Special Edition Roundtable
Money in the Time of Coronavirus

Special Edition Roundtable:
Prompt for Discussion

Contributors: Katharina Pistor, James McAndrews, Saule Omarova, Mark Blyth, Jamee Moudud, Elham Saeidinezhad, Dan Awrey, Fadhel Kaboub, Leah Downey, Virginia France, Lev Menand, Nadav Orian Peer, Robert Hockett, Carolyn Sissoko, Jens van 't Klooster, Oscar Perry Abello, and Gerald Epstein

The financial strains brought by the coronavirus outbreak feel strangely reminiscent of 2008, and yet, markedly different. In the United States, at the writing of this prompt, the S&P 500 has crashed 25%, and the federal funds target rate is once again moving towards the zero bound. The treasury securities market is in disarray, and the Federal Reserve is set to increase its repo lending by over one trillion. In Washington, the administration's insistence that concerns were overblown is now replaced with negotiations over the size and shape of a stimulus package. "I don't want to use the b-word", said a senior administration official about plans to support distressed industries, like airlines. The b-word is, of course, bailout.

So far, so 2008. But the monetary dynamics we are witnessing in the time of corona also take us into new territory. The proximate cause of the crisis past came from within the financial system itself: the housing credit bubble and abuses in subprime lending. The corona crisis, on the other hand, emerges from a material threat to human health. Where the 2008 crisis revealed the vulnerabilities of *financial* globalization, the corona crisis is disrupting the global *production* system, upending supply chains, and threatening shortages in essential inventories.

We wonder about the extent to which the policy arsenal of 2008 can contain the dislocations currently occurring, and what, exactly, stimulating consumer demand means when the consumer herself is in quarantine. Moreover, the crisis response to the corona crisis is taking place within an institutional setting that was itself reshaped by the 2008 crisis reforms. As corona strains unfold, it remains to be seen whether the promise of financial resilience will be borne out, or whether fundamental design flaws left in place will frustrate reformers' efforts.

In this Special Edition Roundtable, JM invites contributors to provide live analysis of money in the time of corona, here in the U.S., and around the world.

Contributions

April 29, 2020
Getting to Know a Brave New Fed
Oscar Perry Abello, Next City

April 10, 2020
The problem with shareholder bailouts isn't moral hazard, but undermining state capacity
Carolyn Sissoko, University of the West of England

April 2, 2020
Crises, Bailouts, and the Case for a National Investment Authority
Saule Omarova, Cornell Law School

March 31, 2020
Why the US Congress gives dollars to the Fed
Jens van 't Klooster, KU Leuven and University of Amsterdam

March 26, 2020
A fire sale in the US Treasury Market: What the coronavirus crisis teaches us about the fundamental instability of our current financial structure
Carolyn Sissoko, University of the West of England

March 25, 2020
The Democratic Digital Dollar: A 'Treasury Direct' Option
Robert Hockett, Cornell Law School

March 22, 2020
Derivative Failures
James McAndrews, TNB USA Inc. and Wharton Financial Institutions Center

March 20, 2020
The Case for Free Money (a real Libra)
Katharina Pistor, Columbia Law School

March 19, 2020
The Monetary/Fiscal Divide is Still Getting in Our Way
Leah Downey, Edmond J. Safra Center for Ethics at *Harvard University*

March 18, 2020
Is Monetary System as Systemic and International as Coronavirus?
Elham Saeidinezad, UCLA Department of Economics

March 17, 2020
Here We Go Again? Not Really
Dan Awrey, Cornell Law School

March 16, 2020
Repo in the Time of Corona
Nadav Orian Peer, Colorado Law

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Beyond Pathogenic Politics

Jamee K. Moudud, Sarah Lawrence College

March 15, 2020

Economic and Financial Responses to the Coronavirus

James McAndrews, TNB USA Inc. and Wharton Financial Institutions Center

Money in the Time of Coronavirus
S. Das, Roundtable Wrap-up

June 29, 2020

Sannoy Das, Harvard Law School

The *Just Money* roundtable was convened to analyze policy responses, emerging mostly from monetary authorities, to the economic dislocations that occurred or became imminent as the coronavirus crisis hit every corner of the globe. Most of our contributions focused on the responses by the Fed in the United States – and while this is obviously limiting in one sense, in another we gained from zooming in on the actions and authority of that agency. The institutional role of the Fed in the American economy evolved in response to the 2008 financial crisis, and does so again here. The deployment of the tools fashioned in that crisis offers insight into the role that monetary authorities can, and should, play in the governance of the economy. The contributions here generally underscore the influential, even outsize, role that the Fed plays in shaping the course of the American economy. In fact, given the position of the dollar, the Fed's interventions will surely have significant impact on other economies too, and will condition the response of other monetary and fiscal authorities.

Sixteen contributions were published between March and May – as America moved from the earliest days of scattered local lockdowns, to deeper and more widespread orders, to down shutters. These posts were written in the backdrop of a rapidly evolving context and speak to a wide range of questions. In this brief summary, I am going to attempt to distil a set of fundamental concerns from otherwise very divergent contributions. Naturally, I cannot capture all the arguments that all our authors made, and I try, post hoc, to draw connections between contributions that may be somewhat tenuous. Nevertheless, I hope this summary offers some helpful guidance on reading the roundtable. The entire roundtable – with a serial presentation of the contributions – is available here.

Several of our contributors ask a fundamental political question – as the Fed intervenes to protect the financial system, and the Congress passes a trillion-dollar relief package – to whom do the benefits of these interventions flow? That distributional question sits at the heart of the Fed's legitimacy and political identity, particularly as the COVID-19 crisis threatens to worsen escalating inequality. Duncan Kennedy suggests that the Fed should buy up debt that is secured by mortgages over low income housing properties, conditioning this bailout on the landlord extending protection to tenants. Similarly challenging the Fed's focus on shoring up banks, Gerald Epstein proposes that the Fed inject liquidity into municipal governments by accepting new forms of local and state bonds – paper issued on the basis of local *human capital* rather than tax revenue. Certainly, both these interventions would fall within the scope of the Fed's powers, but they involve going beyond the role that economists conventionally assign to a central bank. To be sure, in 2008, the Fed acted in ways that went far beyond what conventional wisdom would have admitted; donning the avatar of Oscar Perry Abello's 'Brave New Fed.' This is precisely the argument now – that any constraint on the Fed acting for benefit of the American working class is ideologically constructed. In the broader context of how politics responds to the pandemic, J.K. Moudud underscores this point about ideology, arguing that we must look beyond the 'market fundamentalist' obsession with shoring up stock markets and economic growth alone in response to a crisis. By contrast, Dan Awrey mounts something of a defense for the Fed's conventional intervention to back up banks and financial institutions by stabilizing the money market. To be sure, Awrey's point is *not* to deny the importance of monetary system reform for the benefit of American households, but merely that the Fed's 'subsidies' for Wall Street are not entirely without social purpose.

Fundamental to Keynes's challenge to nineteenth century economic wisdom was the insight that workers don't bargain for a real wage – they bargain for the money wage. If what matters for a stable and equitable economy is money in the hands of people, Katharina Pistor and Robert Hockett, in slightly different ways, suggest that rethinking how the dollar circulates as currency can serve that purpose. Pistor, borrowing from the history of cooperative monies, suggests that the central bank should issue a digital currency – 'Free Dollars' – that depreciate over time so that recipients are incentivized to spend. Hockett, similarly, suggests utilizing the existing digital architecture of the Treasury to create digital 'treasury dollars' that people can spend from their treasury direct wallets, and which would be convertible to Fed dollars. Despite important differences between these two proposals, they have two insights in common. First, they agree that money is 'created' by the banking system because that system is backed by the sovereign. Accordingly, new ways to create money for the benefit of the people are always within sovereign prerogative. Second, and as I noted above in respect to other posts, they reiterate that our assumptions about the Fed's role being limited to managing the 'financial' system are ultimately tenuous. Leah Downey sharpens the focus on this point by reminding us of how the abiding divide between monetary and fiscal matters serves to blunt the possibility of transformative political interventions in times of crisis. And Saule Omarova notes that once the economy comes to be sustained on the basis of monetary and fiscal interventions, there is good reason to reconsider the possibility of a developmental role for the State by instituting a national investment authority.

Enduring questions about the vulnerability of a financial system in uncertain times appear in three contributions: one by Nadav Orian Peer and two by Carolyn Sissoko. They address matters of risk assumption by financial market participants and the regulation of that risk by the Fed. Orian Peer addresses the rise in transactions in the 'sponsored repo market,' different from the tripartite repo market, where participants are better regulated by the Dodd Frank Act and Basel III norms. The turn to sponsored repo transactions, a case of regulatory arbitrage (which Orian Peer, with literary flourish, describes as an existential feature of the human condition), threatens the stability of the financial system by undermining the regime of regulatory oversight over repo transactions that followed the 2008 crisis. More concerning is how this 'sponsored repo market', now unwittingly supported by the Fed, would affect its future response as a financial crisis looms large following the pandemic. Carolyn Sissoko points to the more general volatility of a financial system with high volumes of repo transactions. The nature of the repo market makes it inevitable that any decline in the value of assets that are collateral for repo borrowing (the inevitable outcome of some negative sentiment in the economy) will lead to margin calls from repo lenders, triggering a 'fire sale' of assets, all the way down to the otherwise safe Treasury bonds. As this played out in March, the Fed intervened to stabilize Treasury bonds, but with negative sentiment always just around the corner during a pandemic, the dark clouds of a crisis gather overhead. In another contribution, Sissoko turns to a more fundamental question of risk and bailouts under capitalism. State capacity under capitalism exists because the private sector is characterized as risk bearing. Bailouts threaten that underlying compact and must for those reasons (rather than the more ubiquitous 'moral hazard' arguments) be considered with caution.

Two contributions by J. van't Klooster and E. Saeidinezhad, in very different ways, offer some perspective on the global context for the Fed's interventions. Saeidinezhad explains how the Fed's re-establishment of central bank swap lines with five other major central banks was designed to ensure stability in the 'Eurodollar' market (foreign deposits denominated in US dollars), when instability became inevitable with the disruption to global trade and supply chains. Thus, paradoxically (or not), the risk emanating from a disruption of the chained global 'real' economy could only be managed by the further globalization of money. Van't Klooster offers a brief comparative insight into the Fed's willingness to inject liquidity against that of the European Bank. Their point is to demonstrate that while central bankers have committed to "do whatever it takes" to keep the wheels of the financial system well-oiled, they are simultaneously concerned about managing the central bank's exposure (more so, in Europe). Central bankers guard against risks of 'technical insolvency' in order to retain their regulatory authority; committing to large scale quantitative easing requires bankers to overcome their fear of insolvency. Unlike those who might dismiss this view of insolvency risk as pure ideology, Van't Klooster takes this

psychological condition seriously, and argues that it accordingly makes sense for the Congress to earmark a part of the relief package for the Fed itself.

Finally, while many of our contributions are invested in the thickets of monetary policy, two pieces by James McAndrews help us think more generally about managing the economy in the midst of a crisis. How we evaluate effective economic policy depends on our basic sense of how the world (the economy) works. Thus, McAndrews suggests that if we diagnose the economy as a set of circular flows, and the pandemic causes leakages in particular streams, then policy prescriptions designed to fix one set of flows can generate imbalances elsewhere. Therefore, monetary policy fixes – designed to increase available credit – must be applied alongside interventions that provide income support, increase flexibility of repayment on existing debts, and enable workers to steadily rejoin the economy. Along similar lines, in his second contribution, he reminds us that our current crisis did not arise on account of a particular problem with the money market. Accordingly, standard tools of monetary policy will likely be insufficient, and attention must be paid to support firms through the crisis. Policy must evaluate which firms to prioritize for support, and how best to support them.

Following leads from the contributions to the Roundtable, we're left with many ways to think about monetary (and fiscal) interventions in a crisis. The conventions by which we conceptualize and implement these interventions may be suspect (Downey, Omarova) and ideologically constructed (Moudud). They include our notions of what the "economy" is (McAndrews), and influence our judgment about the distributional stakes (Kennedy, Epstein, Abello, Awrey). Indeed, a distributional question is subtly at play in how we think about all matters of finance – how currency circulates (Pistor, Hockett), how risk and profit are engineered at the level of high finance (Orian Peer, Sissoki), and how monetary dynamics are tied together globally (van't Klooster, Saeidinezhad). I might close with a word of caution: our view of the present is often fragile. In the years to come, how we evaluate this period of crisis might be well beyond our grasp at the moment.

Money in the Time of Coronavirus
J. McAndrews, Economic and Financial Responses to the Coronavirus

March 15, 2020

James McAndrews[1]

What principles should guide our government's responses to the economic fallout of the Covid-19 pandemic?

To answer the question, it helps if we have a good model of what is happening.

Perhaps the best way to think about the effects of Covid-19 on the economy is to use one of the best models in economics: the circular flow. One can picture the circular flow as a sort of M.C. Escher-like stream, always flowing downhill and yet in a circle. Workers flow to businesses, products and services flow out of businesses to consumers, the consumers are workers who flow to businesses, etc., in a healthy widening gyre.

Above this flowing activity is another circular flow—a halo of sorts—that represents financial flows. Expenditures from consumers flow to businesses; wages, rents, and interest flow to workers, landlords, and lenders.

Markets can be thought of as traffic signals located in the stream that help everyone flow at the right pace and to the right place. Markets help workers get to the right businesses, they help businesses find the right equipment, they help determine how big consumers' expenditures will be, help businesses decide whether to expand or contract production, and so on. The traffic signals in the financial stream also help direct loans to businesses and households, provide incentives for individuals to save, and set the rate of interest—the trade-off between consuming now or saving for the future. Banks can be thought of as straddling the two streams, active in financial markets, but lending directly to households and businesses to finance real investment.

The government, including the central bank, is on the island around which the circular stream and its halo flow, connecting with the broader stream via canals. Some workers flow to the government, and services such as schools, roads, courts flow out to households and businesses from the government. Importantly, in the financial stream, taxes flow to the government, and payments from the government flow to households and business, via social security, crop support payments, wages and rents, expenditures for medical inputs, etc.

With that model in place, let's think of the Covid-19 risk, and the containment measures that are now necessary to prevent widespread transmission of the disease, as a leak of workers, businesses, and consumers from the circular flow into a pond nearby the circular stream. Fewer workers flow to businesses, less production of goods and services flow to consumers because of the leakage of those factors into the still pond. Furthermore, the financial stream suffers a similar leak. Much of the expenditure of those quarantined does not take place, businesses do not earn revenues, and workers don't earn wages.

One might imagine that this sudden leakage from the stream is manageable. Suppose, for instance, that half of all people go into quarantine for a few months, and, moreover, all payments to and from those people were held in abeyance during the period of quarantine—a sort of temporary payment and interest Jubilee. Then we might imagine that the flows around the circular stream and its halo would continue unimpeded, although on a diminished basis.

Several factors make such a Jubilee unworkable. In general, the leakage from the circular stream is disruptive to the flow with some people earning income but not spending, and others not earning but needing to spend. These imbalances will

cause impedance and turbulence in the flow of economic and financial goods and services. We can group these factors into four broad categories: unbalanced flows, prices and expectations, contractual rigidities, and rejoining the stream.

Unbalanced flows: Flows of expenditures must still occur for households in quarantine, but their productivity is diminished while they are away from work. While some people can work from home, many cannot. So where does the money for their expenditures come from? This is an example of an unbalanced flow: expenditures must be made, but no source of income is flowing into the household. The same is true for businesses: many businesses cannot produce (such as airlines, for example) but must still make expenditures to maintain equipment and pay other necessary costs. Such unbalanced flows require a source of funding from outside the circular flow, as individual households and businesses with limited wealth cannot sustain expenditures for long without corresponding inflows of income.

Prices and expectations: The traffic signals that help route the flow of workers, goods and services, loans and savings, i.e., markets, rely on expectations of how many of those factors are needed. Those expectations are human sentiments—they are based on experience, foresight, and the usual patterns of behavior. But given the sudden leakage from the flow and the resulting imbalances in flows, expectations will be more disperse and markets will not perform as smoothly as is usually the case. These "start/stop" moves can lead to a further slowing of activity around the stream.

Contractual Rigidities: A lot of the traffic in the stream is guided by past agreements, or contracts. Those contracts include home mortgages, leases, credit card loans, employment contracts, etc. Like the stockpiles of wealth that allow individuals and businesses to continue expenditures even without an offsetting flow of income, these contracts have their limits. They often do not have a "reset" button; in general, if a homeowner misses too many payments on her mortgage, she defaults, and ownership of the house passes to the owner of the mortgage. The reasons why the homeowner missed the payments usually does not matter, even if there is a systemic medical emergency, such as a pandemic, that prevents the homeowner from going to work and to earn income.

Rejoining the stream: Once one has left the circular flow of economic activity, it requires some significant force to rejoin it. It can require getting a new job, finding new customers, doing business in a new way, and, crucially, having the confidence that one is not endangering others, such as one's customers or family members, by venturing out into the stream of activity. These actions to get a new job, find new customers, establish new ways of doing business, are all costly. The people and businesses in the still pond have not had a flow of income to provide for their expenditures, and the extraordinary expenses of rejoining the stream will be additional shortfalls for them.

As we review policies to limit the damage to the economy, we should first recognize that without policies directed at maintaining the circular flow there is a risk that because of the impediments to the flow we just reviewed, the flow could continue to diminish, and because of the costs to rejoin the flow many people and businesses could become stuck in the still pond of a stagnating economy. So, without vigorous policies to support economic activity the flow could remain only a trickle, even after a possible diminution of the Covid-19 threat.

What can be done about this? Some ways to get the flows going again involve monetary policy — increasing government spending, monetizing that spending, monetizing mortgages, increasing the ability of banks to create more money. But other government actions are also required including adjustments to contract obligations, transfer payments, providing actionable data on risks, encouragement and help in matching workers and businesses once the quarantines are lifted. More than monetary policy alone will be needed to counteract the contraction of the flow of economic activity. We need to counteract each of the impediments identified above in order to restore the economic flow.

1. Income support policies to counteract unbalanced flows

In all private companies and families there is a limit to the financial losses that they can sustain. After the limit is reached, the company is bankrupt, and must suspend its payment of debt. It may have to stop its operations if its revenues aren't sufficient to cover its operating expenses. As we seek to curtail the spread of the virus by limiting travel and large gatherings, many businesses will leak from the circular flow and sustain losses.

It is important to distinguish systemic risks to the economy from other risks. A systemic risk is one that threatens a large part of economic activity. In this crisis, the suspension of large gatherings touches almost every business and threatens the systemic stability of the economy. In such a case, it falls to a source of funding from outside the stream—i.e., the public sector, which can draw on future taxes to finance current spending—to replace that income and provide those services or the recuperative powers of the economy may be permanently damaged.

Further, it is apparent that usually prudent actions by individuals—to avoid sick days and excessive medical tests for fear of the loss of income or the costs involved—are perverse in the case of a pandemic. The public sector should assume these costs immediately.

With so many widespread declines in economic activity, from travel, sports, manufacturing, restaurants, and many others, a good way to approach this loss of income is to provide immediate income support to individuals, especially those with low incomes and wealth, who face significant hardships if their income is interrupted. Emergency provision of Medicaid, food stamps, and other government benefits to a much broader population would be especially helpful. Extended unemployment benefits too will be important for people who exit the flow of economic activity through job loss.

Another component of maintaining the economy's capacity to function would be to provide guarantees for new debt offerings by businesses, especially those industries hit by the quarantine, going forward. Such guarantees need to be carefully designed to provide the right incentives for businesses to expand when demand for services are revived, to help them rejoin the flow of economic activity.

2. Monetary policies to address prices and expectations

Governmental policy is crucial in guiding expectations of participants in markets. This is clear in many venues. An example of the need for coordination are the actions of governments in shutting down schools, and reopening them; that coordination allows whole populations to plan for their child-care and family meals. More broadly, if private agents' pessimism and liquidity constraints lead to prices that portend future disaster, the government can assist society by reassuring the public that, at a minimum, it will provide goods and services in the future, and will avert disaster.

Some of these actions can be done through the central bank. Last week, for example, the Federal Reserve announced its willingness to lend in large amounts against Treasury collateral to private broker-dealers on favorable terms to support the borrowers' business in dealing in Treasury securities. The market for Treasury securities is one of those traffic signals—an important one—that assist in moderating the flow in financial markets.

Accommodative monetary policies will be needed to reassure people that they can borrow on favorable terms now. To support that belief, the Fed should restart the program to purchase mortgage-backed securities (MBS) guaranteed by Fannie Mae and Freddie Mac. Furthermore, because of the uncertain value of many loans now on the books of banks, the Fed should also restart the Term Auction Facility, which provides longer-term financing to banks against the collateral of bank loans. That will support the willingness of banks to lend more freely. Those programs should be seen in the light of the confidence and guidance they convey to the public, just as much as they function directly on interest rates and amounts lent.

The Fed has an important role in keeping the financial flows moving; if the financial flow is impeded the flow of economic activity is also disrupted. But the Fed must ensure that nonfinancial firms can receive loans, even if the private financial system is in disarray. It should restart the Commercial Paper Funding Facility, which lends to nonfinancial firms directly against firms' new issuances of commercial paper—short term borrowing by firms. So long as that commercial paper is rated highly, the Fed should help support the flow of credit to nonfinancial firms; again, this policy is, at least in part, to instill confidence that firms can borrow in the future if needed, as much as it is to funnel needed funds to firms now.

Other monetary policy moves are needed for the economy that is diminished by the leakage from the circular flow. Interest rates should be lowered to their effective zero lower bound. Purchases of Treasuries should be expanded. There are novel policies that will be required to address problems that are not yet apparent.

