

# PROTECTING FINANCIAL STABILITY: LESSONS FROM THE COVID-19 PANDEMIC

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## ABSTRACT

*The COVID-19 pandemic has produced a public health debacle of the first order. But the virus has also propagated the kind of exogenous shock that can precipitate—and to a certain degree did precipitate—a systemic event for our financial system. This still not fully resolved systemic shock comes a little more than a decade after the last financial crisis. In the intervening years, much has been written about the global financial crisis of 2008 and its systemic dimensions. Considerable scholarly attention has focused on first devising and then critiquing the macroprudential reforms that ensued, both in the Dodd-Frank Act and the many regulations and policy guidelines that implemented its provisions. In this essay, we consider the coronavirus pandemic and its implications for the financial system through the lens of the frameworks we had developed for the analysis of systemic financial risks in the aftermath of the last financial crisis. While the COVID-19 pandemic differs in many critical respects from the events of 2008, systemic events in the financial sector have a common structure relevant to both crises. Reflecting back on responses to the last financial crisis also affords us an opportunity both to understand how financial regulators responded to the COVID-19 pandemic and also to speculate how the pandemic might lead to further reforms of financial regulation and other areas of public policy in the years ahead.*

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## PREFACE

Though in the first instance a public health catastrophe, the COVID-19 pandemic also posed risks to financial stability in ways that are quite distinct from, but still reminiscent of, the causes of the last financial crisis that crested in the fall of 2008. This essay contrasts the current pandemic with the last financial crisis and then examines the steps that financial authorities have taken to safeguard financial stability against the effects of COVID-19. The essay also explores the extent to which financial regulation might be reformed and supplemented in the future to address the emerging lessons of the pandemic crisis.

Quite understandably given the pervasive and sudden emergence of COVID-19, regulatory responses in 2020 were largely ad hoc and reactive, drawing heavily on the regulatory toolkits devised in response to the last financial crisis. The response has inherently been suboptimal as government authorities have had to work to a considerable degree with the legal authorities and institutional structures already in place. Much of the analysis that follows consists of a review of those actions in comparison to regulatory responses to the last financial crisis. But our inquiry also offers preliminary thoughts with respect to prospective regulatory reforms that might more ef-

fectively deter or mitigate financial instability caused by pandemics or other unanticipated but large-scale economic disruptions in the future.

While there may be ways to expand upon the regulatory interventions designed to address the weaknesses exposed in the last financial crisis, the types of regulatory interventions needed to make the financial system robust enough to withstand ordinary systemic shocks may never be sufficient to withstand fully an extraordinary catastrophe, like COVID-19, which imposes such widespread economic disruptions of such an unpredictable duration. Although more rigorous regulatory interventions could and arguably should make the financial system more resilient in the face of this type of calamity, they might not be economically and politically feasible to fully insulate the financial system, especially as memories of past pandemics fade.

Our essay therefore also touches upon how other spheres of regulation could be reformed to try to prevent pandemics from occurring in the first place. To that end, we introduce the idea of using regulatory interventions designed to protect the financial system, as a “system,” to inform the design of regulatory interventions to protect the healthcare system, as a system—thereby helping to control the spread of localized diseases into pandemics.

## I. SYSTEMIC RISK AND THE LAST FINANCIAL CRISIS

It is in the nature of financial systems and most especially modern financial systems to organize themselves into legal entities and market arrangements that leave the financial sector vulnerable to exogenous shocks. Left to their own devices, financial firms and market participants do not fully consider the effects of their actions on the rest of the economy and so organize their activities with, at times, excessive leverage, inappropriate complexity, susceptibility to runs, and other forms of financial contagion.<sup>1</sup>

Macroprudential regulation—that is regulation to protect the financial system, as a system, as opposed to microprudential regulation focused on

