
Cato Institute

Recovering the Liberal Spirit: Nietzsche, Individuality, and Spiritual Freedom

Steven F. Pittz

New York: SUNY Press, 2020, 280 pp.

Liberalism, in the classical sense, has always suffered from a miasma of critics who claim they know better. Even as respect for the dignity of the individual, and the political and economic liberty it engenders, grew as a cultural and governing force producing the great fruits of prosperity and peace, communitarians of the left and right grumbled that something was rotten at its core. Liberalism might be good for the pocketbook, and it might be good for the hedonist, but it’s bad for the soul. Its riches and lifestyle options, in other words, come at a spiritual cost. For what will it profit a man if he gains the whole world and forfeits his soul?

Defenders of the liberal project have typically responded by doubling down on the twin benefits of wealth and choice. It’s better for people to be richer, and nothing gets us richer faster than free and open markets. It’s better for people to be free to author their own lives, and nothing enables that more than getting the coercive might of government out of the way—and also having some extra spending money. But that’s, in a sense, merely restating the anti-individualist, pro-communitarian case. For the kind of person who believes man’s telos is more expansive than “survival” or “happiness” and instead involves being a very particular sort of person, saying that liberalism expands choice and the resources to it is a knock against it, not a fact in its favor.

Enter Steven F. Pittz's *Recovering the Liberal Spirit: Nietzsche, Individuality, and Spiritual Freedom*, a rejoinder to such worries that admits the importance of spiritual growth and argues that liberalism's the best way to get it. His basic argument is that the "free spirit" is a robust and worthwhile alternative to communitarian forms of spirituality, that liberalism allows for and supports free spirits, and that as members of the liberal political project, free spirits bring value to the rest of us. Liberalism has its economic and political defenses. Pittz gives us a spiritual one.

As the title suggests, Pittz draws heavy inspiration from Nietzsche, but the discussion ranges widely enough, and with plenty of original ideas and analysis, that the book ought to be read by anyone interested in liberalism and its critics, and not just by Nietzsche scholars. He begins by setting out just what a free spirit is: "the free spirit is a skeptic with a cheerful temperament who seeks above all to confront life and existence directly, fearlessly hovering over the illusions of tradition, metaphysics, and customary morality." Spiritual fulfillment comes from what one discovers about the universe and oneself, in the form of an intense aesthetic appreciation for life, when carrying through on this direct examination, freed from the blinders and constraints narrowing the perspectives of non-free spirits.

The benefit of liberalism to the free spirit is relatively clear, in that spiritual fulfillment is desirable and valuable, and for someone of such inclination, freedom to experiment with their lives is the best, or only, way to achieve it. And those political institutions that enable free spirits also enable the rest of us to choose to live less skeptically, following more closely tradition and customary morality if that's our jam.

The value of living in a society with free spirits is a little less direct for everyone else, but very real and profound. Free spirits, through heightened examples and experimentation, are vivid signposts pointing us to ways of living we weren't aware of before. Even if we don't choose to live as they do, we have a picture of how we might, and so gain a degree of autonomy and self-mastery in deciding among a greater menu of options. In addition, by detaching from society and its politics, free spirits give us a more nuanced perspective about the importance of both, and so bring the temperature down on ideological debates. If I can see actual examples of people being happy without concern for my ideology, I will be less inclined to force my ideology upon others. This will "change the attitude . . . society has

toward nonconformists, outcasts, or all those who fall outside of the mainstream of politics or culture.” Free spirits make liberalism more liberal.

If I have a worry about the book, however, it’s that the people most in need of recognizing the value of a liberal society to free spirits and of free spirits to the rest of us, are unlikely to view his argument as even getting off the ground. I have in mind illiberals on the left striving to punish those who deviate from the moral codes and language of their woke subculture, and those on the right striving to rebuild America into a pastoral, working-class nostalgia. Unlike the progressives and communitarians Pittz wrestles with in the book’s closing chapters, those influential groups are likely to read *Recovering the Liberal Spirit* not as a defense of liberalism but as a portrait of why it must be abandoned.