3. Mediation and debt workouts to address contractual rigidities

The administration has announced a temporary waiver of payments of interest on student loans held by federal agencies. Such contractual flexibility is an example of what is likely to be needed on a much broader scale by workers and companies whose jobs and business are interrupted and removed from the circular flow of economic activity. While a widespread Jubilee of debt forgiveness may be neither feasible nor effective, delaying interest payments, writing down principal amounts, and other compromises by debtors and creditors can be very effective in keeping debtors from defaulting while maintaining the long-term viability of debts.

Banking supervisory policy is important in allowing banks to continue to finance debt that is in arrears, so it is important for bank supervisors to provide and to implement guidance to banks that relax some of the strict rules on classifying debt as delinquent. Fiscal policy to provide alternative sources of income to debtors to assist them in meeting their obligations is vital.

4. Grants and data to address rejoining the stream

In addition to fiscal support to people and businesses that have been excluded from the stream of economic activity by the threat of Covid-19, fiscal support will be needed to assist in financing some the activities necessary to get people back into the flow of economic life. The longer economic activity is interrupted, the more important will be this part of the policy response. Policies to sponsor job fairs, advertising them, and providing grants to businesses to reopen businesses may prove very beneficial in assisting the restart of economic activity.

To reopen a business, an owner must have the confidence that its activity won't endanger its customers, and similarly, in going back to work, a worker must have the confidence that by doing so, she is not threatening her family with an infection of Covid-19. To be blunt, providing such confidence will require real data on the prevalence of the virus, necessitating widespread testing for it; it will not be provided by self-congratulatory pronouncements from glad-handing government officials. This should be a key policy by governments at all levels.

The Covid-19 crisis has quickly drained much of the dynamic activity from the circular flow of the economy into a still pond of isolation, worry, and expense. Our government is needed to supply income and promises of future support throughout the economy to combat this systemic stop in activity and to lay the foundation for a resumption of the normal flow of economic activity. Carefully designing policies to ameliorate rigid contract terms in debt and other contracts, to guide expectations, assist markets to function and to avoid excessive pessimism, to provide income, food, and medical support to those made destitute by the crisis, and to build ramps for everyone to rejoin the flow of economic participation is of utmost importance for us to emerge from this crisis with a strong economy.

[1] TNB USA Inc. and Wharton Financial Institutions Center. In this essay, I confine myself to general economic and financial policy responses to prevalence and threat of Covid-19. We must aggressively work to contain the spread of the virus itself, in large part to protect the capacity of the medical system to function in its role to treat patients afflicted with Covid-19 and other diseases. I will focus in this essay of economic and financial policies, and not address the important public health issues involved.

Money in the Time of Coronavirus
J. K. Moudud, Beyond Pathogenic Politics

March 16, 2020

Jamee K. Moudud, Professor of Economics, Sarah Lawrence College, and Board Member, *Association for the Promotion of Political Economy and the Law* (APPEAL)

In considering the recent stock market crash the casual observer cannot help but be struck by the way in which history repeats itself. Seen in retrospect the current second major crisis of the twenty-first century appears to eerily parallel the first one at the end of the previous decade. Then, as now, the prelude to the crisis was a period of hubris in élite circles whose triumphalism celebrated GDP growth and falling unemployment rates. Then as now those same élites —whether in politics, the corporate world, or mass media—were blind-sided when the world fell off the proverbial cliff. One may wonder, why did they not see the troubling structural problems brewing under the superficial economic booms in each of the two decades of the twenty-first century?

And yet all the troubling signs were there in both contexts, although they were rendered hidden because of ideological reasons. If we want to stop the recurrence of cataclysmic crises of one sort or another we need to take a longer-run view of the causal factors that repeatedly plunge us into such crises, going beyond the conventional preoccupation of boosting stock markets and economic growth. A number of authors have discussed the origins of neoliberal financial flows[1] and the roots of the subprime mortgage crisis of 2007/2008[2] but the purpose of this article is not to repeat their arguments. It suffices to say here that financial market "liberalization" over many decades has involved growing inequality[3] along with the acceleration of speculative investments relative to long-term production-oriented ones. The rise of what Keynes called *casino capitalism* is seen by the growth of the finance, insurance, and real estate (FIRE) sectors relative to GDP in all OECD countries since the 1980s.[4] I would argue that this growth-at-any-cost paradigm is responsible for both crises.

If neoliberal globalization has been responsible for creating toxic financial assets it has had another consequence. To understand this issue it is worthwhile quoting Dr. Margaret Chan, Director General of the World Health Organization, who in 2009 said:

> *Last year, our imperfect world delivered, in short order, a fuel crisis, a food crisis, and a financial crisis. It also delivered compelling evidence that the impact of climate change has been seriously underestimated. All of these events have global causes and global consequences, with serious implications for health. They are not random events. Instead, they are the result of massive failures in the international systems that govern the way nations and their populations interact. In short: they are the result of bad policies…. In far too many cases, economic growth has been pursued, with single-minded purpose, as the be-all, end-all, cure-for-all. The assumption that market forces could solve most problems has not proved true.*[5]

The narrow pursuit of growth and "free markets" has produced climatic disturbances and largescale deforestation in particular in the Global South in which countries are under the mandate of free trade agreements to pump out their purported "comparative advantages" in cash crop exports. Casino capitalism has led to "land grabs" in the Global South by domestic and foreign investors for commercial or speculative purposes.[6] The felling of trees and deforestation have also been linked to largescale commercial farming projects thereby "helping to create the perfect ecology for breeding newly virulent and

pathogenic influenza viruses"[7] because of closer human contact with wild animals that harbor microbes. And there is a growing body of scientific work that has linked the melting of the polar ice caps to the release of ancient bacteria and viruses buried deep in the ground.[8] In short the climate crisis, the consequence of relentless growth and privatization programs, is exacerbating the threats from dangerous pathogens. Thus the appearance of the Covid-19 virus is not the equivalent of a black swan event. As Sonia Shah reports,[9] there is a long pattern over many decades of the periodic reappearances at random moments of deadly pathogens which have devastating consequences. In other words, like financial crises, pathogenic crises are "known unknowns", i.e. they are events that we know will occur but not when.

Toxic pathogens and toxic financial assets are two sides of the same coin which is neoliberal financial globalization. Just like their financial counterparts, pathogenic contagions do not respect borders. Robust public health care systems in Europe and Canada will be only as effective as those in the rest of the world. However, decades of right-wing assaults against the public health care system in the US have left it woefully underfunded and unprepared[10] while many countries in the global South under IMF-imposed austerity programs[11] are grossly deficient in delivering high-quality healthcare to their populations. The not-for-profit *Trust for America's Health* reports that, adjusted for inflation the CDC's (Centers for Disease Control and Prevention) budget was cut by 10 per cent over the decade 2010 – 2019.[12] To compound the problem pharmaceutical corporations, like those in other sectors, have over the past several decades devoted disproportionate shares of their earnings in stock buybacks relative to R&D expenditures, especially in basic research.[13] In other words, for the pandemic crash of 2020 all the pre-conditions, established over many decades, were in place to create the perfect storm just like those leading up to the financial crash of 2007/2008. Then as now blind faith in our current market architecture ruled in élite circles.

The problem is that the dominance of neoclassical economics has elevated "market forces" to a Panopticon-like status with the prison yard of the market providing little scope for political agency. This has reached its highest level of absurdity in US élite-level political discourse when calls by large segments of the population for universal healthcare in this turbulent period are routinely derided as "dangerously socialistic." Markets in this view are implicitly treated as pre-political; thus "state interference" is always unnatural. In order to change the dominant discourse, therefore a first step is to debunk the purportedly purely private and "natural" basis of markets. As the Legal Realists, Karl Polanyi, and "old" institutional economists such as John R. Commons wrote, markets are fundamentally political constructions with the background regimes of property, contracts, and tort laws constituting the context within which "market forces" operate. And of course markets cannot exist without money creation and flows. In short, in order to understand how the economy currently works and how it could be reconstituted one needs to drill down to reveal the political and legal foundations of money, as Christine Desan has shown.[14]

Variants of capitalism exist precisely because the political and legal foundations of money and markets can vary enormously in different contexts. This is the central conclusion that comes from the contributions of Wesley Hohfeld, Robert Hale, and John R. Commons. The romanticized notion of the isolated private entrepreneur saving, investing, and creating jobs is completely at odds with both contemporary capitalism[15] and its history. One of the central concerns of business historians is the study of varying political and legal contexts[16] that determine business investment thereby creating different variants of capitalism. As I have argued, one has to conceptualize the business enterprise as constitutionally embedded, i.e. the "small c" constitutionalism that Christine Desan and Sabeel Rahman discuss. [17]

This has two important implications. First, given the corrosive feedback relationship between inequality, destitution, ill-health, and vulnerability to infection[18] there is an urgent need to change the tax code to mitigate the highly regressive

nature of the current taxation system by bringing it back to its previously more progressive nature.[19] Second, in the wake of the current public health crisis state-business relations, in particular with regard to the pharmaceutical industry, have to be reconfigured because that industry will play a central role in mass producing a global vaccine that should be accessible to all. For example, share buybacks need to be made illegal (as they once were) so that greater proportions of retained earnings can be devoted to basic R&D in developing current and future vaccines. Given the massive direct and indirect subsidies that corporations have historically received from the government[20] pharmaceutical companies should be required to contribute taxes to a government-administered fund (equivalent to the Social Security Trust Fund) that would expand research on pathogens at public agencies like the National Institutes of Health (NIH) and the CDC. The reconfiguration of state-business relations is not a particularly radical proposal – it has always been a *central feature of capitalism,* as business historians have documented. Given the governance context in which they are embedded, which includes their state-enforced charters, private corporations are quasi-public agencies.[21] Thus their *modus operandi* has been restructured many times and continues to be malleable.

In terms of a global immunization program the distinguished global health expert Jonathan Quick, author of *The End of Epidemics* (2018), concluded that "Virus biology and vaccines technology could be the limiting factors, but politics and economics are far more likely to be the barrier to immunisation."[22] Further, despite the optimistic title of his book, Quick notes that infectious diseases with the potential to become epidemics or even pandemics are inevitable.[23] Given the plausibility of this pessimistic assessment, I would argue that the current moment is equivalent to the widespread increase in industrial accidents that spread across the US, Europe, and other countries starting in the mid-nineteenth century. What came to be known as "occupational risk" was one of the first major challenges confronting industrializing societies. As Julia Moses[24] and John Fabian Witt[25] discuss in their legal histories of industrial accidents, economic development had over time generated the dominant view that this human disaster which crippled, killed, and caused widespread destitution among the working classes was an "inevitable" concomitant to industrialization. And yet industrial accidents were causing labor unrest, production interruptions, and liability lawsuits against employers by injured workers. In short, faced with a growing governance crisis, occupational risks over time triggered workplace safety laws which included workmen's compensation. Moses, in particular, argues that the significance of such laws which mitigated workplace risks provided the foundation to the modern social states in which public authority came to play an increasingly important role in managing new and emerging risks faced by society, such as lack of healthcare and prolonged unemployment.

We are at such a moment now in terms of the urgent need to rethink global public policy in the face of existential risks. For scholars, this requires challenging the core theoretical foundations of neoclassical economics and legal formalism whose cultural power has made terms like "market forces" and "free markets" seemingly non-controversial terms. As the coronavirus demonstrates all too tragically, we must strengthen, not subvert, our society's ability to create socio-economic and legal arrangements to deal with such threats.

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7. Sparke, *supra* note at 243. ↑

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Money in the Time of Coronavirus
N. Orian Peer, Repo in the Time of Corona

March 16, 2020

Nadav Orian Peer, Colorado Law

> *"It was inevitable: the scent of bitter [money markets] always reminded him of the fate of unrequited [convergence trades]."*

Yes, this is a paraphrase. The Márquez original reads "almonds" in lieu of "money markets", and "love" instead of "convergence trades". An odd paraphrase, I am aware, but like the Márquez classic, *Repo in the Time of Corona* grapples with existential features of the human condition. Those are: (1) The desire to tap money markets for high-leverage trades; (2) The incessant drive towards regulatory arbitrage; (3) The Fed's dilemma of dealing with the former two in its role as the ultimate purveyor of liquidity. Main characters and events include the rise of FICC sponsored repo, the sponsored hedge funds and the dealers sponsoring them, corona disruptions in the treasury market, and the Fed's policy response. It's nowhere as charming as Márquez, but quite as dramatic.

Flashback: Repo Post-Crisis

I started studying financial regulation in 2010 and, like many of my cohort, felt an urgency to understand the causes of the Financial Crisis, and the reforms just then taking shape. An early key insight, reading people like Ricks, and Gorton, was that repo was "money like": a short-term claim held for transactional purposes, much like a bank deposit. Repo borrowers share another trait with banks: they are vulnerable to runs. This run risk materialized in 2008, and became an inflection point in the recession that followed. Work like this trained its readers to see the issuance of money claims outside of chartered banking (and the public safety net) as a threat to stability.

A second key insight, reading people like Mehrling and Pozsar, was a mental map of the repo market. The right-hand side of this map had cash investors (money funds, corporate treasuries) lending repo as a kind of cash equivalent. The left-hand side had hedge funds borrowing repo to leverage-up their trades. A dealer was drawn in the center of the diagram, reflecting the fact that cash investors and hedge funds do not interact directly. Dealers borrow from cash investors in the triparty repo market, and lend to hedge funds (often, prime brokerage clients) bilaterally. The dealer's ability to profitably offer its balance sheet as this meeting ground, I learned, shapes the daily workings of money and capital markets.

A third insight was about the regulatory philosophy guiding the Dodd Frank Act and Basel III, the reforms everybody was trying to wrap their heads around. This third insight knitted together the first two. Morgan Ricks and others argued that as a non-sovereign money claim, repo was crisis prone, and should be prohibited outright. The regulatory reforms did not adopt this approach. They opted instead for a middle-ground, somewhere between eliminating repo and business as usual. Enter the smallish repo market of the 2010s, shrunk from its $5 trillion glory, to $1.5-2 trillion.[1] That the repo market would remain smallish was premised on several assumptions. First, all major dealers were now regulated as affiliates of bank holding companies. Second, Basel III's tightening of capital, leverage, and liquidity requirements meant these dealers' balance sheets were becoming increasingly expensive. To address rising balance sheet costs, dealers had to mark-up their bilateral repo lending rates to hedge funds. Rising rates would make levered trades less profitable to hedge funds, ultimately curbing demand. That is, of course, as long as hedge funds and cash investors could not find each other outside the dealer's balance sheet. Spoiler alert: they did.

The End of the Basel III Honeymoon

On September 17, 2019 the otherwise sleepy repo market made headlines when the repo rate spiked from 2% to 5%, with some distressed trades reportedly paying double that rate. Much of the commentary on the repo spike focused on what it implied about the tightness of bank reserves. This was essentially a story about the *supply side*: looser reserves would have created opportunities for profitable repo lending by banks. But readers following this episode also learned something new about the *demand side*, the identity of repo borrowers. The assumptions that underwrote the smallish repo market of the 2010s were loosening. Time to update the repo mental map.

"Sponsored repo" is the name of a new segment of the repo market. In just two short years, it went from basically non-existent, to $400 billion. The service is offered by the Fixed Income Clearing Corporation (FICC), a user-owned central clearing counterparty (CCP) whose primary regulator is the SEC. A hedge fund and a cash investor enter a repo, and the trade is novated to the CCP. As the central counterparty, FICC becomes a repo borrower to the cash investor and a repo lender to the hedge fund. The dealers themselves, it is worth noting, are still involved as the "sponsors" of those hedge funds. But the dealers' *balance sheets* are basically out of the picture, thanks to the CCP.

It requires more careful study, but this arrangement raises concerns of regulatory arbitrage. In traditional CCP practice, each member (like the dealers) guarantees performance by its clients (like the hedge funds). FICC seems to use a similar model, in their words:

> *"While the Sponsored Members [=hedge funds] are principally liable to FICC for their securities and funds-only settlement obligations, the Sponsoring Member [=dealer] is required to provide a guaranty to FICC with respect to all obligations of its Sponsored Members, so that if a Sponsored Member does not satisfy any of its obligations to FICC, FICC can invoke the Sponsoring Member's guaranty."*

If a hedge defaults, a dealer is still on the hook to FICC and its risk exposure as sponsor is essentially identical to on-balance sheet intermediation. It is not clear why regulators would provide sponsoring with favorable treatment. Be that as it may, dealers discovered favorable treatment was in fact forthcoming. A JPM primer explains:

> *"[Sponsored repo] …takes a significant step in alleviating the regulatory costs of fixed-income financing in a post-crisis world. 'We believe sponsored repo cannibalizes less efficient forms of repo, ultimately freeing up capital and creating more capacity for banks to provide liquidity to the fixed-income markets…"*

Since 2018, triparty repo volume (which includes FICC) rose by around $600 billion (~30%), with sponsored repo accounting for the majority of the increase. Some of this capacity was taken up by hedge funds engaging in relative value trades. A December research note by the BIS related the demand-side squeeze in the September repo spike to these sponsored hedge funds. Interestingly, the FT reports that last week's disruptions in the treasury market were also related –to some degree, large or small, we do not yet know—to these relative value trades coming under liquidity pressure. These are the same market disruptions that the Fed cited in its string of announcements of large-scale repo auctions and asset purchases. Sponsored repo is still relatively small, but it raises new and perplexing questions about how the Fed's crisis response is going to play out.

Trading Liquidity Risk

Relative value trades exploit small pricing discrepancies, which become profitable if leveraged many times over. For example, a hedge fund might purchase treasuries that are underpriced in the cash market, and hedge its position by selling futures against them. This trade elegantly eliminates market risk. The futures contract allows the seller to settle by delivering

the actual treasuries towards the end of the contract period. At that time, prices would have to converge, and the seller hedge fund would pocket the pricing difference, amplified by its leverage. This leverage is obtained in the repo market, where the hedge fund can borrow cheaply by pledging its treasuries as collateral.

But while the trade eliminates market risk, the hedge fund is assuming a considerable amount of liquidity risk. The FT's reporting about relative value traders coming under pressure amidst corona volatility is a case in point. As it turns out, the futures leg of the trade appreciated at a faster rate than the cash leg (the actual treasury securities). Here's a speculation as to what's going on. Futures contracts are subject to daily –and sometimes intradaily— variation margin by the clearinghouses. With treasuries appreciating, this represents a liquidity drain to hedge funds. As repo borrowers, however, the hedge funds are also gaining liquidity, because their treasury collateral is gaining in value (yields are dropping), making them entitled to positive mark-to-market. The problem, it appears, is that the cash market is moving more slowly than the futures market, meaning the liquidity drains dominate the gains. If so, the same frictions between cash and derivatives markets that relative value traders were trying to exploit are now turning against them (For more on the theme of liquidity exposure between cash and derivatives positions, see Merhrling, and Mehrling et al.).

Like many a convergence trader before them (say, LTCM), these hedge funds are struggling to maintain positions that will become profitable, if only they can survive to see the day. The FT reports that pressure on these hedge funds can translate — and perhaps, has already been translating— into disorderly liquidations, disrupting the broader treasury market. This is where the Fed's recent policy announcements come in. To reiterate, how large a factor relative value trading has been in the current disruptions remains to be discovered. It is certain, however, that if the sponsored repo market continues its growth trajectory, such dynamics will become more likely in episodes yet to come.

Fed Support for Sponsored Repo?

At over 15% of the market, the rise of sponsored repo subverts the unspoken compromise of the post-crisis order: the repo market will survive, but only as long as dealers, the gateway to the ultimate borrowers, remain tightly regulated. With hedge funds meeting cash investors through FICC, the Fed could be increasingly facing the dilemma of whether to support sponsored repo. Failure to offer support risks market disruptions, while willingness to support is bound to increase leverage and risk. The post-crisis compromise was based on the premise that risk and leverage regulation ex-ante would save the Fed from facing this dilemma ex-post. This compromise is now unraveling.

Fed support of sponsored repo could take various forms, providing funding liquidity as a lender of last resort, or market liquidity, as Mehrling's dealer of last resort.

Funding liquidity would become relevant if cash investors withdrew from FICC, perhaps after the failure of a sponsored hedge fund. The Fed could put itself in cash investors' position, lending directly on the FICC platform. Indeed, only two months ago, the WSJ reported the Fed considered adding a sponsored repo facility to its evolving monetary policy implementation framework. So far, this has not happened. In part, legal concerns might be at play given the FICC's DFMU status (designated financial market utility). Fed lending to DFMUs requires a Fed Board finding of "unusual and exigent circumstances" and consultation with the Treasury Secretary (12 U.S. Code § 5465(b)). This roughly parallels the famous Sec. 13(3) emergency lending authority to non-banks. So far, neither provision has been triggered. Stay tuned.

Short of a 13(3) announcement, funding liquidity to sponsored repo borrowers could only be provided indirectly, through the dealers. Hypothetically, a dealer could borrow repo through the Fed's current auctions, and lend into the sponsored market. Such indirect support might face serious limitations. After all, the whole raison d'être of sponsored repo was "freeing up

capital" for the dealers and BHCs. Reintermediation would require recommitment of this capital. Judging by low take-up in the first large repo auctions last week, dealers seem reluctant to offer their balance sheets for any purpose at this point.

Given that a run on sponsored repo has not yet happened, Fed actions have a more direct bearing to relative value traders through the impact those actions may have on market liquidity (as opposed to funding liquidity). As hinted on Sunday evening's FOMC conference call, the Fed was initially hoping the large repo auctions to dealers would encourage them to make steadier markets. Low dealer take-up of repo got the Fed moving to outright purchases of at least $700 billion in treasury and agency securities (with few exceptions, the Fed is legally not allowed to purchase private credit assets). Note that the Fed's goal here is to stabilize market pricing conditions (dealer of last resort), not merely increasing bank reserves, which given the scale of purchases, are once again on a path to super-abundance.