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<sup>1</sup> For more complete descriptions of our views on systemic risk in financial regulation, see Steven L. Schwarcz, *Systematic Regulation of Systemic Risk*, 1 Wis. L. Rev. 1, 2–3 (2019) [hereinafter *Systematic Regulation of Systemic Risk*] (defining systemic risk as “the risk that instability in the financial system will cause a recession or otherwise significantly impair the real economy”); Howell E. Jackson, *Introduction: Thinking Hard about Systemic Risk*, in SYSTEMIC RISK IN THE FINANCIAL SECTOR: TEN YEARS AFTER THE GLOBAL FINANCIAL CRISIS 1, 8 (Douglas Arner, Emiliós Avgouleas, Danny Busch & Steven L. Schwarcz eds., Centre for International Governance Innovation 2019); see also MICHAEL S. BARR, HOWELL E. JACKSON, & MARGARET E. TAHYAR, FINANCIAL REGULATION: LAW AND POLICY, 770–78 (3d ed. 2021) [hereinafter BARR-JACKSON-TAHYAR]; cf. Steven L. Schwarcz, *Misalignment: Corporate Risk-Taking and Public Duty*, 92 NOTRE DAME L. REV. 1 (2016) [hereinafter *Misalignment*] (observing that because much of the harm from a systemically important firm’s failure would be externalized onto the public, such a firm can engage in risk-taking ventures with positive expected value to its investors but negative expected value to the public—creating a critical misalignment between private and public interests). For an elaboration of our views on the topic, see Howell E. Jackson & Steven L. Schwarcz, *Pandemics and Systemic Financial Risk* (Duke Law School Public Law & Legal Theory Series, Working Paper No. 2020-26, 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3580425](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3580425).

specific components (such as individual financial firms or markets) of the financial system—can address the problem of “systemic” risk to the financial system in two ways. First, ex ante regulatory measures can be imposed in advance of exogenous shocks with the goals of preventing major shocks from occurring and of ensuring that the financial system is less vulnerable to the shocks that do occur and also less likely to amplify those shocks into a full-blown systemic crisis. These ex ante measures are put into place in advance of a crisis. A second and distinct category of regulatory responses to systemic risk is ex post intervention that operates during a financial crisis and is designed to slow down the transmission of systemic risk, mitigate its harm, and allow the financial system to maintain critical economic functions while recovering from the exogenous shock.

In the decade since the last financial crisis, a vast effort has gone into shoring up the ability of the United States and other leading economies to reduce and mitigate the problem of systemic risk. On the ex ante side, experts have differed in their views as to whether stricter regulatory structures—like higher capital requirements or more demanding liquidity rules or organizational reforms designed to facilitate resolution of distressed firms—were sufficient (heading into the 2020s) to protect the financial system from exogenous shocks or whether the post-crisis interventions had overshot the mark and stifled economic growth. With respect to ex post interventions, the principal policy debates have been over whether, on the one hand, the public interventions of the last crisis—such as the Troubled Asset Relief Program (TARP) and the extraordinary and unprecedented measures the Federal Reserve Board took in 2008 and the years that followed—created substantial moral hazard problems by implicitly signaling to market participants that similar interventions would be available in future financial crises or, on the other hand, whether restrictions that the Dodd-Frank Act imposed on the Federal Reserve Board and other government actors to constrain ex post interventions might dangerously constrain the capacity of public officials to mitigate future financial crises.<sup>2</sup> The coronavirus pandemic has provided policy analysts an unexpected and unwelcomed opportunity to reconsider these disagreements.

## II. TODAY’S PANDEMIC VERSUS THE SOURCES OF THE LAST FINANCIAL CRISIS

The last financial crisis is best remembered for the dramatic failures (or, but for government bailouts, near-failures) of major financial firms, starting with Bear Stearns in spring 2008 followed over the summer and fall by Fannie Mae and Freddie Mac and then, most spectacularly, by Lehman, AIG, and a number of other pillars of the global economy. In that sense, the last

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<sup>2</sup> See, e.g., Hal S. Scott, *Connectedness and Contagion: Protecting the Financial System from Panics* (2016).

financial crisis presented as a top-down systemic catastrophe rather than the bottom-up feel of today's pandemic, where infections have spread out from a few isolated pockets into the broader population with stunning speed. In terms of public perceptions, the financial crisis began with the failures of these major firms, which occurred in the first nine months of 2008, although the Federal Reserve Board's liquidity facilities were rolled out over a number of months thereafter and its subsequent programs of quantitative easing lasted for many years, as did the economic consequences for the broader economy.