Beneath its philosophical veneer, the bulk of illiberalism on both the left and the right, among intellectuals and regular citizens, isn’t about institutional structures or ideological commitments. It’s about intolerance of difference grounded in the idea that the job of politics is to ensure that the world conforms to our personal tastes. From that perspective, free spirits are bad not because of their effects, but because they exist at all. These illiberals might like a society with free spirits in it, but that favor is limited to those who represent heightened and unencumbered distillations of their own preferences, as they represent what they desire themselves to be. To illiberals, free spirits whose aesthetic seeking takes them elsewhere aren’t beneficial, they’re distasteful.

In *Anarchy, State, and Utopia*, Robert Nozick made the case that you can get from anarchism to a minimal state without violating the rights of non-consenters by, in effect, compensating them for the rights violations of forcing them to live under and pay for a state. But this strategy doesn’t work because the anarchists don’t want to be subject to a state, nor do they want to pay for one, and so forcing them to do both hardly counts as compensation for that compulsion. You can’t rectify a rights violation simply by declaring the violation to instead be a benefit.

While the existence of free spirits isn’t a rights violation, I worry that populists and illiberals will see an analogous move on Pittz’s part. Communitarians worry that liberalism leads to spiritual emptiness through the “disintegration of the connections between ourselves and the things that might bring us spiritual fullness, things like

religion, community, and traditional values,” and Pittz responds by pointing out, correctly, that free spirits are in fact spiritually fulfilled, and that religions and communities needn’t be enforced by the state in order to thrive. But I can’t help but think that communitarians will respond with a simple, “Yeah, but I wasn’t talking about *that* kind of fulfillment.”

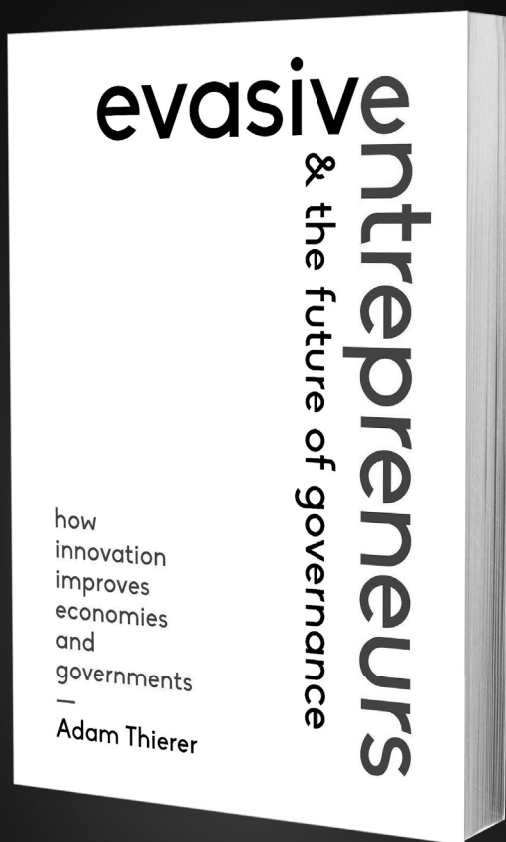
It’s striking that the next person Pittz mentions, by way of example, after that passage is Patrick Deneen, who believes it is the role of government to give you spiritual fulfillment, but, as an integralist, he means specifically Catholic spiritual fulfillment. That’s why he’s so sympathetic to Victor Orban’s Hungarian authoritarianism and wouldn’t be persuaded by a case for liberalism grounded in the capacity to find fulfillment in a faith of your own choosing, or in none at all. He might abide by the free spirit Augustine, but he’s not going to see it as a perk that liberalism allows for Timothy Leary.

For this brand of illiberals, the supposed political benefits of free spirits (detachment, lowering the heat of ideologies) are instead *problems* with liberal regimes. It’s not clear how Pittz’s argument can work against a narrower definition of spiritual fullness, or a belief that autonomy is good, so long as it’s the right kind. *Recovering the Liberal Spirit* will speak quite strongly to those on the fence about liberalism’s values. But for those who hold that self-authorship and freedom from society’s values are grand—so long as you don’t express the wrong ideas about curing racism—or that spiritual fulfillment is a higher good—so long as it’s found within Catholicism or the Law of Attraction—it’s likely to be read as a case for the prosecution, not the defense.