To the distressed hedge funds, these market purchases might come as a lifeline. If the relative value trades are coming under pressure due to slower appreciation of treasuries (slower than the futures leg, that is), Fed purchases in the cash market could bring more rapid appreciation. The hedge funds were profiting by assuming liquidity risk, and Fed actions are intended to make this liquidity risk disappear. It might work, it might not. It remains to be seen.

All of this goes to the technical question of how the Fed might support (or is already supporting, wittingly, or unwittingly) sponsored repo. The broader question, of course, is whether the Fed should offer such support in the first place. To ask this question is already to acknowledge the decline of the post-crisis order. If sponsored repo is the regulatory work-around it appears to be, its growth would compromise the immunity system that the post-crisis order was so desperately trying to boost. Repo in the time of corona is a wakeup call for regulators: the public's financial health should come first.

[1] FRBNY's triparty repo statistics only begin in 2010. The $5 trillion figure is my back-of-the-envelope calculation based on the primary dealer survey. It aggregates "securities out" figures for Jan. 2007, and discounts it somewhat to account for haircuts. Working with repo statistics presents challenges that are beyond our current scope.

Money in the Time of Coronavirus
D. Awrey, Here We Go Again? Not Really

March 17, 2020

Dan Awrey, Cornell Law School

The global pandemic unleashed by the coronavirus has inadvertently shone a spotlight on the design of some of our most important monetary institutions. It has also revealed widespread misunderstandings about how these institutions work—especially in times of crisis.

In response to the escalating economic fallout of the coronavirus, central banks in the United States and elsewhere have used their emergency lending authority to mount a series of important policy interventions. On March 12th, the Federal Reserve announced that it will make available up to $USD1.5 trillion in liquidity support—that is, loans—to primary dealers through its existing term repo operations. On March 15th, the Fed then announced that it would reduce its target interest rate to a historic low, reactivate its crisis-era USD swap lines with other major central banks, reduce borrowing costs for banks at its discount window, and eliminate bank reserve requirements. Treasury Secretary Steven Mnuchin, meanwhile, announced that he would ask Congress to remove legal constraints, introduced under the 2010 Dodd-Frank Act, on the Fed's emergency lending authority to non-bank financial institutions.

The stated rationales for these interventions are "to address temporary disruptions in Treasury financing markets" and "support the flow of credit to households and businesses". More generally, giving central banks the legal authority to undertake these types of interventions is designed to advance two fundamental policy objectives. The first is to prevent dislocation within private money markets from triggering the failure of otherwise healthy banks and other financial institutions, along with the consequent withdrawal of lending, deposit-taking, and other key financial services. The second is to provide an effective counterweight against potential reductions in the aggregate money supply that might otherwise trigger a deflationary spiral characterized by a broad-based decline in prices, economic output, and employment. In a world where the vast majority of our money consists of short-term liabilities issued by private financial institutions, giving central banks this authority represents an important public bulwark against the intertwined threats of financial and monetary instability.

Yet to a great many observers, these latest interventions have evoked an instinctive response: *here we go again*. Just as they did during the financial crisis of 2007-09, the Federal Reserve and Treasury Department are bailing out Wall Street whilst letting Main Streets across America fend for themselves. This response reflects a number of more substantive objections, voiced by commentators across the political spectrum. Perhaps the most common objection is that the Fed's interventions represent a subsidy to banks and other financial institutions—one not generally available to other commercial enterprises, let alone the general public. Others point to the jarring disconnect between the speed and scale with which the Fed has taken action to "rescue the stock market" versus the Trump Administration's slow, and to date far more modest, response to the underlying public health crisis. Yet others worry that the Administration will use any expansion of the Fed's emergency lending powers to advance its own private political and economic interests. These objections reflect a growing sense of déjà vu, along with frustration that we have somehow failed to heed the lessons of the last financial crisis.

These objections are all valid and, given the devastation wrought by the last crisis, understandable. In light of the present circumstances, however, they are also misplaced. On the first objection, few would seriously deny that these interventions

are not subsidies. In theory, banks can now borrow at the Fed's discount window at 0.25% for 90 days and immediately turn around and invest the proceeds in risk-free 3-month Treasury securities currently yielding 0.28%, 3-year Treasury securities yielding 0.58%, or 30-year Treasury securities yielding 1.56%. That's easy money. Yet the real question is not whether these interventions represent a subsidy, but whether this subsidy advances important and socially desirable policy objectives. Given that the counterfactual is a full-blown financial crisis alongside the existing public health crisis, the answer would appear to be a resounding yes. Indeed, there is a strong argument that it is precisely these types of exogeneous demand shocks that should be amongst the least controversial uses of the Fed's emergency lending authority. Put bluntly: this is what the Fed was built for.

On the second objection, the fact that the Fed has responded relatively quickly to contain the potential economic fallout from the coronavirus seems like misdirected criticism. Ideally, of course, the Fed's interventions would be accompanied by complementary fiscal policy measures. Yet while Congress may still take action in the coming days, its failure to do so reflects the current level of political dysfunction in Washington—dysfunction in which the Federal Reserve has admirably played little or no role. Nor, similarly, can the Fed prevent President Trump from running roughshod over the Emolument's Clause. Ultimately, the idea that the Fed should not throw out a life preserver simply because there is an idle coast guard cutter anchored a few miles offshore seems like a remarkably short-sighted rescue strategy. It is not the Fed's fault that it has become the only game in town.

Perhaps even more importantly, these objections are fundamentally mistimed. As distasteful and unjust as it may often seem, the Fed's emergency lending authority reflects the logic and structure of our current monetary system. That system relies on banks, money market funds, and wholesale money markets to provide the vast majority of the money circulating within both the financial system and real economy. It is the fragility of these private markets and institutions, along with the potential impact of their failure on both financial and monetary stability, that ultimately necessitates the type of public backstop that is now under the spotlight. Undertaking the type of comprehensive structural reforms that might enable us to credibly rollback the Fed's emergency lending authority is simply not possible in the thick of a crisis.

Against this backdrop, what the present crisis is revealing is our failure to use the *last* crisis as an opportunity to ask more fundamental questions about the type of monetary institutions that we, as a society, really want. Instead, we tinkered around the edges of the existing monetary architecture: imposing new constraints on the Fed's emergency lending authority without asking whether these constraints would be credible in the absence of more meaningful structural reforms targeting systemically important banks, wholesale money markets, and other components of the so-called "shadow" banking system. Both logic and historical experience suggest that the answer would be no—and the current crisis is very much validating this prediction. As we begin to look beyond this crisis, the key insight may therefore be that the time has finally come to reevaluate, and potentially reimagine, the structure of our monetary system.

The good news is that there is no shortage of proposals for structural reform. Some of these proposals, such David Andolfatto and Jane Ihrig's call for the Fed to create a standing repo facility, are designed to strengthen institutional support for the existing monetary system. Others, such as the proposal by Morgan Ricks, John Crawford, and Lev Menand to permit the public to open accounts at the Federal Reserve, envision far more fundamental changes to the nature of money and banking. Yet others attempt to grapple with the recent emergence and enormous growth of the shadow payment system and the risks posed by the resulting reappearance of bad money. My goal here is not to debate the relative merits and drawbacks of these proposals: although I sincerely hope that this roundtable, and justmoney.org more generally, will become a platform for doing so. Rather, it is to highlight that the current crisis may afford us with an opportunity to take this debate to a wider audience, to raise awareness of the importance of monetary design and, perhaps, to build momentum toward a new and better monetary consensus.

Money in the Time of Coronavirus

E. Saeidinezhad, Is the Monetary System as Systemic and International as the Coronavirus?

March 18, 2020

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The coronavirus crisis has sparked different policy responses from different countries. The common thread among these reactions is that states are putting globalization on pause. Yet, re-establishment of central bank swap lines is making "money," chiefly Eurodollars, the first element that has become more **global** in the wake of the Coronavirus outbreak. This is not an unexpected phenomenon for those of us who are armed with insights from the Perry Mehrling's "Money View" framework. The fact that the monetary system is inherently international explains why the Fed reinstalled its standing U.S. dollar liquidity swap line arrangements with five other central banks **just after** it lowered its **domestic** federal fund's target to zero percent. However, the crisis also forces us to see global dollar funding from a lens closer to home: the fact that the Eurodollar market, at its core, is a domestic **macro-financial linkage.** In other words, its breakdown is a **source of systemic risk within communities** as it disrupts the two-way connection between the real economy and the financial sector. This perspective clarifies the Fed's reactions to the crisis in hand. It also helps us understand the recent debate in the economics profession about the future of central bank tools.

The Great Financial Crisis of 2008-09 confirmed the vital importance of advancing our understanding of macro-financial linkages. The Coronavirus crisis is testing this understanding on a global scale. Most of the literature highlights the impact of sharp fluctuations in ***long-term*** fundamentals such as **asset prices** and **capital flows** on the financial positions of firms and the economy. In doing so, economists underestimate the effects of disturbances in the Eurodollar market, which provides **short-term** dollar funding globally, on real economic activities such as trade. These miscalculations, which flow from economists' natural approach to money as a veil over the real economy, could be costly. Foreign banks play a significant role in the wholesale Eurodollar market to raise US dollar financing for their clients. These clients, usually multinational corporations, are part of a global supply chain that covers different activities from receiving an order to producing the final goods and services. Depending on their financial positions, these firms either wish to hold large dollar balances or receive **dollar-denominated loans**. The **deficit** firms use the dollar funding to make **payments** for their purchases. The *surplus* firms, on the other hand, expect to receive payments in the dollar after selling their products. The interconnectedness between the payment system and global supply chains causes the Eurodollar market to act as a bridge between the real economy and the financial sector.

The Coronavirus outbreak is putting a strain on this link, both domestically and globally: it is disrupting the supply chain, forcing every firm along the chain to become a deficit agent in the process. The supply chain moves products or services from one supplier to another and is essentially the sum of all firms' sales. These sales (revenues) are, in effect, a measure of payments, the majority of which occur in the Eurodollar market. A sharp shock to sales, as a result of the outbreak, precipitates a lower ability to make payments. When an output is not being shipped, a producer of final goods in China does not have dollar funding to pay the suppliers of intermediate products. As a result, firms in other countries do not have dollars either. The trauma that the coronavirus crisis injects into manufacturing and other industries thus leads to missed payments internationally. Missed payments will make more firms become deficit agents. This includes banks, which are lower down in the hierarchy, and the central banks, which are responsible for relaxing the survival constraints for the banking system. By focusing on the payments system and Eurodollar market, we are able to see the "survival constraint" in action.

The question for monetary policy is how far central banks decide to relax that survival constraint by lowering the bank rate. This is why central banks, including the Fed, are reducing interest rates to zero percent. However, the ability to relax the survival constraint for banks further down in the hierarchy depends also on the strength of foreign central banks to inject dollar funding into their financial system. The Fed has therefore re-established the dollar swap line with five other major central banks. The swap lines are available standing facilities and serve as a vital liquidity backstop to ease strains in global funding markets. The point to hold on to here is that the U.S. central bank is at a level in the hierarchy above other central banks

Central banks' main concern is about missed payments of U.S. dollars, as they can deal with missed payments in local currency efficiently. In normal circumstances, the fact that non-U.S. central banks hold foreign exchange reserves enables them to intervene in the market seamlessly if private FX dealers are unable to do so. In these periods, customer-led demand causes some banks to have a natural surplus position (more dollar deposits than loans) and other banks to have an inherent deficit position (more dollar loans than deposits). FX dealers connect the deficit banks with the surplus banks by absorbing the imbalances into their balance sheets. Financial globalization has enabled each FX dealer to resolve the imbalance by doing business with some U.S. banks, but it seems more natural all around for them to do business with each other. During this crisis, however, even U.S. banks have started to feel the liquidity crunch due to the negative impacts of the outbreak on financial conditions. When U.S. banks pull back from market-making in the Eurodollar market, there will be a shortage of dollar funding globally. Traditionally, in these circumstances, foreign central banks assume the role of the lender of last resort to lend dollars to both banks and non-banks in their jurisdiction. However, the severity of the Coronavirus crisis is creating a growing risk that such intermediation will fracture. This is the case as speculators and investors alike have become uncertain of the size of foreign central banks' dollar reserve holding.

To address these concerns, the Fed has re-established swap lines to lend dollars to other central banks, which then lend it to banks. These particular swap lines arrangements were originally designed to help the funding needs of banks during 2008. However, these swap lines might be inadequate to ease the tension in the market. The problem is that the geographic reach of the swap lines is too narrow. The Fed has swap lines only with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank and the Swiss National Bank. The reason is that the 2008-09 financial crisis affected many banks in these particular jurisdictions severely and their economies were closely intertwined with the US financial system. But the breadth of the current crisis is more extensive as every country along the supply chain is struggling to get dollars. In other words, the Fed's dollar swap lines should become more global, and the international hierarchy needs to flatten.

To ease the pressure of missed payments internationally, and prevent the ***systemic risk outbreak*** domestically, the Fed and its five major central bank partners have coordinated action to enhance the provision of liquidity via the standing U.S. dollar liquidity swap line arrangements. These tools help to mitigate the effects of strains on the supply chain, both domestically and abroad. Such temporary agreements have been part of central banks' set of monetary policy instruments for decades. The main lessons from the Coronavirus outbreak for central bank watchers is that swap lines and central bank collaborations are here to stay – indeed, they should become more expansive than before. These operations are becoming a permanent tool of monetary policy as financial stability becomes a more natural mandate of the central banks. As Zoltan Pozsar has recently shown, the supply chain of goods and services is the reverse of the dollar funding payment system. Central banks' collaboration prevents this hybridity from becoming a source of systemic risk, both domestically and internationally.

Update: On March 19, 2020, the Fed announced the establishment of temporary U.S. dollar liquidity arrangements with other central banks such as Reserve Bank of Australia, the Banco Central do Brasil, the Danmarks Nationalbank

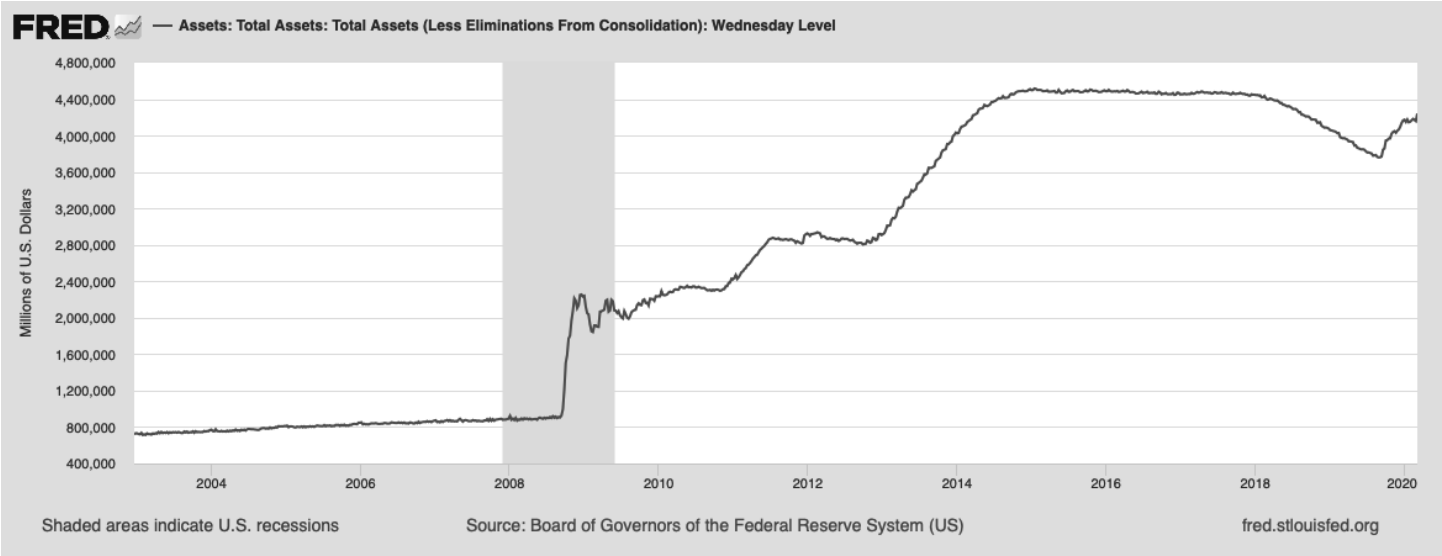
(Denmark), the Bank of Korea, the Banco de Mexico, the Norges Bank (Norway), the Reserve Bank of New Zealand, the Monetary Authority of Singapore, and the Sveriges Riksbank (Sweden).

Money in the Time of Coronavirus
L. Downey, The Monetary/Fiscal Divide is Still Getting in Our Way

March 19, 2020

Leah Downey, Edmond J. Safra Center for Ethics at Harvard University

In the wake of the Great Financial Crisis (GFC) the Federal Reserve got creative. The Fed employed a set of 'unconventional' policies aimed at addressing the crisis within the given institutional structures and tools available. Those policies, including Large Scale Asset Purchases (LSAPs, commonly known as QE or "Operation Twist") and forward guidance, did constitute a significant break from prior policy approaches — take a look at the Fed's balance sheet over time — but they did not alter the fundamental structure of monetary policy. LSAPs were, after all, simply immense targeted open market operations (OMOs) and forward guidance was an internal change in communication policy.[1] In other words, when the GFC hit, the Fed innovated within existing structures to address the threat.



The Fed is taking exactly the same action to confront the Coronavirus. As one New York Times headline put it, "The Fed Deployed its 2008 Arsenal All in One Weekend." This should come as no surprise. While testifying to Congress before the Coronavirus hit the US, Chair Jerome Powell was asked what tools the Fed had available to fight the next economic downturn. He answered by pointing out that the current environment of low interest rates meant that cutting rates further would likely be insufficient to fight a downturn. He went on to say that, in such a situation, the Fed would have to employ the same tools it did in the wake of the Great Financial Crisis: forward guidance and large-scale asset purchases (LSAPs). "We will use those tools. I believe we will use them aggressively should the need arise to do so." And so they have.

In 2008 it was at least conceivable, if highly debatable, that the proper monetary policy response to a *financial* crisis was to inject a large amount of money into the *financial* sector. Can the same be said in the face of a global pandemic? In 2008, the Fed designed and executed its monetary policies to spur real economic activity. It purchased a huge amount of longer-term assets in an effort to push liquidity to businesses in the real economy. Today, in a world of social distancing, we don't need to jumpstart real economic activity, we need to freeze it. If we get that right, "production and spending must inevitably decline for a time." But so far, the Fed still wields the same tools, seeking to send large amounts of money into the economy via a small set of large financial institutions (primary dealers). Given the different nature of the two crises, this seems odd.

Nadav Orin Peer ended his post writing, "the public's financial health should come first." I couldn't agree more. Unfortunately, at the moment, it is very difficult, if not impossible, for the Fed to heed the call. The Fed's only conduit to supporting the financial health of society at large is via the financial markets: it can cut rates, change regulations, and buy and sell assets from large financial institutions. When it comes to Fed interventions, it's no wonder the financial sector comes first.

We have had twelve years to re-structure our financial architecture. After the Great Financial Crisis and the Eurozone Crisis, some called for legislatures to enable central banks to deposit money directly into the bank accounts of individual citizens: People's QE. Notably, executing this policy would be a lot easier if individual citizens were permitted to hold bank accounts at the central bank. Perhaps ironically, Ben Bernanke poo-pooed this notion not on the basis of economic theory, but by appeal to democratic theory. He wrote, "the distribution of what are effectively tax rebates should be subject to legislative approval, not determined unilaterally by the central bank." And he's right. But then should QE, the distribution of what is effectively an immense amount of credit to a small set of financial institutions, be determined unilaterally by the central bank? What Bernanke's comment reveals is that balance sheet policies, no matter to whom the money is distributed to, blur the monetary-fiscal divide.

Many economists in the wake of the GFC have called for increased monetary-fiscal policy coordination in emergency situations. Their proposals implicitly recognize the simple fact that there are macroeconomic policy strategies which the state *cannot* execute without monetary-fiscal policy coordination. The most obvious example involves money creation by the Fed for public spending, a central bank operation that some call "helicopter money" and Ben Bernanke dubs a "Monetary-Finance Fiscal Program." Instead of the Fed using new money to buy assets from large financial institutions to stimulate the economy, with helicopter money the Fed makes new money available for the legislature to spend—if they so choose, in one way or another, including sending a check to every citizen—something we've been hearing a lot about lately.

There is no existing institutional mechanism ready to facilitate such monetary-fiscal coordination. Congress did not act after the GFC. It did not heed the call to enable central banks to deposit money directly into the bank accounts of individual citizens. It did not heed the call to allow citizens to hold accounts at the Fed. It did not heed the call to enable soft monetary-fiscal coordination, in which the Fed runs the show, determining how much new spending it will finance but allowing Congress to decide if and how to spend it. Nor has Congress considered developing a national investment authority.

There are potential problems with all of these proposals, particularly the soft monetary-fiscal coordination proposals, but at least they are all attempts to learn from the structural limitations that American policymakers—monetary and fiscal—faced in addressing the Great Financial Crisis. Congress did nothing, and here we are. We face a whole new threat to the global economy and to global health, and still all the Fed can do is give money to large financial institutions.

In an earlier post, James McAndrews called for more fiscal action to stave off economic crisis: extend unemployment benefits, expand Medicaid and food stamps, etc. Some of his wishes have been granted since he wrote, and it's obvious now that we still need much more fiscal stimulus. But we should not let critiques of fiscal actions, or lack thereof, blind us to Congress's other macroeconomic responsibilities. The Fed may be an independent central bank, but it is unquestionably Congress's responsibility to govern monetary policymaking by setting the terms of the Fed's power. The Fed was established over a century ago as a banker's bank. At the time it was primarily a coordination mechanism for private banks. Today the Fed is, above all, the U.S. government's monetary policy authority. It should possess the powers and mechanisms necessary to safeguard and promote the financial health of the entire nation directly, not merely via the financial sector, and the democratic oversight to empower it to do so legitimately.