The immediate legislative responses to the Financial Crisis of 2008 were also primarily focused on the problems of large financial institutions. While a small portion of TARP funding was eventually directed to support individual loan modifications, the overwhelming majority of TARP funds were directed to support financial institutions and the U.S. automobile industry.<sup>3</sup> Early in the summer of 2008, Congress adopted legislation that laid the foundation for putting Fannie Mae and Freddie Mac into Conservatorships with substantial federal assistance. Only in the economic recovery packages of early 2009 was legislation adopted that provided substantial amounts of relief to individuals, and this was more in the nature of Keynesian demand-side stimulus, rather than federal aid specifically directed to households with losses directly tied to the financial crisis (such as those with underwater mortgages) as opposed to those suffering from the then deepening recession.<sup>4</sup>

Despite the prominence of big financial institution failures of 2008, the last financial crisis also can be conceptualized as having bottom-up origins. The root cause of the last financial crisis was a pattern of errors in prior market expectations about the capacity of individual borrowers to sustain mortgage payments and the sustainability of continuously rising housing prices. These expectations led to a dramatic rise in loans to finance and refinance home purchases, along with a marked increase in leverage, both at the level of households and financial firms. Similar thinking was also baked into default models of credit-rating agencies and the pricing behavior of global markets, not just for the underlying mortgage loans but also the mortgage-backed securities (MBS) into which these loans were packaged and the derivatives that guaranteed their value by reference to MBS pricing.<sup>5</sup> Those prior market expectations shifted starting in 2007 and dramatically read-

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<sup>3</sup> See Congressional Budget Office, Report on the Troubled Asset Relief Program—March 2020, at 3, 6 (2020).

<sup>4</sup> As discussed below, some analysts were calling for more aggressive relief for households in the midst of the last financial crisis, but the official response focused on interventions and support at the institutional level, prompting subsequent political reactions, such as the Occupy Wall Street movement that emerged in the fall of 2011.

<sup>5</sup> Cf. CORELOGIC, EVALUATING THE HOUSING MARKET SINCE THE GREAT RECESSION (2018) (finding that, prior to the last financial crisis, rating agency S&P modeled that housing prices could fall as much as 20%, whereas they actually fell around 33%—more than during the Great Depression).

justed in 2008 as housing prices dropped precipitously and borrowers began defaulting on their loans, causing highly rated MBS to be downgraded in creditworthiness and impairing payment on some non-investment grade MBS. The resulting uncertainty caused investors to lose confidence in the accuracy of credit ratings, not only for MBS but also for long-term corporate debt such as bonds and even short-term commercial paper. That, in turn, not only deprived businesses of capital market funding but also created profound uncertainty about the overall solvency of major financial institutions holding substantial MBS portfolios. The resulting illiquidity and volatility led to massive contagion effects, concerns about complexity, and ultimately a collapse of the financial system, resulting in a worldwide recession.<sup>6</sup>

Viewing the COVID-19 pandemic through the lens of systemic risk to the financial system (as opposed to a public health crisis), we can also consider the events of the first quarter of 2020 as an exogenous shock in which prior expectations about borrower creditworthiness and overall economic activity have proven to be profoundly incorrect. The financial system failed to incorporate, or seriously discounted, pandemic risks into loan pricing and risk models, perhaps because a pandemic is—just as the 2008 financial collapse was thought to be—a so-called “black swan” event.<sup>7</sup> From that perspective, the COVID-19 pandemic parallels the last financial crisis or most other financial panics in that the precipitating event was the emergence of new information that disrupted prior expectations.<sup>8</sup> And the dramatic swings in capital market pricing and the evaporation of liquidity in certain markets in March of 2020 mirrored market disruptions of the fall of 2008, at least until the Federal Reserve Board sprang into action with a prompt rebooting of many financial crisis era programs.