That all said, this is a marvelous and thought-provoking book, and it sets out a path for grounding and defending liberalism worth attention and further development.

Aaron Ross Powell
Cato Institute

Innovation Drives Growth and Better Government

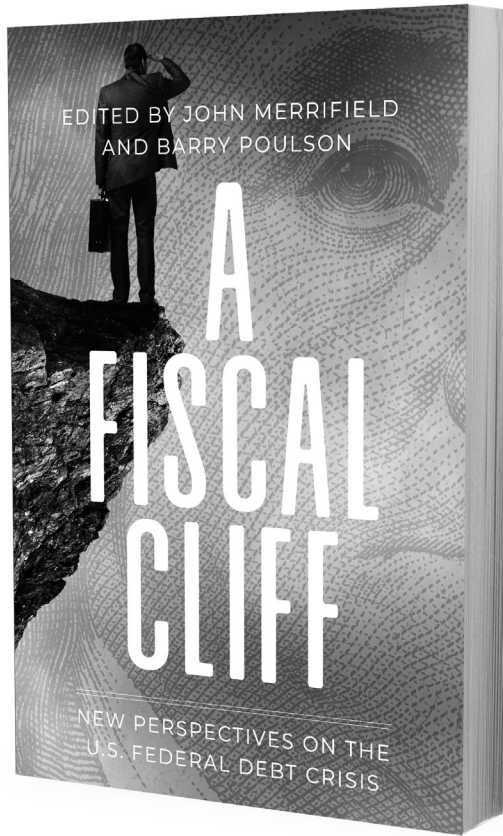


Innovators of all stripes are increasingly using new technological capabilities to circumvent traditional regulatory systems. Disruptive innovators are emerging in a range of fields, including 3D printers, drones, driverless cars, Bitcoin and blockchain, virtual reality, and the “Internet of Things.” In essence, evasive entrepreneurialism and technological civil disobedience are new checks and balances that help us rein in the excesses of the state, make government more transparent and accountable, and ensure that our civil rights and economic liberties are respected.



AVAILABLE AT CATO.ORG AND ONLINE
RETAILERS NATIONWIDE.

It's Time for New Perspectives on the U.S. Federal Debt Crisis



Despite numerous congressional committees, bipartisan commissions, and votes, we are no closer to a solution to the U.S. federal government debt crisis than we were more than a decade ago. In this timely volume, scholars and policymakers assess the United States' fiscal constraints and provide new perspectives that are desperately needed. Previous recommendations focused on the outcomes of fiscal policy, but perhaps we should take a step back and ask whether the fiscal and budget process rules themselves should be reformed.

CATO
INSTITUTE

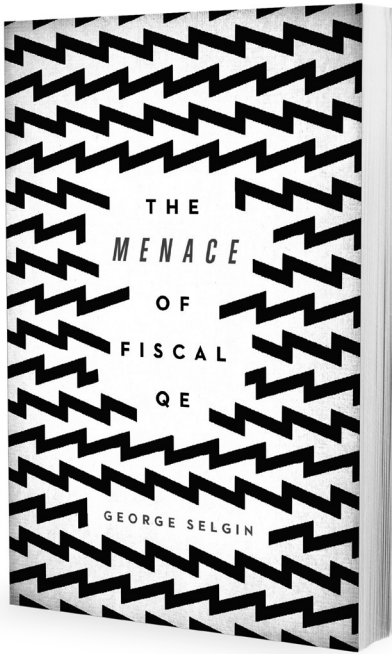
AVAILABLE AT CATO.ORG AND ONLINE
RETAILERS NATIONWIDE.

FROM THE CATO INSTITUTE'S CENTER FOR
MONETARY AND FINANCIAL ALTERNATIVES

“George Selgin has provided us with an excellent guide to understanding the risks of the Fed’s use of Quantitative Easing or QE. It shows how unconventional monetary policies during the crisis have paved the way for fiscal abuse of our central bank’s balance sheet. I highly recommended it for anyone with a serious interest in the appropriate interactions of monetary and fiscal policy.”