If the monetary policy response to coronavirus is similar the monetary policy response to the Great Financial Crisis, we should expect the outcomes to be similar. The financial sector will recover quickly and benefit handsomely. The rest of the

economy will survive, with long lasting scars. We should learn from the GFC. Congress should improve the existing power and mechanisms for executing monetary policy: it should consider opening up the Fed to individual depositors, engage in 'People's QE', or convert the regional Federal Reserve Banks into regional investment banks. To fight the Great Financial Crisis, the Fed had to get creative in designing its approach to monetary policy. The time for Congress to do the same is long overdue.

1. Payment of interest on excess reserves was perhaps slightly different, as it constituted a change in powers of Fed to pay interest on excess reserves. However, this change was made by congress well in advance of the actual GFC. ↑

Money in the Time of Coronavirus
K. Pistor, The Case for Free Money (a real Libra)

March 20, 2020

Katharina Pistor, Columbia Law School

Our money system revolves around debt. It combines state-issued legal tender with private debt instruments that in good times are money-like. Debt is a pledge on the future and debt-based money is based on the expectation that the future will produce positive returns.

The *Coronavirus pandemic* is a stark reminder that this is not always the case. Indeed, we are beginning to realize that the problem with our future now is not that it is uncertain, but that it will certainly be radically different from past expectations, even from our current imagination. Investors are selling assets as fast as they can, which is their way of taking back the bets they had made on the future. They are hoarding cash. Debt Money will dry up next and this will bring the economy to a grinding halt. Individuals and families without any cash (or bank deposit) reserves will be hit hardest.

The Trump administration has announced that it will send out dollar-denominated checks to all American citizens. As welcome as this government handout will be fore many, there are several fundamental problems with this strategy: First, payouts that are limited to tax payers, as currently envisaged by the GOP bill, will not reach the poorest of the poor; and even if they were included, most lack bank accounts to cash in their checks. Second, a one-time payment will not be enough given looming unemployment and the huge debt burdens too many households face. Third, richer households will hoard the dollar rather than spend them, thus dampening the effects of this liquidity boost.

As an alternative, I propose that governments should issue a *new type of currency* Free Dollars (Euros, Pounds, Yen) – a *really* free Libra – and they should issue them as central bank digital currencies, or CBDCs.[1] Free Dollars (and their equivalents) should not be issued as a one-off payment; rather a first payment that puts Free Dollars in the hands of every person living in a given currency area should be followed by subsequent releases in response to effective demand.

Free Dollars should serve as a medium of exchange as well as a unit of account. In contrast to the greenback and other conventional currencies, they should *not* be designed as a store of value.[2] Instead, a Free Dollar should lose a fraction of its nominal value unless it is spent within a set time period. This feature is comparable to negative interest rates that would permanently attach to unspent money. Its purpose is not just to fight a temporary deflationary episode, but to make money *abundant* throughout the economy. The government should accept Free Dollars for settling outstanding tax obligations, thereby firmly anchoring the Free Dollar as unit of account.[3] Free Dollars should be issued in the form of digital money using mobile phones and online devices that are common already in many parts of the world, including in China and parts of Africa.[4]

The Free Dollar's *demurrage feature* – its slowly diminishing value — would ensure that a large fraction of the Free Dollar would actually be circulated, not hoarded. Even as the economy is in lock down, Free Dollars could be used to pay outstanding debt and taxes, to buy household necessities and acquire vouchers that promise future deliveries of goods and services. Once economic activities pick up again, Free Dollars would be readily available to boost spending throughout the economy.

The idea for Free Dollars takes its cue from cooperative forms of money that often emerge spontaneously in times of economic distress.[5] That happened in Germany during the period of hyperinflation in the 1920s, in North America after the stock market crash of 1929 and on both sides of the Atlantic during the Depression, in Argentina after the meltdown of 2001, and again in North America and Europe after the financial crisis of 2008. Cooperative money allows everyone who has something to exchange to participate in the economy. They don't have to be wage earners; neither do they need a bank account. What they do need is a viable currency with a high turnover, or velocity rate to participate in economic activities on their own terms. As Irving Fisher put it in the midst of the Great Depression,

> *"Free money may turn out to be the best regulatory of the velocity of circulation of money, which is the most confusing element in the stabilization of the price level. Applied correctly it could in fact haul us out of the crisis in a few weeks…. I am a humble servant of the merchant Gesell."*[6]

A prominent example for free money was the "Wörgl" (pronounced *Voergel*), a currency that was issued in the 1930s by an Austrian city bearing the same name.[7] Confronted with thirty percent unemployed and a collapsing economy, the mayor of Wörgl followed the recommendations of Silvio Gesell, a German autodidactic scholar, who had lived through the Argentine crisis of the 1890s and whose work would greatly influence Keynes.[8]

The city of Wörgl issued *Freigelt*, or "Free money" to its citizens in the form of "labor certificates." It deposited its remaining cash reserves (which had dwindled during the recession) with a local bank to back the certificates. To ensure that the Wörgl served its purpose as a medium of exchange, a stamp was affixed each month to the certificate at 1 percent face value. Furthermore, the Wörgl circulated at a rate of 12-14 times that of the national currency, giving credence to the high velocity of free money. The Wörgl survived only 13 months — not, however, because it did not deliver on its promises. In fact, the city's economy prospered, unemployment went down and local businesses frequently paid their taxes early to avoid the stamp discount, leaving the city government with a revenue stream to spend. This successful social experiment in free money was shut down, because the central government reasserted its monopoly over money and threatened sanctions for its continued use.

Sovereigns guard their monetary sovereignty carefully. Yet, over the past decade, they have stood by as new forms of digital money, spearheaded by Bitcoin, were launched. These digital currencies turned out to be an experiment in form, but not in substance. Bitcoins were designed as a trustworthy medium of exchange; but they were kept scarce so as to protect their value. While they can be acquired though work, mining bitcoins is energy intensive, and thus hardly free. But the Achilles heel of Bitcoin is its convertibility into hard currencies. This turned Bitcoin into just another debt money: an asset that is held in the expectation of future gain.

Likewise, Facebook's "Libra", which the company hoped to roll out this year, was anything but free. It was designed as a for-profit currency, a "currency of currencies" that was to be backed by hard currencies and other assets denominated in hard currencies.[9] Placed in a separately managed reserve, these assets were meant to produce interests, not for the Libra holders, but for the members of the Libra Association. The project was met with fierce political and regulatory backlash and seems to have been put on hold for now with Facebook turning to develop a digital infrastructure for digital currencies others might issue.[10]

Still, the digital technologies private companies have developed might be used for a more egalitarian and sustainable money system. My own preference would be to open accounts for CBDCs for all people (not only citizens!) within a given currency area with their central bank. However, this might not be feasible in the short term, because outside China and a few other countries the necessary infrastructure is not yet in place. As an alternative, central banks might take advantage of the

infrastructure some private companies have already developed. However, if governments choose this option, they should protect the data of their citizens from appropriation.

Free money could be issued by any community, not just the central government. Historically, free moneys emerged spontaneously in response to acute money shortages during economic downturns. This was true not only for the Wörgl, but also for other cooperative currencies, such as the *credito,* which emerged after the 2001meltdown in Argentina. Other community-based moneys emerged at different times in history for designated purposes, such as elderly or child care currency, energy conversation currency, local food-growing currency, among others. These moneys link unused resources with unmet needs and as such should be encouraged. Their viability could be further enhanced with the help of blockchain technology. Indeed, several municipalities have already seen bills on blockchain-based payment platforms introduced.[11]

There is certainly room for more than one money. Ideally, different types of money should co-exist and be least partially interoperable, as this would greatly enhance the resilience of the money system. However, the convertibility of free money into conventional debt money must be restricted, because this would defy the purpose of free money. Obviously, this will create new governance challenges, such as setting conditions for convertibility and exchange rates, which would have to be worked out. For now, it is critical to set in motion the creation of moneys that facilitate economic exchange at every feasible level.

To be clear, issuing free money is not meant as a substitute for other much-needed government interventions, such as debt relief, social insurance schemes aimed at protecting businesses and their labor force, investments in health services, etc. Rather, the aim of this proposal is to show how we could harness the current political opening for rolling out a new form of money as the foundation for "sustainable abundance".[12] If there is a silver lining to this devastating pandemic, it is that it might serve to lay the foundations for economic and financial systems that are more equal and sustainable.

1. Facebook announced a new digital currency in June of 2019, The Libra (the Latin word for free), which, in fact, was designed as a for-profit currency of currencies. ↑

2. Gesell, Silvio. 1949. *Die natürliche Wirtschaftsordnung*. Nürnberg: Rudolf Zitzmann Verlag. English translation available at https://www.community-exchange.org/docs/Gesell/en/neo/. ↑

3. Whether or not you believe that governments need taxes to fund themselves, imposing an obligation on everyone that must be paid in the unit of account has been a key factor in anchoring a currency historically. See Desan, Christine. 2015. *Making Money: Coin, Currency, and the Coming of Capitalism*. Oxford: OUP. ↑

4. On the digitization of finance in China, see Zhang, Longmei, and Sally Chen. 2019. "China's Digital Economy: Opportunities and Risks." IMF Working Paper WP/19/16. In much Africa, M-Pesa, a mobile money rolled out by Vodafone and similar systems are in use. On recent trends in adding debt features to this payment system and their devastating impact on poor households, see Kevin Donovan and Emma Park, "Perpetual Debt in the Silicon Savannah", Boston Review, 20 September 2019. ↑

5. See Lietaer, Bernard, and Jacqui Dunne. 2013. *Rethinking Money: How New Currencies Turn Scarcity into Prosperity*. ↑

6. Irving Fisher, "Stamped Scrip and the Depression." Fourth Letter to the Editor, *The New Republic*, 74 (April 12, 1933): 246. ↑

7. Lietaer and Dunne (2013), Chapter 10. ↑

8. Dillard, Dudley. 1942. "Silvio Gesell's Monetary Theory of Social Reform." American Economic Review 32 (2):348-352. For a more recent assessment of Gesell's work, see Ilgmann, Cordelius. 2015. "Silvio Gesell: "A strange, unduly neglected" monetary theorist." Journal of Post Keynesian Economics 38:532-564. ↑

9. See my testimony to the House Financial Services Committee, 17 July 2019. ↑

10. "Facebook 'rethinks' plans for Libra cryptocurrency", BBC 4 March 2020. ↑

11. New York City is among. On the ideas motivating the bill, see Robert Hockett. 2019. "The New York Inclusive Value Ledger: A Peer-to-Peer Savings & Payments Platform for an All-Embracing and Dynamic State Economy." ↑

12. Lietaer and Dunne (2013), at 55. ↑

Money in the Time of Coronavirus
J. McAndrews, Derivative Failures

March 22, 2020

James McAndrews, TNB USA Inc. and Wharton Financial Institutions Center

> *In wild periods of alarm, one failure makes many, and the best way to prevent the derivative failures is to arrest the primary failure which causes them.*
>
> *Walter Bagehot, Lombard Street*

One failure makes many, wrote Bagehot, the dean of financial crisis analysts. When economies are in wild alarm, as in the fall of 2008, a failure, like the Lehman Bros. failure, can reverberate throughout the financial system, causing a wave of rescue efforts and other failures.

Our current crisis and its anxiety are borne of a different cause. Large parts of the economy have been shuttered, not because of financial stringency or economic insufficiency. Instead, conscious decisions have been made that to save lives it is necessary to close shop.

Bagehot's words have a different interpretation now: the best way to overcome the crisis is to arrest the spread of Covid-19, the primary failure. Surely, arresting the spread of Covid-19 through means other than social distancing remains many months away. We are left with the question of how best to prevent, or, if unsuccessful in prevention, to cope with the derivative failures.

That reduced economic activity is a derivative failure of the spread of Covid-19 demands different reactions from policy makers from more familiar recession scenarios, often caused by excessively tight monetary policy. Further, with policy rates in many advanced economies near or below zero, the room for a several percentage point drop in policy rates doesn't exist. What steps are crucial to counter the deepening social distancing recession?

First, we must support, protect, and direct resources to the health sector to maintain and even increase its capacity. Second, outside of the health care sector, much economic activity need not be stimulated at present; instead it needs to continue to be suppressed. Third, we must work in every dimension to prevent hardship to those who are suffering—those who have or will lose their employment or income, who are isolated from necessary support, or are laboring in difficult circumstances. Finally, it is important now to preserve the knowledge and capital, much of it human capital, in society in general and also in firms.

The two elements of assisting those who have lost employment and income and preserving society's ability to recover once the primary failure is arrested, have been the subject of many essays in this series and elsewhere. There are many laudable suggestions. In the remainder of this essay, I'll discuss how governments might best preserve the ability of firms to survive the crisis.

As Dan Awrey pointed out in his essay, the Federal Reserve's recent expansion of lending is welcome in that it is designed to "prevent dislocation within private money markets from triggering the failure of otherwise healthy banks and other financial institutions, along with the consequent withdrawal of lending, deposit-taking, and other key financial services."

These recent actions by the Federal Reserve are important building blocks in preserving the financial services that all modern economies rely on.

The Fed's actions alone cannot preserve the ability of many nonfinancial firms to survive a long period of inactivity. The Federal Reserve's lending is based on counterparties delivering collateral to the Fed. That collateral consists of loans to firms, but for the firms to receive the loans in the first place, the lender must be confident in the firm's ability to repay. In the current crisis and as the slowdown continues, that confidence to lend will disappear. To maintain the confidence of lenders, there is an urgent need for Congress to provide assistance with pandemic insurance, in a fashion similar to the Terrorism Risk Insurance Act in 2002. Many lenders will refrain from lending if borrowers don't have insurance for business interruptions caused by pandemics, but we'll need the federal government to provide reinsurance to private insurers.

Some adjustments to the Fed's programs can improve their efficacy during this slowdown. The joint U.K Treasury and Bank of England program for lending to firms, the Covid Corporate Financing Facility, has many features worth emulating here in the U.S. It measures firms' credit quality prior to the spread of the pandemic; it allows firms that had not before issued commercial paper to participate in the facility; it uses measures of credit quality beyond those of ratings agencies; it allows firms of relatively lower credit quality to participate in the facility; finally, it aims to match market pricing prior the economic shock from Covid. The U.K.'s CCFF is open to all firms that "make a material contribution to the U.K. economy." Broadly inclusive features like those should be adopted by the Federal Reserve for its CPFF.

Firms also face the specter of paying interest and principal on their existing borrowing. Without the ability to refinance those borrowings and to borrow additional amounts to make interest payments, many won't have the revenue to sustain the required principal and interest payments. Financial regulators have issued helpful guidance to banks to continue to support businesses and households Nonetheless, as the slowdown continues the confidence to lend will surely be drained from the circular flow of economic activity, limiting the efficacy of the Fed's lending programs and guidance.

Consequently, much more must be done to preserve firms in the face of the slowdown. Simply providing funds to specific firms now, as is currently being discussed in Congress with respect to the airlines, is not likely to be effective. We have little idea how long the slowdown will persist, and we have not assessed which firms are crucial to any anticipated recovery. Spending resources injudiciously now may prevent us from applying those same resources in more effective ways in just a few months.

Some principles can assist us in determining which firms should be a priority for extraordinary government assistance. Like the auto firms in the wake of the global financial crisis, firms that have both significant employment and high capital intensity are vital to preserve. Firms with high capital intensity are difficult to replicate, and this is true for firms that employ highly skilled workers, that is, firms that have high human capital intensity. A second principle is that firms that provide inputs to others are likely more systemic in their operation than those that provide final goods. For example, a computer chip manufacturer is likely more systemic than a computer manufacturer. Finally, extraordinary assistance should only be considered if broad-based, widely available facilities to help most firms are already in place.

It is difficult to make the determination of where to focus resources as such triage decisions are most excruciating. But the government will make such decision according to some principles. It is vital that the government should make its principles explicit, so that people can understand the reasons the government is acting and can better forecast future interventions. In general, society needs to examine, through democratic methods in Congress, which firms are harder to replace than others, and which are more systemic in their effects on other firms and focus its preservation efforts on those firms.

Notwithstanding how difficult it was to replace the auto firms given their importance to the economy, the auto firms were put through bankruptcy in 2008-2014 and continued to operate. That approach was possible, in part, because many other firms were not also in the same straits as the auto firms. New policies to reorganize the finances of systemically important firms that cannot service their debt will have to be considered.

The current crisis will strain our finances, but it may strain our imaginations even further. How to deal with the derivative failures caused by an extended shutdown of the economy without impairing the ability of the economy to recover is one such challenge. We should avoid a rush to throw money at industries randomly. Instead a pledge to preserve the economy, to direct resources at particular industries and firms, and to do so in a deliberative and democratic way, is likely to be more effective in addressing the failures that will result from this abrupt recession.

Money in the Time of Coronavirus
R. Hockett, The Democratic Digital Dollar: A 'Treasury Direct' Option

March 25, 2020

Robert Hockett, Cornell Law School

Introduction

On March 23rd House Democrats did something I and many others have been advocating for some time – draft plans to legislate into existence a digital dollar, along with a system of digital wallets. The plan I've been pushing can be instituted by municipal, state, or national authorities, and at the national 'level' can be administered either by the Fed or by Treasury. (We proposed the state version in New York's Assembly and Senate last October, and it has generated much 'buzz' here ever since.)

It is the latter – the Treasury – version of the Democratic Digital Dollar that I want to emphasize here, in light of both (a) the 'need for speed' in aiding our Corona-hit public and flagging economy, and (b) the Fed's century long common-law marriage to Wall Street. The Treasury – an agency more democratically accountable than the Fed – *already has half of the requisite digital architecture in place*. Treasury has a universal account system – 'Treasury Direct' – available to all citizens and legal residents of our country. It would be easy in principle for Treasury to issue a new Fed 'dollar bill' equivalent – what I call a 'Treasury Dollar Bill' – receivable into these accounts, then either facilitate easy convertibility into Fed dollar bills or – better yet – declare them legal tender as well.

This isn't as exotic as some might initially think. Our first truly nationally issued dollar – the 'Greenback' (sound familiar?) – was administered by the Treasury when it was first instituted during the Civil War – hence the 'bank regulator' OCC's name – 'Comptroller of the Currency.' The dollar only came to be Fed-administered about 50 years later, when we established the Fed so as to render the dollar supply more 'elastic.' But we'll come back to that. First some background…

1. *Background: The Democratic Digital Dollar & the Inclusive Value Ledger*

Last autumn, New York Assemblyman Ron Kim and State Senator Julia Salazar proposed legislation I'd drafted to institute what I call a Democratic Digital Dollar plan. The plan, designed and discussed fully here, is meant to be implementable at the state, local, or federal levels. At the federal level, it could be administered either by the Fed or by Treasury.

The plan's architecture is strikingly simple: via this 'public Venmo' or 'inclusive value ledger' (IVL) system, every person and business receives a smart-device accessible digital wallet, with what I call 'vertical' connectivity to the public fisc, and what I call 'horizontal' (think P2P) connectivity to all other wallets. All are thus able to pay taxes and receive tax refunds and other disbursements over the IVL, and all are able to make real time payment to one another over the same system.

The reasons to put such a plan into place are quite numerous and are especially strong now when the need to get stimulus moneys to hard-hit Americans' wallets is as urgent as it could possibly be.

For one thing, in any self-professed 'commercial society' and 'exchange economy' such as our own, a payments system must be considered an essential public utility, which justice requires we make freely available to all. People don't pay to use sidewalks, nor do they or small businesses pay to use nickels or dollar bills. Neither, then, should they have to pay to use digital payments media as these now supplant paper currencies.

For another thing, we measure the size and the growth of our economy by reference to transaction volume. That is all GDP is. It follows that a more seamless and efficient payments system, by enabling more rapid transacting and hence larger transaction volumes within any time interval, means much greater economic growth and a much larger economy. Justice and growth thus converge.

Thirdly, the presence of such a system, once it is in place, offers a host of collateral benefits too. If administered by a nation's exchequer or monetary authority (think Fed and Treasury), it will enable much faster fiscal stimulus or monetary policy transmission than does our present Baroque system of bank middlemen who we hope will pass cheap credit to consumers. Instead we just drop the helicopter money into our digital wallets.

And, in more ordinary times, we offer interest on savings in wallets, whereupon we can then move those rates up or down when we must slow down or speed up aggregate spending activity. Indeed we can even then 'micro-target' specific sectors of the economy where spending appears to be overheating or dangerously cooling.

Fourthly, an IVL system would enable cities and states to begin giving monetary rewards to 'care work' providers and other contributors to the public good that our present payment arrangements make too difficult for most governments to judge feasible. A teenager who helps grade-schoolers with homework after school, for example, or someone who looks in on and cares for a 'shut in,' can quickly transmit 'proof of work' (POW) to a city or state, even a federal welfare authority and receive spendable IVL credits in return. Given the long-term savings to municipal, state, and federal budgets such work affords, crediting it over the IVL is quite readily justified even on fiscal grounds, let alone Good Society ones.

Finally, going digital offers financial data privacy benefits too. Unlike private sector banks and online payment 'service' firms, public sector administrators of the IVL do not do what they do for profit – there are no 'carrots' to entice 'data harvest' and sale. They're also subject to 4th Amendment constraints as 'state actors,' unlike, say, Wells Fargo or Venmo – there is a 'stick.'. Adding more sticks through the criminal law, moreover, along with especially hard encryption for all transactions of amounts lower than what the law requires banks to report under anti-money-laundering law, is quite easily done on an IVL system.