Putting aside sudden market swings and flights to cash in the spring of 2020, COVID-19 had the potential for imposing further disruptions on the financial system in a manner that differed from the spread of economic losses during the last financial crisis. It is not just the direct effects of the coronavirus itself (through deaths or illness) that threatened systemic consequences to the financial system, but rather the behavioral responses of

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<sup>6</sup> Steven L. Schwarcz, *The Financial Crisis and Credit Unavailability: Cause or Effect?* 72 *BUS. LAW.* 409, 410–11 (2017). Note that downgrades by credit-rating agencies in the spring of 2020 renewed concerns about the accuracy of credit ratings. See Patrick Temple-West, *Rating Agencies Brace for Backlash After Rash of Downgrades*, *FIN. TIMES* (Apr. 2, 2020), <https://www.ft.com/content/253210d5-4a2d-439f-a4a6-204a7f66d445>.

<sup>7</sup> The term “black swan” event has come to mean a very low-probability but very high-risk event. See generally NASSIM NICHOLAS TALEB, *THE BLACK SWAN: THE IMPACT OF THE HIGHLY IMPROBABLE* (2nd ed. 2010); see, e.g., *Black Swan*, *INVESTOPEDIA* (Apr. 17, 2020), <https://www.investopedia.com/terms/b/blackswan.asp> (“A black swan is an extremely rare event with severe consequences. It cannot be predicted beforehand, though many claim it should be predictable after the fact.”).

<sup>8</sup> Cf. EVALUATING THE HOUSING MARKET SINCE THE GREAT RECESSION, *supra* note 5 (observing that, at the root of the 2008 failures, were errors in prior market expectations about the future and sustainability of housing price increases and the capacity of individual borrowers to sustain home mortgage payments).

households, firms, and governments that had dramatic consequences on the economy on several levels. Early in 2020, we witnessed abrupt shifts in consumer demand for services associated with increased risk of infections, like cruises, transportation, and entertainment.<sup>9</sup> Employee sickness and employer concern to avoid such sickness then started causing firms to minimize their in-person workforces. With few exceptions (for example, delivery services such as Amazon<sup>10</sup> and firms supplying medical supplies), customer contagion and fear of such contagion reduced the number of buyers—and thus impaired the demand side of the economy.<sup>11</sup>

Government edicts to implement social distancing and self-isolation further impaired business interactions, cancelling public events and large gatherings and effectively closing many non-essential businesses for lengthy time periods. As a result, we saw wide-scale layoffs, skyrocketing unemployment, and the grinding to a halt of many sectors of the economy.<sup>12</sup>

The result was the beginning of an unprecedented economic collapse and a disruption of unknown duration. At times, supply chains broke down, but even with inventory, businesses found it difficult to continue to manufacture and to sell products—especially to retail customers. Small-to-medium-sized businesses were especially challenged.<sup>13</sup>

The accumulation of these bottom-up effects threatened further liquidity and perhaps even solvency effects on many sectors of the economy, distinct from and in many respects more troubling than capital market volatility

<sup>9</sup> Cf. Claire Bushey, *US Airlines Seek to Delay Day of Reckoning with \$50bn Bailout*, FIN. TIMES (Mar. 24, 2020), <https://www.ft.com/content/a3713e3e-6d74-11ea-89df-41bea055720b> (“[S]hares of the four largest US airlines lost between 40 per cent and two-thirds of their value since February. . .”).

<sup>10</sup> Amazon, for example, has committed to hiring 250,000 temporary employees. However, margins for the largest online retailers, such as Target, have fallen as consumers prioritize low-cost staples over higher-margin goods. Sarah Nassauer, *Coronavirus Boosts Target’s Sales but Squeezes Profits*, WALL ST. J. (Mar. 25, 2020), [https://www.wsj.com/articles/coronavirus-boosts-targets-sales-but-squeezes-profits-11585132560?mod=itp\\_wsj&ru=yahoo](https://www.wsj.com/articles/coronavirus-boosts-targets-sales-but-squeezes-profits-11585132560?mod=itp_wsj&ru=yahoo).