—CHARLES PLOSSER

President of the Federal Reserve Bank of Philadelphia from 2006-2015

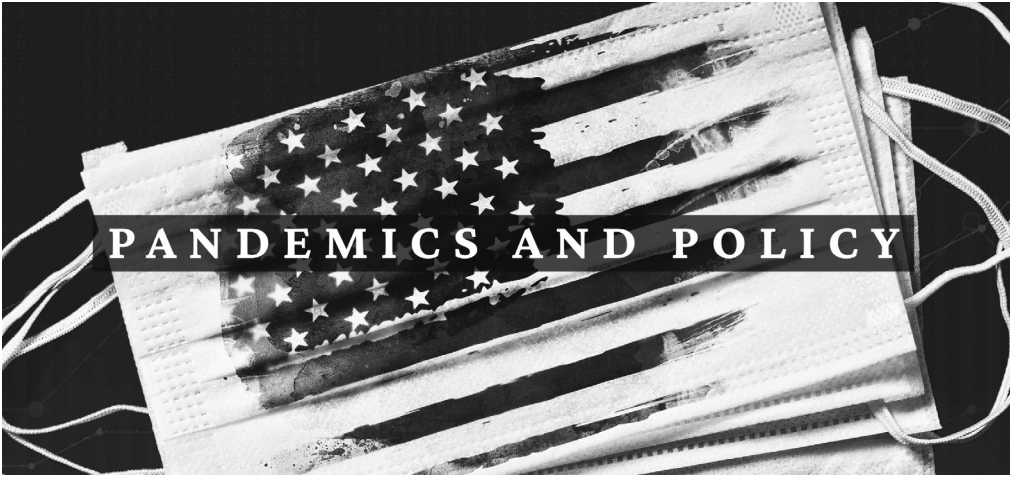


Thanks to crisis-era changes to its operating procedures, the Fed now enjoys practically unlimited powers of quantitative easing (QE): it can buy as many assets as it likes while still controlling inflation. So far, QE has been a weapon for combating recession. But if certain politicians have their way, the Fed may be forced to use it not for macroeconomic purposes but to finance backdoor spending.

In his brief but systematic study, George Selgin reviews the movement favoring fiscal QE,

shows how it threatens both the Fed’s independence and democratic control of government spending, and counters claims that it offers a low-cost means for financing such spending.

What went wrong, what we've learned, and how to prepare for the next time.



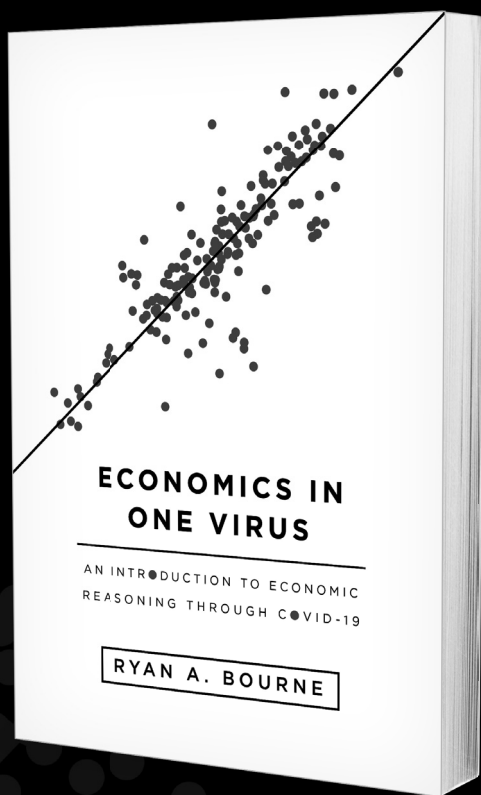
The COVID-19 pandemic has upended our daily lives and transformed the political landscape, with governments at all levels exercising emergency powers rarely seen outside the context of total war. With so much at risk, what's needed now is a sober, realistic assessment of the choices ahead—a guide to policies that can stem the damage while avoiding permanent transformation of American life and law.

The Cato Institute aims to meet that need with its new series, *Pandemics and Policy*, which provides policymakers with an actionable guide to policies that can harness ingenuity and foster a resilient society capable of meeting the challenges ahead.