No matter how you look at it, then, we should do this. Commercial and financial inclusion, more rapid economic growth, leak-proof fiscal stimulus and monetary policy, valuing undervalued work, and tightening financial privacy … what's not to like? Well, it rather depends, in the national case, on what Congress ultimately decides.

2. *Latest Congressional Discussions*

A lot seems to have happened in the last 24 hours or so. On March 23rd, reports emerged that something like IVL might be included in the House Democrats' stimulus and relief bill as of that night. As more details emerged, however, it emerged that what actually was under consideration was multiple things. On the one hand, there was language suggesting that what was under consideration was something like what Morgan Ricks, Lev Menand, and John Crawford have proposed. On the other hand, there was also language suggesting that IRS accounts and prepaid debit cards of the kind I proposed for fast helicopter money earlier this week might be in the cards. And finally, there were sufficient references to wallets and digitization to make clear that the legislators really did have digitization in mind.

Needless to say, this is all very gratifying to the many of us who have been advocating central bank digital currencies in the name of more just and efficient commercial and financial architectures for so long now – not to mention the yet more of us who see the need to get money to struggling Americans quickly right now. But all is apparently up for grabs again now, given Congress's decision to leave any digital dollar, Treasury-housed or otherwise, out of the current bill. We should

nonetheless keep discussing how to go forward before the next stimulus bill, which will surely come. This could prove interesting even later, should the Fed's long common-law marriage to the banking sector, or should its statutory constraints, prove at any point problematic. It's also interesting because in Treasury's case, we already have half of the architecture in place, as I'll now explain.

3. *The Treasury Dollar Bill & the Treasury Direct Plan*

Few seem aware of this fact, but the U.S. Treasury already affords any citizen or legal resident who desires it a 'Treasury Direct' Account (TDA) with the Treasury itself. Through this portal, citizens and legal residents can purchase or sell all four of the principal classes of Treasury security – bills, notes, bonds and Treasury Inflation-Protected Securities (TIPS) – at any time, 24/7. All that is needed is (a) a net-accessible laptop, smartphone, or other device; (b) a Social Security or Taxpayer I.D. number; and (c) a bank account out of which payments for, and into which redemptions of, Treasury securities can be made. All that is needed to make this a full Treasury-administered Democratic Digital Dollar and IVL is to add one new Treasury security – a kind of digital cash – to the basket now offered, and to establish 'horizontal' connectivity between Treasury Direct Accounts to supplement the 'vertical' connectivity between these accounts and the Treasury – by making them P2P wallet-interactive.

Here, then, is the nucleus of what can be quickly scaled-up into a national savings and payments platform administered by Treasury.

First, Treasury will be authorized, and indeed required, to issue a new denomination of a Treasury bill with no maturity date and a face value of $1. We'll call it a Treasury Dollar Bill (TDB). It is effectively a one-dollar 'perpetual,' a.k.a. 'consol,' much like the Federal Reserve notes we call '*dollar* bills.' Treasury will directly convey Congressionally determined 'amounts' of these Treasury Dollar Bills, which we'll call 'Starter Deposits,' to holders of Treasury Direct Accounts, which can be digitized into digital wallets as described below. There will be no need to 'sell' them. Starter deposits then can be periodically supplemented by what we'll call Supplemental Deposits as Congress determines.

Treasury Direct wallet Accounts holding TDBs will be much like accounts held with present-day money market mutual funds (MMFs), save that they will be sovereign issuances with all the guarantees thereof. TDBs will for their part be reminiscent of the 'Greenbacks' that Treasury issued as the nation's primary currency from the mid-1860s until early in the 20th century, when the Fed was established and Fed Notes began to supplant Treasury issuances as primary currencies.

Second, through legislation we will mandate either (a) that henceforth Treasury Dollar Bills will be legal tender on the same footing as Fed dollar bills, or (b) that the Fed open individual deposit-cum-transaction accounts – we'll call them 'Fed Transaction Accounts' (FTAs) – for all who have Treasury Direct Accounts, with free transferability of funds between each pair of twinned Fed Transaction and Treasury Direct Accounts. Any and all such accounts will be digitized into smart device-accessible digital wallets as we upgrade the national payments infrastructure as most developed nations are now planning to do.

TDBs will thus constitute Congressionally determined 'helicopter money' that functions alongside garden-variety Fed-administered money. Of course Treasury will coordinate with the Fed to prevent undesired inflationary impacts. Because what occasions helicopter drops is essentially by definition a significant contraction, however, this seems unlikely to become 'an issue.'

Third, we supplement the currently open 'vertical' connectivity channel between Treasury and TDA wallet holders with universal P2P 'horizontal' connectivity among all TDA wallet holders themselves. We do that either between TDAs

themselves, in the event that we opt for ption (a) just above, or between FTAs, in the event that we opt for Option (b) above. Again, then, TDAs or FTAs will become digital wallets, out of which anyone can pay anyone else for anything legally sold, and into which anyone can be paid by anyone else for anything legally sold.

As in my Democratic Digital Dollar and IVL plans more generally, private sector banking institutions will be required, as a condition of licensure, to be among those businesses with what I call 'horizontal' connectivity to TDA wallet-holders. In that capacity they will be required to offer full, fee-free access to teller windows, ATMs, and all other facilities at which anyone might wish to convert TDBs into Federal Reserve Notes (FRNs), coins, or any other form of legal tender cash we might ever include among our money forms.

Fourth, we will cryptographically protect all TDAs or FTAs, and all transactions performed with them. We should also guarantee cash-reminiscent anonymity of transacting for all transactions in amounts not already required to be reported to bank regulators under current bank privacy and money-laundering enforcement laws. Violations of these protections by any government official will not only constitute 4th Amendment violations, but will also be legally prosecutable – as, of course, will be any breaches by 'hackers' or other miscreants. Because the Treasury, unlike private sector banking institutions and payment 'service' providers, isn't actuated by a profit motive, security and data protection seem likely to be easier assured on the new Treasury direct system than they are now. But there is no need to leave this to chance.

Finally *fifth*, once the system is fully up and running, we might commence paying interest on funds held in TDAs or FTAs, just as the Fed now pays interest on reserves (IOR) to banks holding accounts with it, and as private sector banks pay on checking and savings accounts held with them. The reason for doing this is that it will afford our monetary authority – be that the Fed, Treasury, or a consolidated fiscal and monetary authority such as that designed in work that I have now in press – a most potent, because 'direct,' monetary policy tool. Rates can be raised to slow spending, and can be lowered to boost spending.

There will be no more 'pushing on a string' problems or other leakages in monetary policy transmission should we go this route. Nor need we 'hope banks will lend' or 'hope people will borrow' in crises. We'll simply 'drop money in' when we must, soak it back up other ways – raising rates high, impounding some funds, or raising taxes if necessary. As CPI inflation seems to have been lower than policy targets for decades now, though, that seems a fairly remote possibility. We shall soon see whether productivity drops owing to Covid-wrought social distancing measures might change that.

The 'Treasury Direct' plan, then, offers all the advantages I laid out above for *any* Democratic Digital Dollar and IVL plan. But there are also three more.

First, Treasury is generally more democratically accountable than the Fed. It is more forthrightly 'the people's fisc,' than is the Fed, which is presently a bank for the banks. Second, the Treasury labors under fewer statutory constraints than the Fed, which might come in handy once we start 'People's QE.' And finally, my Treasury Dollar Bills clearly resemble both Fed dollar bills held at banks and other, coupon-carrying Treasuries, affording a salutary reminder to the public that their Fed Note money, Treasury Note 'debt,' and indeed all sovereign liabilities in a democracy at bottom come down to our liabilities to one another.

*Conclusio*n

I hasten to add, in conclusion, that I am myself undecided at this point as between Fed and Treasury options for the Democratic Digital Dollar. In my work thus far, I've been interested only in saying that both can be done. I've taken a more advocative role here only for two reasons sharing a common cause: Our present pandemic-fueled hurry requires we act

quickly, which Treasury Direct makes quite feasible. And, ironically, that same hurry has us talking about Fed plans while not giving Treasury alternatives their due.

C. Sissoko, A fire sale in the US Treasury Market: What the coronavirus crisis teaches us about the fundamental instability of our current financial structure

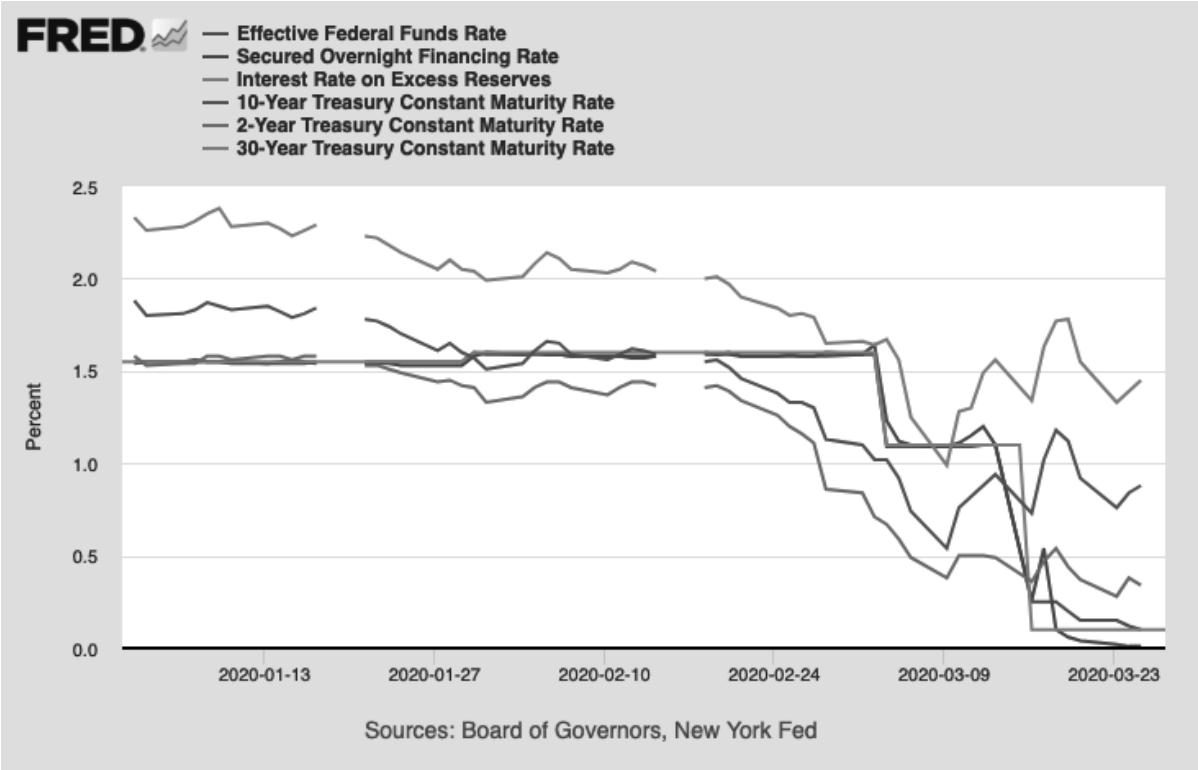
March 27, 2020

Carolyn Sissoko, University of the West of England

A recurring theme in the papers that I have written is that asset price instability is endemic in a system of collateralized lending based on repurchase agreements. Even I, however, was caught completely off-guard when it was the US Treasury market that began to experience fire sales.

Almost everybody[1] thought that by moving the repo and derivatives collateral market into "safe assets" or bonds issued by the most credit-worthy sovereigns, the repo market could be de-risked. What we learned over the past few weeks is that the ineluctable logic of margin calls and forced sales can play havoc even in markets for the safest collateral. This throws into doubt the very concept of a "safe asset" and makes clear how dependent the concept is on the underlying market micro-structure.

Here is a chart that gives year-to-date values for the Fed's policy rate (green), the market repo rate (SOFR: red), the yield on the 2-year Treasury (light blue), the yield on the 10-year Treasury (purple) and the yield on the 30-year Treasury (orange).

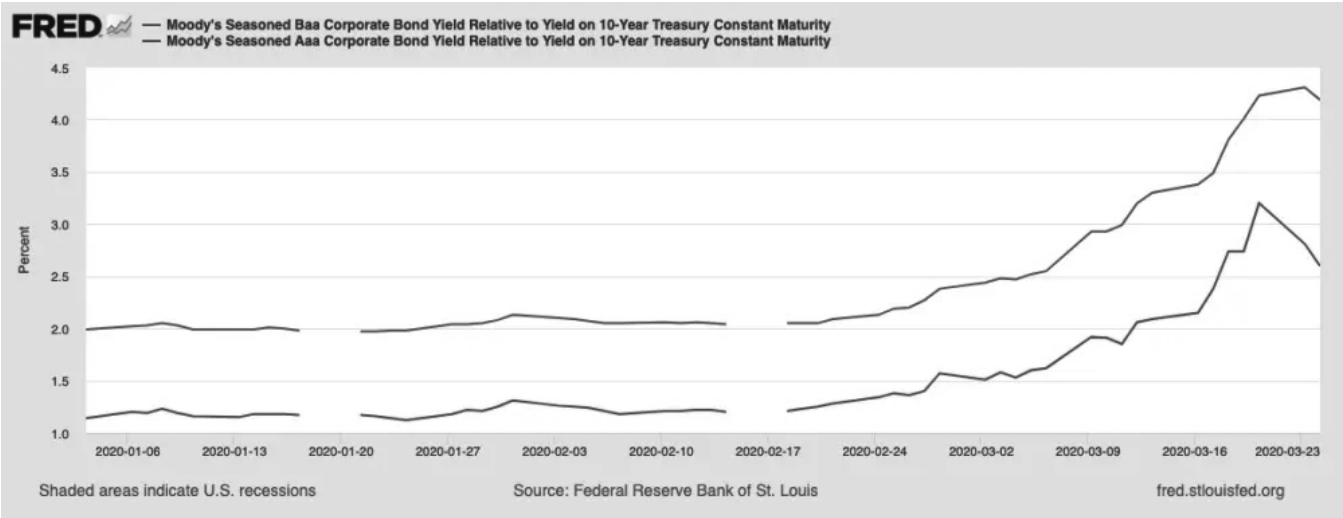


Keep in mind that when the Treasury yield declines, that means that people are buying Treasuries and that the price of Treasuries is increasing. And when the Treasury yield rises that means that people are selling Treasuries and that the price of Treasuries is falling.

Starting in mid-February, this chart depicts a 'flight to safety' into Treasuries as the corona virus crisis generated uncertainty for investors and they chose to shift into Treasuries. This is what we expect to happen with a 'safe asset.' What is remarkable about this chart is what happens after March 9. Treasuries are clearly being sold in significant amounts after March 9.

I have seen two explanations for the onset of this phenomenon. The first explains that the flight to safety took place faster in futures on Treasuries than in the actual Treasuries themselves and that this caused a significant price gap between the two contracts. As there are hedge funds that arbitrage these two prices – and, because the return on this trade is so small, engage in this arbitrage on a highly leveraged basis – the price gap resulted in significant mark-to-market losses for these funds. Apparently, these arbitrage funds chose to sell out of their positions – realizing their losses now before they got worse. Liquidation of arbitrage positions is notorious for causing price gaps to worsen and for causing others engaged in a similar trade to also choose to liquidate their positions. The liquidation of these positions involved selling Treasuries.

The second explanation starts with investors in bond funds, including both mutual funds and exchange-traded funds, deciding that they no longer wished to hold those positions since the coronavirus was likely to have a significant impact on many firms that issued bonds. When investors exit bond mutual funds, the managers of those funds have to reduce their holdings of bonds. The process for exchange-traded funds is more complicated, but has the same overall effect: if investors sell their bond ETFs, then the ETFs themselves will end up selling bonds. You can see the effect of these sales on the chart of the spread between corporate bond yields and Treasuries.



Since these sales were of corporate bond funds, one can easily ask how this behavior could end up causing a sale of Treasuries. The answer is that many bond funds have some Treasuries in their portfolios. As sales of corporate bonds ramped up and the bond fund managers didn't like the prices they could get on the corporate bonds – or the price effects they would generate by adding to the sales – they turned to selling off Treasuries to meet their redemptions needs.

Whatever the underlying cause of the sales of Treasuries was, we can see in the first chart that, on March 10, sales of Treasuries were so significant that they drove the price of Treasuries down and their yields up. This continued through March 12, when the Federal Reserve tried to address the problem by flooding the repo market with $1.5 trillion. While the Fed was successful in bringing the repo rate, the Secured Overnight Financing rate (SOFR), down, repo liquidity couldn't address the selling pressure in the Treasury market, and Treasury yields continued to rise.

With the sudden decline in the price of Treasuries, the negative feedback loop that is inherent in the repo market and in the related market for derivatives collateral kicks in (see Adrian and Shin 2010, Gabor 2016, Gabor and Ban 2016, Sissoko

2016).

The negative feedback loop in repo works like this: a decline in the value of collateral results in a margin call. As an example, assume a borrower has borrowed $98 by posting $100 in Treasury collateral and is required to maintain a haircut (or excess collateral) of 2%. Then a decline in the value of the Treasuries to $99 will lead to a $1 margin call that can be met with either cash or collateral. That is, to support a $98 loan, $100 of Treasury collateral must be maintained. Alternatively, a payment of $1 in cash will reduce the loan to $97 against $99 in collateral. If the borrower happens to own additional, unpledged Treasuries, the call is easily met. However, when the repo borrower is at the limits of her borrowing capacity, the margin call forces the borrower to scramble to meet the call with additional cash or collateral. This will in general force the borrower to sell something. In other words, margin calls generate a demand for cash.

Furthermore, if the borrower fails to meet the margin call, then the lender sells the collateral to pay back the $98 loan. Note that the lender has no incentive to seek the best price for the collateral – the lender just wants to make sure that the $98 loan is covered – any excess returns from the sale of the collateral have to be remitted to the borrower. In short, margin calls generate sales either from borrowers desperate for cash or from lenders who are liquidating the collateral to close out the repo loan. These sales push prices down further and generate more margin calls. The bottom line is that repo has always been associated with fire sales of assets in crises. These fire sales are a function of the contractual structure of the repo loan.

The issue at the present moment is that the coronavirus crisis has caused a significant increase in the volatility of many financial markets. When volatility increases, the collateral that needs to be posted in derivatives contracts typically increases too. So, the crisis has been accompanied by an increase in the collateral that needs to be posted. As a result, demand for collateral has increased. Collateral that could meet demand in late February would not be enough to meet demand in mid-March. (Indeed, it's possible that this dynamic had already started playing a role well before March 13.)

At the same time, as we have seen, the fall in Treasury prices from March 9 to March 13 meant that the supply of collateral had declined. In fact, for 30-year Treasuries, a rise in yield of 0.5% as we see over this period can be associated with a decline in value of 8% or more. While the effects are smaller for Treasuries with shorter maturities, the aggregate effect on the supply of collateral that is generated by the interest rate movements in the first chart is both substantial and dramatic. Furthermore, this decline in value affects each and every owner of long Treasuries. In short, from March 9 to March 13 traders who held long Treasuries as "safe assets" learned (as they had always been told by people who pay attention to these things) that even Treasuries can be risky assets. This undoubtedly increased the demand for cash, and the incentive to sell long Treasuries.

This decline in the value of long Treasuries caused collateral positions everywhere to fall. The decline in collateral was inevitably accompanied by margin calls. In these circumstances there were inevitably some traders who were unable to meet the calls or who were desperately looking for cash to meet them. They looked at long Treasuries as risky assets, because they didn't know how long this cycle of margin calls was going to continue – and how far the price of 30-year Treasuries could fall, which generated a strong demand for cash and very short Treasuries. Traders who didn't meet their margin calls faced forced sales of their collateral, resulting in more sales of Treasuries. With these sales came lower prices and more margin calls and more sales, with no clear end in sight.

This is the fundamental nature of repo and similarly structured markets. When traders' balance sheets are stressed, all it takes is a fall in the price of collateral to turn the repo market into a coordinating device that generates a vast liquidity drought, hitting everybody in the market. We saw this in March and September of 2008, but then the cycle was stopped by dramatic Federal Reserve action before Treasuries became illiquid. And almost everybody, certainly including myself, thought that the shift of the repo market out of private sector collateral would help stabilize it. What we learned over the past

two weeks is that, in a crisis, repo markets don't just act as a vortex sucking liquidity out of the financial system, but that this vortex is so strong that not even Treasuries can be treated as "safe assets."

From March 15 through March 17, the Fed took dramatic actions, providing liquidity to the banking system, opening swap lines with five central banks, restarting quantitative easing, re-opening crisis programs to lend to investment banks against collateral and to help non-financial corporations to borrow on commercial paper markets. Even so, the yields on Treasuries continued to rise through March 18. Only after the Federal Reserve re-opened crisis support for money market funds (March 18) and extended swap lines to nine more central banks (March 19) did the yields on Treasuries finally begin to fall. Even so, by end of day on March 20, yields had still only fallen to their level on March 13 and remained far above their March 9 level.

Thus, on the morning of March 23, the Federal Reserve took unprecedented action, expanding its support of credit markets far beyond the policies it adopted in the 2008 crisis. Most important to the repo market, the Fed declared that it stood ready to buy Treasuries in unlimited amounts. In short, the Federal Reserve is now a backstop for the price of Treasuries at all maturities. In my opinion, the Fed's actions on March 23 were designed to put a stop to the repo markets' forced run on Treasuries. And I believe the Fed has succeeded: yields on Treasuries dropped on Monday and the Fed has the means to keep them from rising significantly.

While the Fed may have stabilized the Treasury market, when the health care crisis has passed, it will be time to reconsider whether we want to continue to rely on repo markets now that we have seen twice in a dozen years how they suck liquidity out financial markets just when it is most needed. Structural reform of our money markets needs to be on the agenda.

[1] Gabor and Ban 2016 is an exception.