<sup>11</sup> Cf. Veronica Guerrier et al., *Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages* (Nat’l Bureau of Econ. Rsch., Working Paper No. 26918, 2020) (characterizing the shutdowns as generating in the first instance supply shocks leading to demand shortages). While the distinction between demand-side and supply-side effects may be important for macroeconomic policy, it seems that both are at work—and very much interacting with each other—in the current pandemic.

<sup>12</sup> Cf. Hiba Hafiz, Shu-Yi Oei, Diane Ring, & Natalya Shnitser, *Regulating in Pandemic: Evaluating Economic and Financial Policy Responses to the Coronavirus 14–15* (Mar. 17, 2020) (unpublished working paper) (on file with Boston College Law School) (observing that it is “possible that a widespread wave of small business failures—even if they are not individually systemic actors—may ripple across other parts of the economy and eventually trigger contagion and collapse”).

<sup>13</sup> Cf. Jim Tankersley, *Strategies to Restart an Economy on Ice*, N.Y. TIMES, Mar. 22, 2020, at B2. Tankersley discusses economists’ concern of a possible “doom loop,” in which an “even moderately protracted shutdown of economic activity permanently kills waves of small businesses . . . that cannot survive very long without customers. A typical small business in the United States does not have enough cash on hand to cover even a month of expenses if its revenues are completely disrupted, according to research by the JPMorgan Chase Institute. In minority communities, where profit margins are often narrower, the typical cash reserve is even smaller.” *Id.*

in March of 2020. As is evidenced by the specific focus of congressional action in 2020, airlines, the hospitality industry, and entertainment concerns all faced acute difficulties. Many small businesses, especially those in retail or dining, faced dramatic reductions in customer traffic and had to scramble to devise online or remote distribution channels to maintain any cash flow. State and local governments also faced severe budget shortfalls with little capacity to engage in deficit financing. The resulting layoffs accelerated in the late spring of 2020 with declining demand and consumer retrenchments.

At least as of year-end 2020, the financial services sector did not experienced top-down failures of the sort we saw with Lehman and AIG in 2008. To be sure, capital markets fluctuated dramatically and experienced a high degree of volatility. Not surprisingly, credit markets—especially for small-scale enterprises most hard hit by pandemic induced declines in demand—dried up in the spring of 2020, and liquidity in fixed income trading markets was disrupted for periods of time and remained heavily restricted for certain firms for extended periods. Certain segments of financial markets, such as marketplace lending, may have suffered even more extreme reductions in intermediation. While it is not clear that the solvency of any major financial firm was ever seriously threatened, the authorization of new guarantee facilities for money market funds and the expansion of FDIC support for bank liabilities suggests that federal authorities were concerned about the potential of runs. Especially in March and April of 2020, there were surges towards cash and cash-equivalents, which led to a loss of liquidity for some financial firms and a challenge for those exposed to significant duration mismatches. The subsequent decline in interest rates—including the possibility of negative rates for the indefinite future—posed challenges for financial firms dependent on margins.

Depending on how long the disruption of the real economy persists—which is inexorably linked to how long conditions of social isolation remain in effect—the erosion of the financial capabilities of innumerable borrowers, both household and corporate, could produce long-term challenges to solvency for many financial firms, large and small. The widespread interruption of rent payments and other contractual obligations (both mortgages and other forms of consumer debt servicing)<sup>14</sup> could have significant and far-

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<sup>14</sup> See Will Parker, *Nearly a Third of U.S. Apartment Renters Didn't Pay April Rent*, WALL ST. J. (Apr. 8, 2020), <https://www.wsj.com/articles/nearly-a-third-of-u-s-renters-didnt-pay-april-rent-11586340000> (“Nearly a third of U.S. apartment renters didn’t pay any of their April rent during the first week of the month, according to new data to be released . . . by the National Multifamily Housing Council and a consortium of real-estate data providers.”). Bank of America allowed 50,000 borrowers to defer mortgage payments for up to three months as of the beginning of April. See Prashat Gopal, *Bank of America Lets 50,000 Mortgage Borrowers Skip Payments*, BLOOMBERG (Apr. 1, 2020), <https://www.bloomberg.com/news/articles/2020-04-01/bank-of-america-lets-50-000-mortgage-borrowers-delay-payments>. Moody’s Analytics estimates that as many as 15 million households may need mortgage forbearances and other home loan assistance. See Mark Zandi, Webinar, *COVID-19: Top 10 Questions and Answers*, MOODY’S ANALYTICS (Apr. 2020), <https://www.economy.com/getlocal?q=EBF5F2CD-1E1A-48D9-99A5-41EC7B1D5789&app=download>; see also Jim Zarroli, *America’s Largest Bank*,