READ THE PANDEMICS AND POLICY ESSAYS AT
CATO.ORG/PANDEMICS-POLICY • #CATOCOVID

New from the Cato Institute



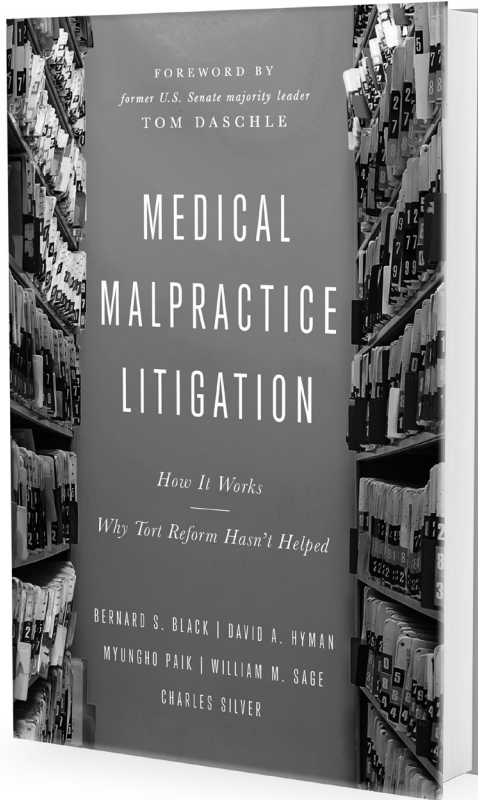
Drawing on the dramatic events of 2020, *Economics in One Virus* brings to life some of the most important principles of economic thought. Packed with supporting data and the best new academic evidence, those uninitiated in economics will be given a crash course in the subject through the applied case study of the COVID-19 pandemic to help explain such things as why the United States was underprepared for the pandemic and how economists go about valuing the lives saved from lockdowns.



AVAILABLE AT [CATO.ORG](https://www.cato.org) AND
ONLINE RETAILERS NATIONWIDE

“A hard-headed, empirical analysis of medical malpractice reform.”

—JASON FURMAN, PROFESSOR, HARVARD UNIVERSITY, AND FORMER CHAIRMAN, COUNCIL OF ECONOMIC ADVISERS



Over the past 50 years, major medical malpractice crises in the United States have created dramatic increases in the cost of malpractice liability insurance. These crises sparked vigorous politicized debates marked by a shortage of evidence, as well as misstatements and overclaiming, leaving the public confused about answers to some basic questions. What caused the premium spikes? What effect did tort reform actually have? Did it reduce frivolous litigation or improve access to health care? This book provides an accessible, fact-based response to these and other questions about how the medical malpractice litigation system actually works.



AVAILABLE AT CATO.ORG AND ONLINE
RETAILERS NATIONWIDE • #CATOBOOKS

Cato Institute

Founded in 1977, the Cato Institute is a public policy research foundation dedicated to broadening the parameters of policy debate to allow consideration of more options that are consistent with the principles of limited government, individual liberty, and peace. To that end, the Institute strives to achieve greater involvement of the intelligent, concerned lay public in questions of policy and the proper role of government.

The Institute is named for Cato's Letters, libertarian pamphlets that were widely read in the American Colonies in the early 18th century and played a major role in laying the philosophical foundation for the American Revolution.

Despite the achievement of the nation's Founders, today virtually no aspect of life is free from government encroachment. A pervasive intolerance for individual rights is shown by government's arbitrary intrusions into private economic transactions and its disregard for civil liberties. And while freedom around the globe has notably increased in the past several decades, many countries have moved in the opposite direction, and most governments still do not respect or safeguard the wide range of civil and economic liberties.

To address those issues, the Cato Institute undertakes an extensive publications program on the complete spectrum of policy issues. Books, monographs, and shorter studies are commissioned to examine the federal budget, Social Security, regulation, military spending, international trade, and myriad other issues. Major policy conferences are held throughout the year, from which papers are published thrice yearly in the Cato Journal. The Institute also publishes the quarterly magazine *Regulation*.

In order to maintain its independence, the Cato Institute accepts no government funding. Contributions are received from foundations, corporations, and individuals, and other revenue is generated from the sale of publications. The Institute is a nonprofit, tax-exempt, educational foundation under Section 501(c)3 of the Internal Revenue Code.

CATO INSTITUTE
1000 Massachusetts Ave., N.W.
Washington, D.C. 20001
www.cato.org