Money in the Time of Coronavirus
J. van 't Klooster, Why the US Congress gives dollars to the Fed

March 31, 2020

Jens van 't Klooster, KU Leuven and University of Amsterdam

Commentators have raised various concerns over provisions in the $2 trillion US stimulus bill that assign $454 billion to protecting the Federal Reserve against losses. The most basic worry is that losses should not matter to a central bank. Although I agree that a lot ultimately rests on conventions, that is true for many things. This fear of losses, rather than the Federal Reserve Act itself, may ultimately be what stops it from doing what Dan Awrey, Leah Downey and Robert Hockett have rightly said it should: provide at least some of the support now available to Wall Street to the US's struggling real economy.

In this blog, I will first say something about why it makes (some) sense to spend this money to protect the Federal Reserve against technical insolvency. I then contrast the Federal Reserve's attitude with what is happening in Europe, where the European Central Bank has historically also been immensely concerned about losses. For now, in launching its Pandemic Emergency Purchase Programme (PEPP), it has given up a lot of its earlier risk aversion.

Let me start with some philosophy: does it even make sense to think about financial risk in relation to central banks? Central banks report on their activities and design their operations assuming the reality of their accounting framework. From this balance sheet perspective, central banks are exposed to financial risk because they hold financial assets. Accounting is crucial for private sector agents because they face budget constraints. If central banks operate on an analogous logic, they face a risk of insolvency in this accounting sense. If the value of their assets drops below the value of their liabilities, they are insolvent.

Central bank budget constraints, however, are not at all like those of the private sector. They are not enforceable through the legal system in the way that budget constraints of economic agents are. Where it comes to obligations to pay in in its own currency, central banks can always just print the money. For this reason, the consequences of insolvency are limited. Indeed, the central banks of Chile, the Czech Republic, Israel and Mexico have operated with negative equity, holding assets valued less than their liabilities, for years. It is true that central banks often have strict legal requirements for controlling and reporting the value of their assets and liabilities.12F Calls to "Audit the Fed," as critics have rightly pointed out, falsely suggest that the Federal Reserve is currently not audited by an outside accounting firm. Central banks, however, often decide on their own accounting framework. The Fed, in fact, used this power in 2013 to create a new way to avoid net negative equity. A central bank is, hence, somewhat like a firm under historical socialism, where, even if accounting practices were in place, bankruptcy remained a political decision and losses per se would not result in the dissolution of the firm.

The absence of a default risk, however, does not mean that central bank accounting has no practical significance, as central bankers are keen to point out. A central bank with net negative equity may change its behaviour to a more profit-oriented strategy, which may hinder its macroeconomic and financial market roles. Financial market participants and governments may have less confidence in the central bank, threatening its independence and ability to achieve its objectives. Citizens may think all sorts of things. As is the case for all institutions at the pinnacle of the financial system, as Katharina Pistor has argued, the financial constraints that central banks face are more discretionary and depend crucially on their own perceptions, those of other political institutions and those of market participants.

We should not underestimate how serious central bankers take their budget constraints. Risk management informs an important part of the day-to-day operations of a central bank. Many of the key operational decisions turn on whether risks are properly anticipated and mitigated. To give up on that approach in a crisis is difficult. This is illustrated by the Fed's September 2008 decision to withhold credit from Lehman Brothers, which was based on concerns about losses. Fear of losses is also part of why central bank swap lines, which Elham Saeidinezhad already called attention to, have such a narrow geographic reach. For central bankers, taking on financial risk requires an immense psychological transformation. This, and the $4 trillion in loans that it is meant to unlock, is ultimately what Congress pays for. Eligibility criteria for these programmes may still be way too strict.

To illustrate central bank reluctance and draw some comparisons, consider a European perspective. Here too, central bankers tend to be immensely preoccupied by financial risk. In the past weeks, however, the European Central Bank has made some dramatic moves that side-line a host of preoccupations that were decisive in its response to the previous crisis (for more detail see my blogs on this here and here).

The ECB's legal mandate does not say much about risk management beyond a provision that says that credit should be secured by "adequate" collateral. The main issues are for the ECB itself to decide, which initially gives rise to considerable internal fighting over how to deal with risk. In 2005, the ECB resolved most of these debates by committing itself to a strict market-based approach. From then on, the ECB's collateral policy, also with regard to government bonds, had served to protect it against losses. Moreover, its risk management strategy is meant to follow, rather than shape, market practices. To this end, the ECB makes the collateral eligibility of government bonds conditional on a sufficiently high credit rating issued by Moody's, S&P and Fitch. In the 2010-12 Eurozone Crisis, this risk management strategy shaped the ECB's actions and stopped it from taking up a role as lender of last resort to the member states.

The ECB gave up its narrow focus on risk management only partially after Mario Draghi in July 2012 committed to do "whatever it takes." When in 2014 the ECB started its Quantitative Easing programme, the ECB imposed a range of constraints on purchases to protect itself against losses. For one, government bonds are bought by the national central banks (e.g. the Bundesbank and the Banque de France) to ensure that any default would not impose losses on the ECB itself. Purchases strictly followed the ECB's capital key, which is determined by population and GDP of individual member states. The ECB also takes various measures to ensure that secondary markets continue to shape risk premia paid by individual member states. Finally, the programme remained burdened by the ECB's minimum credit rating, which led to the exclusion of Greece and the inclusion of highly-rated corporate bonds issued by Royal Dutch Shell and other fossil fuel companies.

Although the ECB has thus historically been very preoccupied with financial risk in designing its crisis-fighting measures, the recent Pandemic Emergency Purchase Programme constituted a radical break. The key passage from the ECB press release comes at the end:

> *To the extent that some self-imposed limits might hamper action that the ECB is required to take in order to fulfil its mandate, the [Governing Council of the ECB] will consider revising them to the extent necessary to make its action proportionate to the risks that we face.*

Although less pithy than "whatever it takes," the PEPP's key provision is more compelling in its implicit philosophy and certainly more powerful. It admits that most limits hitherto applied to ECB tools were self-imposed. Therefore, they can be revised in light of the risk (i.e., the economic dangers from the pandemic) that the Eurozone faces. This kind of recognition at the ECB opens the door to giving up the capital key and other restrictions on the PEPP. For now, it is noteworthy that Greece is already explicitly part of the programme. The ECB also expanded the already uniquely generous eligibility

requirements of its collateral framework. It is striking that all these things become possible under its new president Christine Lagarde, who may very well lack the central banker's intuitive risk aversion.

Are the Federal Reserve and the European Central Bank on different trajectories with regard to risk? Let's see when the dust settles.

Money in the Time of Coronavirus

S. Omarova, Crises, Bailouts, and the Case for a National Investment Authority

April 1, 2020

Saule T. Omarova, Cornell Law School

The COVID-19 crisis is unlike any other we've seen so far. An effective response to this massive crisis requires massive coordination and redeployment of the nation's financial, physical, technological, and human resources—not unlike a full-blown war effort. Currently, however, the U.S. lacks an institutional mechanism for an economic mobilization of the type it undertook during the Great Depression and both World Wars of the last century. There is presently no institutional analogue to the New Deal-era Reconstruction Finance Corporation (RFC).

Without such a permanent federal agency, the country must rely on ad hoc crisis-containment measures that are notoriously politicized, messy, and prone to corrupt influences. It's already clear that neither the U.S. Treasury nor Federal Reserve are equipped to manage and oversee the implementation of the multi-trillion emergency relief package approved by Congress. And significant misuse and misallocation of federal relief are bound to have disastrous long-term financial, economic, and political consequences.

To manage this process, we need an RFC-like institution. Having a permanent institutional platform for coordinating the national crisis response, including bailouts of private companies, would help to ensure that these emergency measures are executed in an efficient, transparent, and democratically accountable, and socially just manner.

My colleague, Bob Hockett, and I have long advocated creation of a National Investment Authority (NIA) as a modern version of the RFC. Our original focus was on the NIA's role as the federal instrumentality functionally located between the U.S. Treasury and Federal Reserve and tasked with implementing a long-term strategy of national economic development. At the heart of this strategy is the NIA's proactive use of financial tools to channel private capital into transformative public infrastructure projects, with a view to facilitating socially inclusive and sustainable growth of the American economy. Led by the NIA Governing Board (the NIA Board), an independent federal agency structured similarly to the Federal Reserve Board, the NIA would lever private investment in public goods through federal grants, loans, guarantees, securitization, and large-scale private equity-style asset management.

Although not originally envisioned as such, the NIA is perfectly suited for taking on the RFC-worthy task of managing the nation's response to the COVID crisis. The NIA would be well-positioned to coordinate nationwide production mobilization efforts, oversee financial bailouts, and manage post-bailout public stakes in private companies. Below is a brief outline of how that regime would work.

Production Mobilization

Most urgently, the NIA would act as the principal manager of federally appropriated funds for purposes of organizing the crisis response on the national scale. NIA's dedicated asset-management teams will work with other federal, regional, and local authorities, medical professionals, and other relevant parties to identify specific bottlenecks in the supply chain of critically needed products, prioritize concrete action items, and organize financial and other resources needed to scale up or repurpose individual facilities' production capacity.

Putting the NIA at the center of this mobilization campaign will facilitate and optimize what would otherwise be an impossibly difficult process. It will concentrate key resources and decision-making powers in the hands of an agency specifically designed to conduct business much like a private equity firm. Neither the U.S. Treasury nor Federal Reserve are able to act inside private firms and markets in a similarly direct way.

Bailout Process and Oversight

While direct public financing of private business entities is often a necessary part of crisis response, neither the Fed nor the Treasury are equipped to manage that process. Outsourcing management of the federal government's bailout-related assets to Blackrock, the world's largest private asset manager, is a stark reminder of that institutional gap.

The NIA will be a publicly-owned Blackrock equivalent. Working with the Treasury, it will coordinate emergency assistance to, and manage public stakes in, private companies. The NIA's professional asset-management teams will allocate funds, negotiate the terms of assistance, and run the portfolio of public assets—strictly with a view toward maximizing the public's overall welfare.

The NIA would lever its regional offices and expert teams to work closely with the authorities, businesses, and communities on the ground to conduct simultaneous emergency public investment auctions across the country.

The NIA Board would set transparent and uniform guidelines for choosing individual recipients of public investment, determining the amount and structure of each such investment, and imposing specific conditions on each recipient. The NIA's overarching goal would be to provide support to businesses and organizations of all sizes and types, specifically to stimulate economic activity and to prevent/minimize loss of jobs and income in all communities.

Accordingly, the NIA guidelines would mandate maximizing payroll retention and uninterrupted provision of social services to employees and communities as part of any bailout package. For large corporations, the NIA would also condition emergency assistance on specific changes to their dividend and stock buyback policies, executive compensation structure, and corporate governance—with a strategic view toward correcting systemically destabilizing structural imbalances in the U.S. economy

The NIA's auction policies and procedures would seek to eliminate potential conflicts of interest, favoritism, outside interference, etc. Working closely with the Treasury and the Federal Reserve on coordinating the bailout process with the broader financial and monetary stability goals would provide an additional checks-and-balances mechanism.

The NIA's assistance award decisions would be fully documented and subject to audit by the Government Accountability Office (GAO) or special federal audit panels. The NIA Board would also be required to provide regular public reports to Congress and the Treasury on the status of its public capital support programs. Finally, Congress can mandate additional public oversight the NIA's bailout management process (including appointment of a special Inspector General, etc.).

In theory, the Treasury or the Federal Reserve can structure their emergency bailout efforts in a similar fashion. In practice, however, it is extremely difficult to ensure the necessary degree of uniformity, transparency, and integrity across multiple bespoke bailout facilities, managed by multiple public and private agents. The NIA's strong statutory mandate, specialized expertise, and organizational accountability would render the entire process more transparent, fair, and susceptible to effective public oversight and input.

Managing Public Assets: The "Golden Share" Option

The specific form of emergency public investment in a troubled company—an outright grant of money, a loan, guarantee, or purchase of a particular type of preferred or common stock – will vary on a case-by-case basis. However, in certain cases—for example, where public capital injections are particularly substantial (either on an individual or an aggregate industry basis), or where the recipient-firms provide critical public goods or services (finance, transportation, energy, healthcare, etc.)—it may be desirable for Congress to mandate that the NIA receive and hold, on a permanent basis, a special "golden share" in each such firm.

In the 1980s-1990s, golden shares were used by governments around the world—including the UK government under Margaret Thatcher—to reserve exclusive rights to control key business decisions by newly privatized companies in strategically significant industries. Elsewhere, I proposed the "golden share" regime for systemically important financial institutions, as a macroprudential tool. But this instrument can be easily adapted for purposes of structuring public stakes in bailed-out entities.

In brief, the "golden share" regime would work along the following lines.

The "golden share" would entitle the federal government, represented by the NIA, to receive a specified economic interest in the firm (under the terms negotiated by the NIA as part of the bailout). It would also grant the NIA, as the sole holder of the federal government's golden share, special, exclusive, and nontransferable corporate-governance rights in the relevant firms. The golden share could not be redeemed or eliminated other than by an Act of Congress.

The NIA would occupy a permanent seat on the firm's board of directors. The NIA's primary fiduciary duty, however, would run directly to the American public. In this role, the NIA would have two distinct modes of operation:

- Ordinarily, the NIA would perform mainly observational functions. While not interfering with the company's routine operations, the NIA would actively monitor corporate actions with a view to preventing the company or its shareholders from circumventing the conditions of the bailout funding. The NIA's affirmative vote would be required for corporate decisions authorizing significant stock buybacks and dividends, outsourcing or elimination of jobs, changing executive compensation, adopting aggressive tax-planning strategies, and other actions potentially inconsistent with public capital support.

- Upon the occurrence of specified triggering events—including corporate actions inconsistent with bailout conditions, significant deterioration in the firm's financial condition, or signs of a systemic crisis—the golden share would be "activated," and the NIA would assume the role of the firm's "manager of last resort." From this position of corporate control, it would be able to take fast and direct action necessary to protect public interest: make concrete operational changes, redeploy resources, and so forth. Once the danger subsides, the golden share would revert to its (relatively) passive state.

Importantly, in an emergency situation similar to the COVID-19 pandemic, the NIA would be able to use the golden share trigger to assume its production-mobilization role, discussed above.

While it may be possible to structure the public stake in bailed-out entities as a special class of common or preferred shares that carries similar rights and powers, the proposed golden share is far more effective for purposes of protecting the public's interests in a corporate setting. A streamlined and flexible tool of corporate control, it can be quickly scaled up to enforce compliance with bailout conditions—and to ensure that private firms benefitting from public support do not abuse that advantage going forward.

Enhancing Accountability: A Public Interest Council

To enhance the NIA's democratic accountability, Congress should establish a special Public Interest Council (the Council) representing an explicitly public interest-oriented perspective in matters within the NIA's ambit. A detailed proposal for designing this type of a public accountability regime can be found here.

The Council would comprise academic experts and public interest advocates, all of whom are independent of both the financial industry and regulators. Congress would appoint members of the Council for staggered terms, based on publicly solicited nominations.

The Council would play primarily an advisory and evaluative role. It would submit mandatory reports to Congress, containing its assessments and non-binding recommendations for improvement of the NIA's performance of its statutory functions.

This institutional channel for inserting public interest into the NIA's accountability and decision-making structure would serve as an important check against excessive private-sector influence or political incumbents' overreach.

Ultimately, public accountability is the key to understanding why we need the NIA in the time of Coronavirus. We need the NIA to ensure that the crisis is managed in a transparent and democratically accountable way, so that the American public is protected from the deadly effects of corruption and ineptitude. A permanent federal instrumentality with a clear statutory mandate, organizational depth, and institutional expertise in capital allocation and asset management would serve as an urgently needed—and presently missing—tool of mobilizing the nation's productive capacity and putting our public money to good use.

For an issue brief further outlining the case for an NIA, see here.

C. Sissoko, The problem with shareholder bailouts isn't moral hazard, but undermining state capacity

April 10, 2020

Carolyn Sissoko, University of the West of England

Coronavirus and the immense economic costs associated with repressing its growth has provoked a debate over how to distribute those costs. Many law professors have argued that large, heavily-indebted corporations, such as airlines and private equity owned companies, that cannot afford the losses imposed by the coronavirus crisis need to be put through a government supported, expedited, and managed bankruptcy process along the lines of how the GM failure was managed in 2009 (e.g. Morrison and Saavedra 2020; Morgan Ricks; Ayotte and Skeel 2020). Underlying this approach is an emphasis on the importance of shareholders being wiped out – or at a minimum ending up sharing ownership with those who assist in the restructuring of the company. Several macroeconomists by contrast take a very different approach. They argue that the extent of the economic disruption caused by the coronavirus crisis is so great that it's costs should be treated as a problem for the government, not for business. (E.g. Smith 2020; Bullard interview 2020. See also Farmer 2020.) Objections to the shareholder bailout approach are often immediately classified as concerns about "moral hazard" and then dismissed on the basis that it is unreasonable to expect businesses to prepare for an event such as the current crisis.

What underlies the gulf between these legal scholars and macroeconomists? Lawyers have a nuanced understanding of corporate structure and its economic consequences (see e.g. Pistor 2019), whereas macroeconomic models typically simplify this structure to the point of ignoring it entirely. As a result, the lawyers consider shareholder losses even, or perhaps especially, in the event of *unexpected and unforeseeable risk* to be fundamental to how capitalism is supposed to operate. Implicitly, the lawyers understand that private sector risk-bearing plays an essential role in supporting state capacity and that turning this structure on its head is extraordinarily dangerous to our economic order. The macroeconomists by contrast are not in the habit of modeling the macroeconomic role played by corporate shareholders as risk-bearers in the economy and often have difficulty understanding this relationship. References to "moral hazard" are evidence of a purely microeconomic approach that fails to comprehend a macroeconomic risk-bearing role for the corporation.

What is a corporation? A corporation is a legal form that separates ownership of assets from control over the assets and from liability for the obligations associated with the assets. The corporate form both protects corporate assets from the shareholders (and the creditors of the shareholders) and shifts the risks of the corporation from the shareholders to the corporation's employees, creditors, and the state. Corporations developed with these significant protections for shareholders in order to increase the willingness of the wealthy to invest not in land but in risky enterprise controlled by others – and the growth of corporations is associated with economic growth. The trade-off for the shareholder is that even though the investment is risky, the potential loss to the shareholder is limited to the amount of the shareholder's investment. To the degree that the corporation incurs debts or causes tortious harm on behalf of the shareholder, the shareholder is shielded from liability for the actions the corporation took on the shareholder's behalf. This liability shield means that much of the risk of corporate activity is borne by the corporation's employees, suppliers, the public at large (in the event of torts), and the state.

Thus, the corporate form itself is means of providing public insurance to corporate shareholders against the loss of their wealth. The justification for providing this insurance is to induce wealthy shareholders to bear risk for the economy as a

whole: the shareholders bear the first loss in exchange for being assured that that loss is limited, and reaping significant rewards if the corporation has profits instead of losses. Indeed, the only economic function of the shareholders in a publicly-listed company is to bear risk: the shareholders do not control the company and have minimal say in its management.

Private-equity-owned companies are, as the name implies, privately held. As a result, the private equity fund does control the company. In practice, however, the owners of the private equity fund do not control the companies they own, instead they are limited liability partners who, just as in the case of standard corporate structure, cede control to a group of managers. Just as in the case of corporate shareholders, the only economic function that the limited partners in a private equity fund perform is to bear risk for the economy. Indeed, it's not entirely clear what the macroeconomic function of this two-tiered limited liability structure would be – though it has obvious private advantages to the managing partners of the private equity fund who get to combine control with the public insurance of limited liability for the actions of the firms they control.

Because the function of the shareholders in a public company and of the limited partners in a private equity fund is to bear risk, the idea that government support would protect the shareholders and limited partners from losses doesn't make a lot of sense. The shareholders in a public company and in a private-equity-owned company can be replaced by a Chapter 11 bankruptcy process that converts debt into equity while allowing the corporation to continue operating. Indeed, this is the basic nature of our economic structure. The reason to avoid shareholder bailouts has nothing to do with "moral hazard." Afterall, the shareholders and limited partners don't even control the corporation. The reason to avoid shareholder bailouts is because the shareholders are there to bear risk for the economy.

A full understanding of this point requires an understanding of how private sector risk-bearing plays an important role in supporting state capacity. That is, the reason certain governments have a remarkable capacity both to borrow and to serve their citizens is because these governments are not alone in bearing risk, but have mechanisms that take advantage of private risk-bearing capacity. The financial revolution and the subsequent development of the public stock market provides the best illustration of this point.

The financial revolution represented a turning point in European history, because it took place in Britain and was the foundation of Britain's capacity to win wars and build an empire (Dickson 1967; Roseveare 1991; Baugh 2011; Scott 2011). At the heart of financial revolution sat reliance on private sector risk-bearing both in the form of the Bank of England, which was chartered as a corporation, and in the form of private sector finance of British long-term debt. The market in public sector debt was the foundation upon which the market in corporate securities developed in the early 18th century.

From 1660 to 1763 Britain experienced a financial revolution that had several components: (i) the transformation of the state including (a) an annual budget approved by Parliament, (b) capacity to impose taxes and have them accepted by the populace, and (c) the growth of a professional and highly specialized administrative state; (ii) the transformation of government debt into annual issues of marketable, redeemable, long-term debt bearing an interest rate of 3 to 5%; and (iii) the transformation of private lending through both the Bank of England, which stabilized the value of sterling, and an active market for government debt, which supported borrowing from both domestic and foreign lenders.