reaching consequences as economic losses are passed upward and aggregated onto the balance sheets of major financial firms, including those sometimes denominated as too big to fail. Like many hospitals in the first half of 2020, the bankruptcy courts tomorrow may become overwhelmed, delaying and increasing the costs of debt restructurings and further impairing the health of the country's financial system.<sup>15</sup>

Whereas in the 2008 crisis the key financial uncertainty was the extent of losses to be incurred on home mortgage loans, the central financial uncertainty of the COVID-19 pandemic is the duration of the economic turndown. Whether the recession will be V-shaped, U-shaped, W-shaped, canoe-shaped, or some other yet unimagined configuration remains imponderable and depends on a host of complicated considerations, including the efficacy of safeguards as economies reopen, the development of more effective treatments, and (ultimately) the discovery and production of a safe and effective vaccine. Whether the pandemic also develops into a full-blown top-down financial catastrophe may well turn on how long these economic consequences endure. Just because major financial firms have not yet failed does not mean that they will not eventually fail or suffer debilitating losses as the costs of the pandemic are realized. And if such failures are to occur, the pandemic of 2020 could eventually be remembered as a systemic financial event of the first order. Even if a prolonged pandemic only weakens the balance sheets of many financial intermediaries, the resulting impact on the real economy could constitute a systemic event.

At the time of this writing—at the end of 2020—it is too early to assess the long-term impact of the pandemic on the economy or the financial system. Certainly, the approval of vaccinations and additional rounds of financial support from the federal government have mitigated the financial stress facing many households and businesses. The ultimate impact of the pandemic on both the economy and the financial sector remains to be seen. Our

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*JP Morgan Chase, Prepares for A Massive Round of Defaults*, NPR (Apr. 14, 2020), <https://www.npr.org/sections/coronavirus-live-updates/2020/04/14/833920538/americas-largest-bank-jpmorgan-chase-prepares-for-massive-round-of-defaults> (reporting that JP Morgan Chase's profits fell 69% and the bank is preparing for increased defaults on mortgages, credit card debt, and business loans).

<sup>15</sup> See Kenneth Ayotte & David Skeel, *Bankruptcy Law Needs a Boost for Coronavirus*, WALL ST. J. (Mar. 30, 2020), <https://www.wsj.com/articles/bankruptcy-law-needs-a-boost-for-coronavirus-11585608800>; David Skeel, *Bankruptcy and the Coronavirus*, BROOKINGS INST. (Apr. 21, 2020), <https://www.brookings.edu/research/bankruptcy-and-the-coronavirus/>; see also Benjamin Charles Iverson, Jared A. Elias & Mark J. Roe, *Estimating the Need for Additional Bankruptcy Judges in Light of the COVID-19 Pandemic*, 11 HARV. BUS. L. REV. ONLINE 1 (2020). By February of 2021, the Congressional Budget Office was estimating that legislative actions and other measures would return economic activity to pre-pandemic levels by mid-2021. See Congressional Budget Office, *Additional Information About the Economic Outlook: 2021 to 2031*, at 1 (Feb. 2021). The CBO report did not account for the impact of the \$1.8 trillion American Rescue Plan Act enacted in March of 2021, but subsequent analyses estimate that this additional legislation will stimulate additional growth in U.S. GDP, potentially raising inflationary concerns. See, e.g., Patrick Lenain et al., *American Rescue Plan: A First Package of President Biden's Transformative Reforms*, ECOSCOPE (Mar. 26, 2021).

goal in this section has been simply to lay out some of the similarities and differences of the current crisis to the last financial crisis. Next, we consider regulatory responses for financial authorities, starting with measures taken to date and then speculating as to reforms that might follow in the future.