The financial revolution has been widely recognized since the Seven Years War as the foundation of Britain's pre-eminence during the years in which the Empire was consolidated. A comparison with 18th century France can illustrate how the financial revolution affected borrowing capacity: in the Seven Years War much of the French war effort was financed by short-term debts to suppliers at relatively high interest rates (Scott 2011: 433). Not only was this a less effective means of raising funds for the war, it left France with a crushing burden that destabilized the French financial system (ibid.). For this

reason, the French sought (unsuccessfully) to emulate the British financial system which was described as "one of the wonders of the world". (Ibid. See also Baugh 2011: 15).

It is worth emphasizing some of the aspects of the British system of public debt that made it so effective. The interest payments on the debt were fully funded by taxes. The debt was technically perpetual, which protected the state from the risk of being forced into default, but the debt was in practice supported by a variety of mechanisms for redemption. The relatively high interest (4 or 5%) debt that was issued at the height of a war was typically redeemed in a peacetime conversion to lower-rate debt. The long-term debt was also supported by a "Sinking Fund" that dedicated specific tax revenues to the purpose of paying off the debt. While there was an active market in government debt, the state did not raise funds on the market (despite efforts to do so in the mid-18th century). Instead, the state placed its debt privately with wealthy financiers who had the capacity to hold the debt over time and could use the public market to slowly rebalance their holdings of public debt (Dickson 1967: 226-28). Finally, in exigent circumstances the British government also had access to short-term debt, the issue of which was supported by the Bank of England. On the other hand, this short-term "unfunded" debt typically comprised 5% or less of the total debt burden, and even at the height of the Napoleonic Wars rose only to about 8% of the debt burden (see Thomas and Dimsdale 2017: Table A29).

A cornerstone of the Financial Revolution was the Stock Exchange where the long-term government debt traded – allowing the private investors a way of exiting their investment and providing market liquidity to the government debt. After the Napoleonic Wars the issues that traded on the Stock Exchange expanded to include a large number of private issues, and by the middle of the century there was a robust market in corporate securities.

This review of 300-year-old history is just a reminder that private sector risk bearing sits at the very heart of state capacity. Government capacity is not some kind of stand-alone phenomenon that can work independent of private sector risk bearing. It is instead a consequence of a robust institutional structure that makes it possible for burdens to be widely shared, not just by taxes but also through private sector losses on risky investments.

In short, the reason not to bailout corporate share-holders is not "moral hazard," but because such a bailout represents a shift in the nature of burden sharing in a capitalist economy. It is the norm in macroeconomic models to treat corporations as pass-through vehicles (precisely what a corporation is not from a legal perspective), to abstract from bankruptcy (Goodhart and Tsomocos 2011), and to assume that the corporation's income flows directly back to the shareholders – or even as in the case of Guerreri et al. (2020) back to the workers. The deficit of careful analysis by macroeconomists of the corporate form and of the role that it can play in macroeconomic risk-bearing naturally raises doubts about the degree to which macroeconomists can provide useful advice about the structure of corporate bailouts. The legal profession has the advantage of having thought long and hard about these issues. This debate matters today, because the Federal Reserve has – appropriately under the circumstances – stepped in to provide extraordinary support to US corporations. These actions have taken place so quickly, however, that the end game of these new policies has not yet been specified. Almost all of the support to the larger corporations is in the form of debt, and the Federal Reserve will, when the public health crisis is over, almost certainly have on its hands some corporations that are viable only as long as they have continued access to Federal Reserve lending and will be bankrupt without it. The lawyers will argue that government supported and managed bankruptcies should take place with significant losses to shareholders – even though such a policy will undoubtedly cause significant distress in the stock market. What will the macroeconomists say? Hopefully they will update their models and join the lawyers in demanding that the private sector, not just the government, bear the losses of coronavirus.

Money in the Time of Coronavirus
O.P. Abello, Getting to Know a Brave New Fed

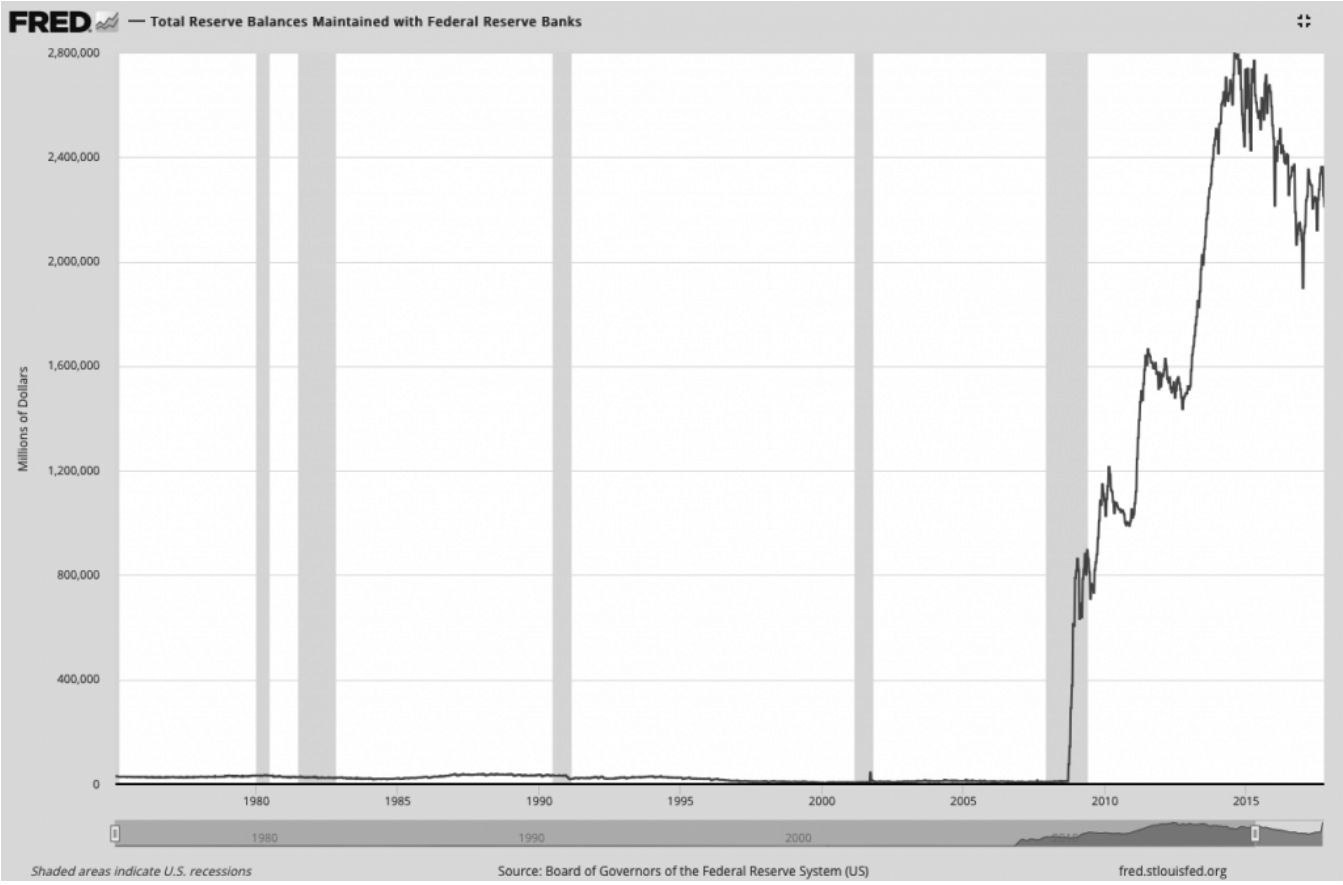
April 29, 2020

Oscar Perry Abello, Next City

For me, as a journalist covering the economies of cities across the United States, this journey started maybe four years ago. That's when I first stumbled upon this chart, showing total reserve balances at the Fed.

Until October 2008, it had been relatively low and stable, consistent with what I had learned as an undergrad economics student — that banks are required to keep a certain level of reserve balances in their accounts at the central bank as part of a normally functioning financial system.

But then in October 2008, clearly something had radically changed. All of a sudden, reserve balances shot up to levels that seemed to make no sense, and then kept on going. And it was almost all excess reserves — orders and orders of magnitude beyond required reserves.



As a journalist covering the economies of cities, my instincts flared up. Was there some kind of insidious modern day redlining at work here? I wasn't sure at the time what it really meant, but at the surface level it certainly seemed plausible that banks were "sitting" on huge amounts of excess reserves at the Fed while every neighborhood I was writing about was struggling to get loans for homeownership or small business. But I wasn't going to go around making such wild accusations without backing it up with more evidence, data, and perspective.

So, I fired off a few emails to some of the most experienced community bankers I knew, but who had been several years retired from running a community bank. They weren't sure what was going on either. I couldn't figure it out in between deadlines, so I filed it away on the mental shelf for a while.

Then came Coronavirus. In response to the economic fallout from this pandemic, unprecedented in both the scale and speed of economic disruption, the Fed suddenly seemed determined to bully its way onto my beat. In just one day, March 23, it leapt into action in ways that took years after the onset of the last financial crisis.

The week after that, on March 31, I published my first story about the Fed, focusing on its latent powers to buy municipal bonds and how close it was to finally using them for the first time. Just a hint of what it could potentially do.

But that was just one story, and I needed to keep digging. For the sake of serving my readers, I needed to understand what the Fed was really doing and how it was going about its work.

I had a working understanding of how the Fed operates. But now that it was becoming more directly active as a player in my coverage area, I needed to understand it as intimately as I understood commercial banks and credit unions and loan funds and foundation endowments and private capital markets and public capital markets — all the pools of capital I had reported about over the past few years with a focus on how they reach some neighborhoods more than others.

I looked first where I look with every other financial institution — its balance sheet. And once again I came across the baffling fact that banks' reserve balances made up the largest share of the Fed's liabilities, even more than currency in circulation at that moment and for much of the previous decade.

It was at that point I finally understood that all those reserves on the Fed's balance sheet clearly had something to do with all the things that were now popping up on the other side of its balance sheet and that seemed to be driving some experts mad with fears of inflation and general "running amok."

My understanding evolved from my initial instincts. Banks weren't sitting on cash they should have been lending out. As I have come to learn over the course of a few weeks, those reserve balances at the Fed were actually just a by-product of the central bank's response to an economic crisis — some of it left over from the last crisis, and even more in response to this one.

Very little if any of this might be new to people who study the Fed all the time, but I needed to connect the dots in a way that worked for me as a journalist, so that I could later connect the dots for my readers.

Poring over papers upon papers, mostly from various research shops at Federal Reserve branches around the country, I eventually came across one 2009 paper from the New York Fed, the heart of it all, explaining how the overall level of reserve balances is based solely on the actions of the Fed, and not any decisions on the part of banks. It sounded crazy at first, but the paper explained everything using the thing that made the most sense to me as an economics journalist — balance sheets.

As that paper explained, even the Fed still needs to keep its balance sheet balanced. When the Fed began creating emergency liquidity facilities in December 2007, in order to balance its balance sheet, the Fed decided initially to sell off Treasury securities and replace them with the emergency liquidity facilities. That kept the initial changes only on the asset side of its balance sheet.

But by mid-2008, the crisis wasn't even fully realized yet and it was clear things were already going to get worse before they got better. Lehman Brothers collapsed in September 2008. The Fed had already sold off a lot of Treasury securities and it

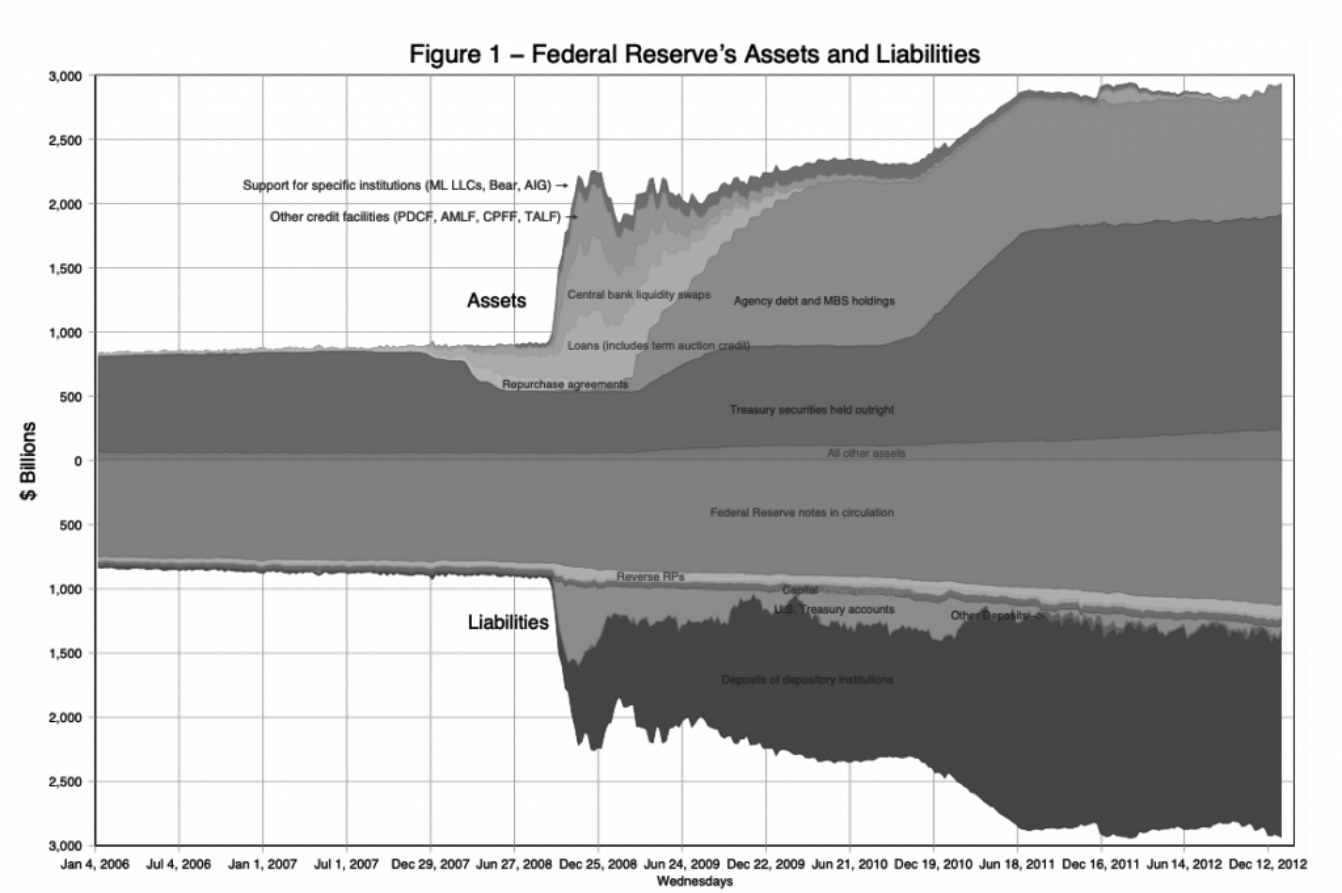
was further expanding its liquidity facilities as the financial crisis got worse. The Fed wasn't about to sell all its Treasury securities. So, the liquidity facilities started showing up on the other side of the balance sheet as bank reserve balances.

As the New York Fed paper also noted, for a little while the Treasury tried creating a mechanism to drain some of the excess reserves on the liability side of the Fed's balance sheet, but even that mechanism couldn't keep up with the growth of the emergency liquidity facilities.

By October 2008, to use words that would become immortal half a decade later, the Fed finally decided to "let it go" — to just let the reserve balances start building up within the system and worry about it later.

And the Fed would need to really "let it go" with what would come next — quantitative easing. The first round, of course, started in December 2008.

While serving a different purpose than emergency liquidity facilities, the effect I could see on the liability side of Fed's balance sheet was the same. Quantitative Easing meant buying huge quantities of assets on one side — federally guaranteed mortgage-backed securities and longer-term Treasury securities — which in turn meant even more reserve balances started building up on the other side of the balance sheet. As I came to understand, the Fed was using its unique power to create deposit liabilities on its own balance sheet at a scale that was once thought purely theoretical and potentially disastrous in theory as a cause of rampant inflation. But those fears were all in theory.



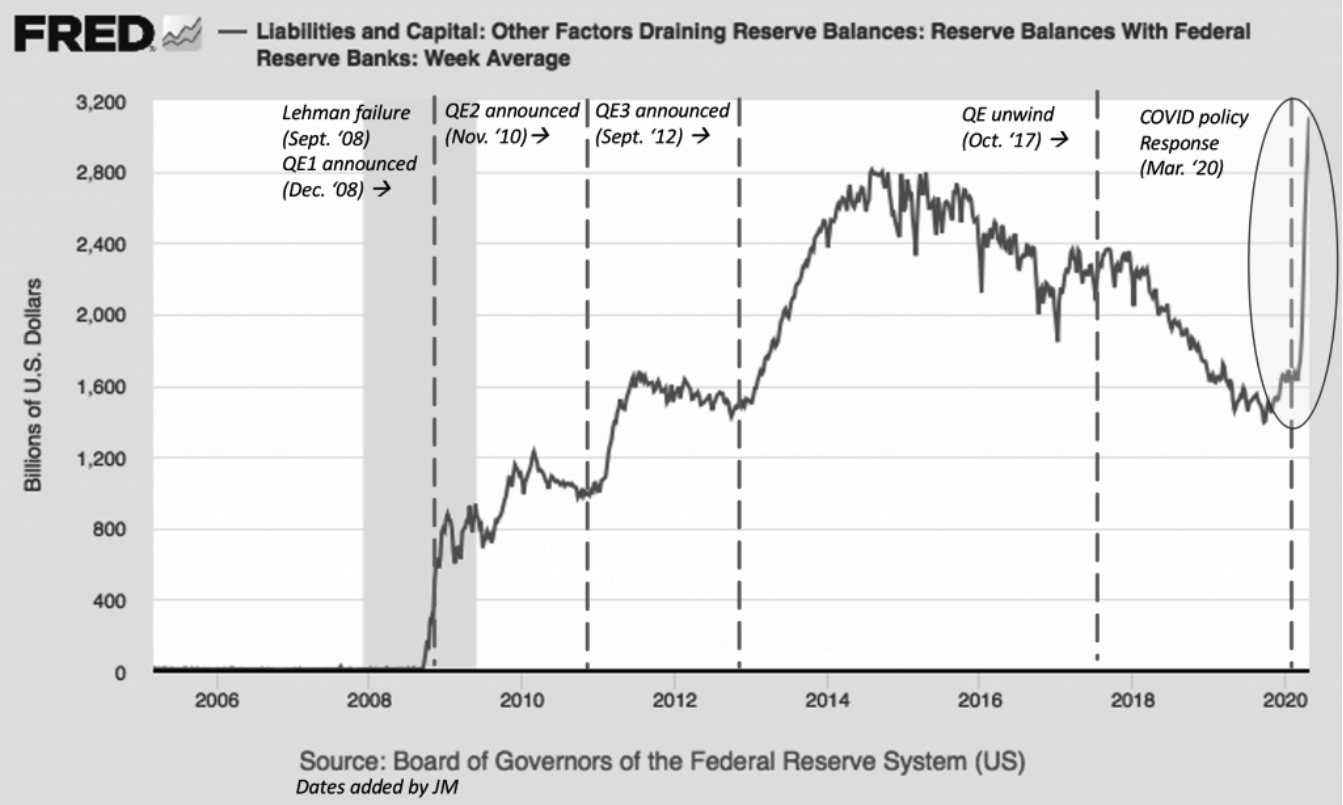
Source: Carpenter et al. (2013)

By October 2009, reserve balances broke $1 trillion for the first time ever. By August 2014, after three rounds of QE on one side of the balance sheet, reserve balances on the other side peaked at nearly $2.8 trillion. The Cleveland Fed wrote a 2015 briefing about it calling excess reserves, "Oceans of Cash."

There was for a time a huge question of when or if the Fed would let reserve balances come back down, as assets on the other side of its balance sheet matured or the Fed sold them back to the market. From 2014-2019, that's exactly what one paper from the Kansas City Fed showed was happening, quietly, smoothly, behind the scenes. That paper also gave a useful but very broad breakdown of which banks it was — foreign banks, large and smaller domestic — that had reserve balances built up and winding down in their accounts at the Fed. By September 2019, total reserve balances at the Fed were back down to $1.4 trillion.

Then came the economic disruption from the COVID-19 pandemic. Quantitative Easing, episode four, began on March 23 — "a new hope," the St. Louis Fed called it. Between March 11 and April 1, total reserve balances went up a trillion dollars. On April 9, the Fed announced $2.3 trillion in emergency liquidity facilities that touched more parts of the economy than it has ever touched directly before, including small businesses, the corporate bond market, and the municipal bond market.

By April 22, total reserve balances broke $3 trillion for the first time. By now, whatever fears might have existed inside the Fed before 2008 about reserve balances building up within the system had either been re-educated away or retired or were being flat-out ignored. It seemed not to matter anymore. This was a brave new Fed.



Beyond the mechanics of what was happening with the Fed and its balance sheet, as a journalist it became important for me to connect the dots to the CARES Act. The political process had found a way of explicitly shaping the Fed's liquidity facilities. While far from perfect, what political process is perfect?

The key was the $454 billion Emergency Stabilization Fund created under the CARES Act. Nathan Tankus, in his very helpful recent writings about the Fed, calls it an "accounting gimmick." I don't dispute his characterization of it from a technical perspective, but in another sense, those funds are the vehicle by which the political process is shaping the Fed's crisis response.

Section 4003 of the CARES Act lays out the process for how the Emergency Stabilization Fund gets divvied up. The legislation directs the Treasury Department to use those dollars to make "loans, guarantees or other investments" into various emergency liquidity facilities, and the Federal Reserve comes in with its balance-sheet fire power to leverage the Treasury's initial investment.

Subsequently, the Treasury allotted $75 billion for the two corporate bond market emergency liquidity facilities, which the Fed is leveraging up to $750 billion in bond-buying power. There's $35 billion initial investment from the Treasury for the municipal bond market facility, which the Fed is leveraging up to $500 billion.