### III. RECENT MEASURES TO ADDRESS FINANCIAL IMPLICATIONS OF TODAY'S PANDEMIC

We begin with governmental responses to the coronavirus pandemic in 2020. Within our framework for categorizing macroprudential interventions, these responses are *ex post* in the sense that they are being implemented in the aftermath of an exogenous shock—here the coronavirus pandemic—with the goal of reducing the shock's disruption to the financial system and the economy more broadly. These measures are necessary, as is often the case with systemic events, because *ex ante* restraints have proven insufficient to insulate the financial system.<sup>16</sup> As noted below, these *ex post* measures may also have a bearing on the future behavior of financial firms and households by influencing expectations about how governments will react to pandemics or other unexpected events. To that extent, these *ex post* measures will have some degree of *ex ante* effects.<sup>17</sup>

These responses to the current crisis fall into several broad categories, discussed below: the provision of liquidity and public guarantees of financial liabilities; other regulatory and supervisory accommodations; public relief to households; public relief to business enterprises; and official encouragement of private-sector relief.<sup>18</sup> Distilling the essence of these government responses poses expositional challenges because the precise content of the responses is still being defined, many key elements are vague or unresolved, and some of the responses are overlapping. For example, whether govern-

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<sup>16</sup> The *ex post* interventions discussed in this section differ in fundamental ways from the *ex post* legal regimes, such as orderly resolution procedures, that were incorporated into our macroprudential toolkit after the last crisis: the former are *ad hoc* and purely reactive. *Ad hoc* interventions of this sort may well be both suboptimal and ineffectual. See Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 231 (2008) (observing that *ad hoc* interventions sometimes “may be too late and the harm has been done or no longer can be prevented, and sometimes there may be insufficient time to fashion and implement an optimal solution”). In cases such as an unexpected pandemic, however, there may be no other choices; to “deter a systemic meltdown, government should seek to prevent the meltdown or mitigate its impact by implementing whatever *ad hoc* approaches appear, at the time, to be appropriate.” *Id.* at 243.

<sup>17</sup> Cf. Douglas G. Baird, *Bankruptcy's Uncontested Axioms*, 108 YALE L.J. 573, 578 (1998) (observing that “[s]ubstantive rules implemented exclusively in bankruptcy . . . may have [effects] on investment beforehand”).

<sup>18</sup> For various efforts to track developments in this area, see generally Program on Financial Stability, *COVID-19 Crisis*, YALE SCH. OF MGMT. (last visited May 15, 2021), <https://som.yale.edu/faculty-research-centers/centers-initiatives/program-on-financial-stability/covid-19-crisis>; see also CHART: US Financial Regulatory Agency Action on COVID-19, STEPTOE & JOHNSON LLP (last visited May 25, 2021), <https://www.steptoel.com/en/news-publications/us-financial-regulatory-agency-action-on-covid-19.html>; *Financial Regulatory Response to COVID-19*, MAYER BROWN (Dec. 1, 2020), <https://covid19.mayerbrown.com/financial-regulatory/>.

ment payments are outright grants or loans that should be repaid is often unclear. In addition, many 2020 interventions contemplated novel collaborations both among government agencies and between public and private actors, with precise responsibilities and legal obligations not fully specified. Finally, with several initiatives, the government response consisted primarily of encouraging action by private parties, a novel extension of the bully pulpit never before used on such a scale, at least not in modern times, and with uncertain effects. We touch upon a number of these issues in a final section outlining several overarching themes.

One final introductory point concerns the emergency measures being deployed in the current crisis compared to the emergency actions taken by financial regulators in response to the last financial crisis. In the fall of 2008, public officials gearing up to address the collapse of global financial markets generally understood the Great Depression of the 1930s to be the most relevant policy precedent. Since this precedent lay outside of the bounds of living memory or direct experience, senior government officials had to resort to the history books and the academic learning of Fed Chair and former Professor Ben Bernanke. In 2020, by contrast, many top financial regulators have had direct experience in fighting the last financial crisis, and a good number no doubt recently participated in 10-year retrospectives. Even junior regulatory staff will have had personal memories of the financial crisis or at least would have been exposed to extensive discussions of and debates over lessons learned from it. Accordingly, as we relate recent government responses to those of the last financial crisis, we are undoubtedly touching upon issues of which public officials were fully cognizant as they formulated these actions. But the proximity of the last financial crisis also explains why current public responses are so closely related to and highly reminiscent of policy responses the last time round.