Most remarkable to me was the Main Street Lending Program. The Treasury Department allotted $75 billion from the Emergency Stabilization Fund for this facility, and the Fed is coming in with $600 billion behind that. That $600 billion will go out in loans to eligible businesses, under terms that include one year of deferred payments, accountability measures to retain employees, limits on executive compensation, and prohibitions on stock buybacks or paying off other debt using Main Street loan proceeds. The $75 billion will cover for any losses on the loans up to that amount before the Fed eats any losses.

Using loan participations, private lenders will underwrite and originate Main Street loans and the Fed will come in behind the scenes to supply 95 percent of the borrowed amount, leaving 5 percent on the private lender's balance sheet to make sure they have some skin in the game. Having reported a lot recently about the Bank of North Dakota, the only state-owned bank in the country, loan participations by a public entity weren't so far-fetched to me, but I'm sure they would seem so to others around the country.

With a $1 million minimum loan size, the Main Street Lending Program is not quite accessible to most small businesses, but that minimum could go away later if the Fed and Treasury can be convinced of the need — or maybe Congress can straight up order them to eliminate the minimum. So, in summary, the Main Street lending facility is effectively one line on a term sheet away from being accessible to the vast majority of small businesses in the country, provided they were in good financial shape before the pandemic.

The municipal credit facility also seemed to have shortcomings, but not entirely unworkable, and outcries at initial terms and eligibility have already altered it. Initially it was only available to cities with at least one million people, or counties with at least two million people, leaving out a lot of hard-hit places. On April 27 those thresholds changed to counties with at least 500,000 people and cities with at least 250,000. Maximum maturity of two years initially seemed a bit shorter than ideal, and that changed to three years. The Fed is even considering allowing additional public entities to participate, like school systems, housing authorities, transit authorities and other public entities that issue revenue-backed bonds.

As a reporter, these were all brand new and fascinating lines of questioning about the ways that each facility works and how each would be received among the private financial institutions with the most potential to make them work for the most vulnerable communities.

The Fed is flexing muscles it never used before 2008. The next time around, people need to know, they can demand that Congress make the Fed open up existing facilities to more people and places. They can demand that some of "Emergency Stabilization Fund 2.0" should be allocated to capitalize vehicles that do other things justified under the rubric of "stabilizing the economy in a crisis."

What if, next time around, the Fed capitalized a small facility to make loans to black-owned businesses or to buy preferred equity shares in MDIs? A secondary capital facility for credit unions? Or a facility to acquire distressed residential or commercial real estate and sell it back to current occupants or to the market with deed restrictions for permanent affordability? What if there were a network of smaller facilities that would be administered by state or local governments —

making them de facto public banks, with equity from Treasury as initial capital bases and leverage from the Federal Reserve?

It's tempting to speculate about having the Federal Reserve's balance sheet firepower behind priorities like those. But, as a journalist, I don't have any horse in the race when it comes to which ideas or causes for advocates to back.

What I do have is a journalistic mandate to examine whether financial institutions, public or private, are able to support the people and places that, based on historical patterns, are most likely to be left behind in a crisis or a recession. The Fed is no longer just a systemically essential but distant player in that narrative; it was suddenly, squarely within my beat and doing new things that people deserved to understand better.

The Fed's post-October 2008 way of operating implies new ways of making demands and holding public officials accountable. It changed in ways that needed to change how I worked, and should probably change how at least some of my readers work. People who care about economic justice and righting the wrongs of history need to know exactly how this brave new Fed works in order to understand more clearly what to demand and how to make demands of an institution that is supposed to be working on behalf of us all.

D. Kennedy, The Fed Should Bail Out Low-Income Tenants and Not Just Banks and Landlords

May 12, 2020

Duncan Kennedy, Harvard Law School

In the last financial crisis millions of American home owners lost their homes while low-income renters were evicted *en masse*. This time the policy consensus is that renters thrown out of work by the crisis are already bearing the brunt of what may be an even worse disaster. For extremely low-income (ELI) households, the COVID crisis is aggravating what is already a highly distressed environment. The number of affordable units for ELI households is only 36 per 100, reflecting a shortage of 7 million units. 71% of ELI households are already spending more than half their income on housing (all figures from NLHIC 2020). There are many worthy plans on the table to avert the COVID rental crisis, pushed in editorials and op-eds in the New York Times, the Washington Post and the Boston Globe. They all have the serious drawback that they require not just legislative action but taxpayer dollars in a hopelessly polarized political environment.

An alternative plan would be for the Fed to exercise, creatively, its vast powers over the monetary system to relieve poor tenants and prevent decimation of the remaining supply of low income housing. The Fed could buy mortgage debt, secured by low-income housing. Then it could bail out low-income landlords in exchange for tenant protection. The Fed would need Treasury support in order to protect against credit risk; without that protection the Fed would not be able to lend under current law. But the Treasury has generously extended protection against credit risk from its existing Exchange Stabilization Fund for large corporations, municipalities, the fossil fuel industry, and a variety of other borrowers. Surely the Treasury would do same to stop meltdown in the market for low-income mortgages.

The Fed should offer to buy the debt for more than the value of the underlying property but for significantly less than the face value of the mortgages. Creditors choosing to sell their debt would liquidate their losing investments for the price of a "haircut."[1] Mortgage debt in hand, the Fed's bailout of landlords and tenants would be done through the issuing banks that now hold the servicing contracts with the investors in the mortgage-backed securities into which individual mortgages are bundled. The Fed as creditor then instructs the servicing banks to forgive or defer some or all of the mortgage carrying charges of qualifying owners of low-income rental housing.

In exchange, landlords agree to a moratorium on evictions for non-payment and to forgiveness or deferral of the rent obligations of qualifying tenants. Landlords also agree to limits on their power to take units out of low-income residential housing use, and to strict enforcement of maintenance standards.[2]

The plan is based on the prediction that crisis conditions will push (are pushing) down the market value of the low income rental stock so that buildings are worth less than the face value of their mortgages – and that those conditions will persist well beyond the present moment.[3]

A realized plan to take advantage of the moment would be full of devilish details such as: how much if any means testing for tenants; what mix of rent forgiveness and forbearance; how big a haircut for the investors in mortgage backed securities; what restrictions on landlords' rights to alienate their now rent-restricted property; how the Fed would exercise or dispose of its new creditor rights.

A big objection is likely to be that the Fed doesn't know how to administer loans directly and certainly not low income loans containing complex tenant protections. The answer is that the servicing banks, usually originators with their own sub-servicers, will administer for the Fed just as they did for the holders of the mortgage when it was part of a mortgage-backed security. The Fed will have to supervise the servicers but not administer loans directly. This is not out of line with standard portfolio maintenance.[4]

As negotiated, the plan could be watered down so as to do practically nothing for low income tenants and a lot for landlords and holders of mortgage backed securities, or it could signal a vast gain for the working poor.[5]

The argument for a seriously pro-tenant version of the proposal goes beyond the mere assertion that if it worked it would benefit low-income tenants faced with economic wipe out and possible homelessness. Here are some of the assumptions that justify the various parts of the scheme as a response to the peculiar circumstances of the health crisis within the housing crisis that has been unfolding in metropolitan areas all over the country.

The various relief and bail out provisions of state and federal law will not come close to closing the rent gap for newly unemployed workers. The unemployment insurance system, backlogged with unprecedented claim volume, will not substantially overcome the gap for many months. Millions of workers now unemployed are not covered in the first place. The CARES Act provides certain forbearance and eviction moratorium to landlords and tenants in multifamily housing with a federally backed (=GSE or FHA) mortgage. But these provisions only cover one quarter of rental units, and even for those lucky few, protections are of limited duration. These provisions are also already running into administrative difficulties.

Owners of low income housing will see a precipitous decline in their rent rolls and in the present value of their equity in their buildings. Rent rolls will not cover mortgage covering charges, real estate taxes and current maintenance expenditures.

Among the decisions owners will have to make, a big one will be when to exercise their absolute legal power to evict tenants (except the very few represented by expert legal services lawyers) for failure to pay even part of a single payment when due, regardless of hardship. One possibility will be to empty a building and put it on the market not for low income housing but for conversion to middle or upper-income use. Another will be to forgive rent to the extent necessary to keep a building occupied while cutting back or eliminating maintenance, "milking" the building as it deteriorates.

The long-term trend in many metro areas of displacement of low income tenants in favor of middle and upper-income buyers will continue, even though middle and upper-income groups are losing wealth and income in the recession. Income inequality keeps bargaining power unequal in the housing market whether the economy is going up or down.

The recession will paralyze high cost upper-income development by new construction away from the city. Falling prices will make conversion of existing units in the remaining low income neighborhoods in and near the city much more desirable. Banks and brokers and builders will arbitrage units out of low into middle and upper income use, devastating what is left of affordable housing in the metro area.

A Fed intervention by conditional bailouts might prevent this result. (Note that passing a rent control bill with tenant eviction protection could accomplish some of the same.) That would be a major collateral benefit of preventing a chaos of eviction and displacement in the immediate future as low income people lose their ability to pay rent.

The beauty of it all: no legislative action required. No new taxes – federal, state or local. The Fed would be doing good first of all for big business, stimulating the economy through the familiar form of quantitative easing. The conditionalities for once support the survival of the poor rather than attacking them in the name of austerity.

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1. What it is a "haircut" you ask? In ordinary times, property value (say, $10 million) is greater than mortgage face value (say, $8 million). But in crisis, property values can drop such that the relationship inverts. For example, the mortgage can become $2 million "underwater", meaning the property's liquidation dropped to $6m. In a stylized example, the Fed bids, say, $7m for the mortgage. The difference between the bid and the property price (=$7 million -$6 million) is the bailout to the seller; the difference between mortgage's face value and the Fed's offer ($8 million – $7 million) is the "haircut" or loss to the seller. ↑

2. Both my friend and a hyper critical semi-sympathetic legal economist X remind me that the structure of mortgage backed securities makes it difficult to identify creditors. X says that the trustee for the first syndicate that bought this mortgage to bundle it is the first responsible party, and could sue. But according to him the trustee could reassemble and sell the dispersed fragments by agreement of the dispersed crowd of the fragment owners, with no pre-set process to unbundle or deal collectively. It does seem that unbundling will involve substantial transaction costs, for someone. It also seems plausible that if the Fed offers hundreds of millions of bail out money to banks struggling with massive business failure all around them, quick witted finance entrepreneurs will figure out a way to get a share by helping the creditors get theirs. ↑

3. The Fed offers to buy mortgages at prices that reflect the extent to which the loan is under water. Everyone thinks the crash in rent means possible massive landlord default and concomitant loss in market value and danger of foreclosure. The creditors will only sell to the fed if something like that is happening. The amount of the haircut negotiated by the fed with the MBS holders depends on the level of distress and could be done for example, by a single fed offer to everyone or different offers for different situations.

   The whole idea is that there might be a lot of distressed cases (listen to the moaning from the industry) but even a few would be all to the good. So the proposal is not dependent on there being some large minimum number of properties underwater by a particular amount. ↑

4. The concessions that need to be enforced cover:

   -rent, building maintenance and evictions (again, forbearance or forgiveness, eviction moratoria with or without good faith eviction protection), and

   -the agreement not to take the units out of the low-income stock (for some period of time).

   The part that needs enforcement is the landlord's promises to the tenants. The prohibition of conversion to higher-income use is easy because the landlord can't convert the building without getting the Fed's permission as mortgagee. That involves simple portfolio management.

   The enforcement of the tenant protections is more complicated. The servicing of the mortgage is in the hands probably of the initiating bank, contracted out to a servicing firm. That firm collects the landlord's payments and transfers them to the Fed. *The servicer* enforces tenant concessions by requiring the landlord to report rents charged, evictions for cause, code inspections and the like. Lying is a federal offense. The section 8 program enforces some tenant rights through this kind of mechanism.

The second enforcement mechanism is tenant self interest in the reduced rent, maintenance obligations and eviction protections. The Fed would require landlords to give a lot of information to tenants and would make it clear to the local legal services bar that it welcomes complaints *to the servicer* of landlord abuse of its agreement. Portfolio management of this kind would be new, but not *that* new, given that the Fed is already in the business of enforcing its bank operation regulations for the benefit of bank customers (analogous to renters). ↑

5. The outcome of the plan is that the losses of income suffered by renters are born as follows:

-some portion by mortgage-backed securities owners (according to the size of the haircut);

-some part by landlords, who get carrying charge relief to avoid foreclosure but have to make all kinds of concessions to tenants;

-some part by tenants, in multiple ways determined by the amount of rent left to pay after forbearance and not forgetting the indirect benefit of the preservation of the stock;

-and some part by taxpayers, who assume the risks of default on the mortgages the Fed has bought.

Readers have had a lot of trouble grasping that this scheme distributes the cost of tenant relief among all parties with no predetermined specific outcome: it all depends on negotiations. ↑

G. Epstein, Human Capital Bonds and Federal Reserve Support for Public Education: The Public Education Emergency Finance Facility (PEEFF)

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Introduction

Public education – K-12 and public higher education – have been hit hard financially by the Covid-19 Crisis. General financial problems afflicting state and local governments – the fall off in tax revenues and increased health and public safety expenses associated with dealing with the pandemic – contribute to the shortfall. Specific increases in costs and declines in revenues afflicting the public education sector itself add to the impact. Given that most states have balanced budget provisions, states and local governments need massive financial help from the Federal Government in order to provide basic services to its residents, including public education. Estimates of the shortfall facing state and local governments suggest an amount approaching $1 trillion dollars through 2021.

In principle, there are multiple mechanisms that could raise and channel these needed funds to state and local governments including public education. In particular, grants from the Federal government would be, far and away, the best solution to the fiscal problems of states and locales. However, even in the best likely scenario, it is unlikely that sufficient funds will be forthcoming through this route.

Fortunately, there are additional available financial channels, namely via the Federal Reserve System (Fed). The Fed has already committed itself to providing an "unlimited" amount of liquidity to the US financial system to prevent a meltdown and to provide credit to some sectors of the economy. Characteristically, this support has been primarily, if not exclusively, for financial markets and businesses. The Fed has created most of these funds through declaring the equivalent of a financial emergency under the authority given to it by section 13(3) of the Federal Reserve Act.

The Federal Reserve has so far made available up to $6 trillion to the financial markets through multiple 13(3)-sanctioned financial facilities, including a number revived from the group it used in the Great Financial Crisis of 2007-2009. Many knowledgeable observers believe this sum could get much higher. In fact, as the crisis has worsened, the Federal Reserve has been expanding almost weekly the kinds of financial institutions and markets it has been willing to support. These have included money market funds, commercial paper markets, and corporate bond markets. The Fed has even recently expanded its liquidity support measures to "junk bonds" and private equity firms. If the Federal Reserve can support "junk bond" issuers and private equity firms, it can certainly support state and local governments and public education.

Indeed, among the new facilities that the Fed has created is a *Municipal Liquidity Facility (MLF)* which currently has the capacity to buy up to $500 billion of state and municipal debt. This facility was created in order to calm the massive municipal debt markets which had been experiencing low liquidity, large spikes in interest rates, and financial instability at the onset of the crisis. In principle, this facility could serve as a mechanism to channel needed funds to public education. With $500 billion in lending capacity, this would be an easy way for the Federal Reserve to begin to support the needs of public education. For example, the MLF could be used immediately to help state governments refinance outstanding debt at

much lower levels, given that one of the goals of recent Federal Reserve policy has been to drive interest rates lower. This could free up millions of dollars of state funds for covering other Covid-19 costs.

Several obstacles stand in the way of public education accessing sufficient, useable funds through this mechanism. One is that education will be competing with many other institutions and interests for funds from the MLF facility, including those financing infrastructure projects and economic-development projects. Public education would simply be one of many interests vying for these funds and might lose out in this competition. A second potential problem is that the dominant way in which borrowers can access these funds is by identifying a clear revenue stream to finance interest payments and repayment of the loans from the Fed. But in the context of this public emergency, school districts and higher public education may find it difficult to identify a viable revenue source and do so in a relatively short time frame. (The MLF loans have a three-year maximum duration). Finally, as mentioned earlier, most states have balanced-budget requirements for current expenditures and regular operating expenses for education are considered current expenditures. Thus, borrowing to finance current expenditures for public education is likely to crowd out expenditures for other publicly useful activities or require governments to raise tax revenues, which is not likely during the crisis.

To address these problems, I explore several remedies. For one thing, many of these restrictions could be loosened or eliminated. The Federal Reserve has already loosened the rules governing the MLF once and they could do so again. Alternatively, a new facility might be needed that could best address these obstacles.

Public Education Emergency Finance Facility (PEEFF)

With the approval of the Secretary of the Treasury, the Federal Reserve could establish, under section 13(3), a facility that would be designed specifically to provide emergency funding for public education for our children and young adults. I call this the Federal Reserve **Public Education Emergency Finance Facility (PEEFF)**. This facility would provide both short and longer-term support to public education in order to help public education survive the pandemic and continue to provide needed education. Like the MLF, this facility could accept paper issued by state and local governments for the purpose of supporting public education.

The terms of this fund could be tailored specifically to the needs of public education. These terms could include lower interest rates and fees, longer terms (beyond the three years), and the ability to accept paper that it is not tied to immediate revenue generation but to revenue that could be generated over a longer terms period (or forgiven entirely). The PEEFF could be created in a form similar to the MLF, with the creation of a Special Purpose Vehicle (SPV) with capital put up by the Treasury department (which has been allocated under the CARES act). Alternatively, it could be a stand-alone facility, such as some of the other emergency facilities created by the Fed in the recent pandemic. There is no law requiring it be created through a SPV structure with Treasury backing. (It should be noted, however, that as of this writing, not all of the initial $450 billion allocated by the CAREs act to back up facilities at the Fed have been allocated.)

As long as the state is borrowing through its current spending authority, these borrowings might be subject to the balanced budget constraint.

State and Local Human Capital Bonds

However, if the borrowings could be put on the capital budgets of states, this could give the states more flexibility. States could innovate by creating *Human Capital Bonds* that the Federal Reserve could purchase.

Most states' balanced budget requirements apply only to the budgets for current spending. These states have separate capital budgets for longer term investments including new schools, new buildings on college campuses, new roads, etc. that

are designed for borrowing. One way around the balanced budget problem is to identify this emergency education spending as a type of capital spending and put it under the capital budget. This would entail denoting these borrowing instruments as investments in **human capital,** using parlance long established in the economics profession. These **human capital bonds** could be issued under states' capital budgets. An additional innovation would be to allow these bonds to be issued for longer than the current limit in the MLF of 3 years.

The MLF and/or the PEEFF could in turn buy the bonds. That purchase would be in keeping with the traditional economics understanding of education as building human capital. By putting its stamp of approval on these bonds, making a market in them and providing liquidity for this market, the Federal Reserve could be essential in creating a new financing tool for a critical social and public good for our country. In addition, the Federal Reserve's financial support for these bonds would enhance their safety and help preserve the state's bond ratings.

Federal Reserve District Regional Human Capital Bonds

A further innovation would be to create a regional consortium to issue human capital bonds. Regional groupings are emerging as important innovations in the way our society is handling the fall-out from the Coronavirus. Regional differences in economics, politics and even culture are leading to these regional consortia and allow for a more flexible type of federalism to overcome acute adversity.

PEEFFs could be organized at the Federal Reserve District level, for example. The Federal Reserve Bank of Boston or the Federal Reserve Bank of San Francisco could host a PEEFF facility which issued regional Human Capital Bonds, and allocated the proceeds to states within the regions. State governments would take responsibility for allocating these funds for public education and for ultimately servicing their share of the bond issue. This regional plan builds on Federal Reserve practices developed during the Great Depression and enhanced during World War II.[2]

The Regional Federal Reserve approach has several advantages. First, it could help states overcome state-level debt issuing restrictions and ratings problems while being able to take advantage of regional risk-sharing facilities, lines of credit, and discount facilities through the District Federal Reserve. The District Fed would thus be able to reduce the risks to participating states. In addition, a Federal Reserve District Facility could help develop mechanisms for a more accountable and democratic Federal Reserve through effective elements of a more decentralized Federal Reserve System (see Epstein, "Reforming the Federal Reserve for the 21st Century", in Epstein, *The Political Economy of Central Banking: Contested Control and the Power of Finance*. Elgar Press, 2019, chapter 23.) Building a more democratic Federal Reserve starting at the Regional level would build on a founding idea of the US central bank, but would help transform it into more accountability to the people, rather than to the bankers.

Conclusion

In addition to the huge direct human toll, the Covid-19 crisis is de-railing many crucial social and public functions, including the education of the next generation. While federal government revenue-sharing would be the best way to confront this problem, the Federal Reserve can also contribute by creating additional needed resources and allocating them to state and local governments, as they have created many billions of dollars for corporations and financial institutions. I have indicated how the current Municipal Liquidity Facility might be utilized for this purpose, and how a new, specially-targeted educational facility, the Public Education Emergency Financing Facility, could serve the purpose of keeping public education afloat during this trying time. In either event, the Federal Reserve's support of a new public financial instrument, Human Capital Bonds, might help funding of this crucial social good, especially in the context of an economic and social emergency.

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[2] Pollin, Robert. 1993. "Public Credit Allocation through the Federal Reserve: Why it's Necessary; How it Should Be Done," in R. Pollin, G. Dymski and G. Epstein, eds., *Transforming the U.S. Financial System: Equity and Efficiency for the 21st Century*, M.E. Sharpe Publishers, pp. 321-354. Lilia Costabile & Gerald Epstein, 2017. "An activist revival in central banking? Lessons from the history of economic thought and central bank practice," The European Journal of the History of Economic Thought, Taylor & Francis Journals, vol. 24(6), pages 1416-1439, November.