#### A. *Provision of Liquidity through Emergency Lending Facilities and Potential Guarantees*

As noted above, the current crisis did not in 2020 manifest itself as a top-down failure of major financial institutions. Still, the Federal Reserve Board early in the crisis promptly deployed its traditional tools for providing institutional liquidity in times of financial stress, including aggressively purchasing financial assets, establishing secured lending facilities designed to support commercial paper and money market funds, and, in collaboration with the Treasury Department (whose consent is legally required), taking a host of other actions authorized for unusual and exigent circumstances under section 13(3) of the Federal Reserve Act.<sup>19</sup> Congress in the CARES Act also

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<sup>19</sup> For a helpful early summary of these actions, see generally *Government Support for Business*, DAVIS POLK & WARDWELL LLP (last visited June 30, 2020), [https://www.davispolk.com/practices/corporate/government-support-business?utm\\_source=vuture&utm\\_me-](https://www.davispolk.com/practices/corporate/government-support-business?utm_source=vuture&utm_me-)

backstopped Fed interventions by temporarily reversing Dodd-Frank Act restrictions on the ability of the Treasury to provide guarantees to money market funds and of the FDIC to enhance its guarantees of bank deposits.<sup>20</sup> While neither of these powers was deployed, the presence of such support also addresses liquidity concerns in sectors of the financial system.

To a considerable degree, many of these Federal Reserve Board actions constitute classic lender-of-last-resort interventions, providing credit to solvent entities in order to avoid fire sales of assets and a downward spiral imposing widespread losses on the financial system.<sup>21</sup> As such, the Fed may well have prevented immediate market responses to the pandemic from causing some top-down institutional failures. In contrast to the last financial crisis, however, a much higher share of Federal Reserve interventions into the capital markets involved not simply the provision of credit to address liquidity shortages, but also directed support to the real economy, often through complicated lending vehicles involving joint operations with the Treasury Department which has been providing various kinds of first-loss protection as authorized under the CARES Act. Indeed, it is sometimes difficult to distinguish the extent to which Federal Reserve Board actions were purely liquidity measures or also might (at least eventually) constitute some form of credit support, either to financial institutions or elements of the real economy, an ambiguity to which we will return at several points below.

While most of the Federal Reserve's initial interventions operate through the financial system, some reach directly into the real economy, such as the Main Street Lending Program. And, for the first time ever, the Federal Reserve Board created a facility to provide liquidity for state and municipal bonds. All of these actions are reminiscent of actions taken over the course of the last financial crisis, although the timetable within which the policy instruments have been deployed has been dramatically compressed. In some cases, the programs actually bear the same acronyms as those used

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dium=V\_email&utm\_campaign=vuture\_emails. For a summary review of Federal Reserve Board actions in the last financial crisis, see generally BARR-JACKSON-TAHYAR, *supra* note 1, at 1011–18. For an analysis of Federal Reserve Board emergency measures in 2020 with comparisons to the last financial crisis, see generally Mark E. Van Der Weide & Jeffery Y. Zhang, *Tale of the Tape: Lessons from the 2008 and 2020 Crises* (Apr. 14, 2021) (forthcoming *Stanford Journal of Law, Business & Finance*).

<sup>20</sup> For an excellent overview of the Federal Reserve interventions and their relationship to the CARES Act, see generally Lev Menand, *Unappropriated Dollars: The Fed's Ad Hoc Lending Facilities and the Rules that Govern Them* (Eur. Corp. Gov. Inst., Working Paper No. 518/2020, 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3602740](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3602740); see also Lev Menand, *Fed to the Rescue: Unprecedented Scope, Stretched Authority*, CLS BLUE SKY BLOG (Apr. 27, 2020), <https://clsbluesky.law.columbia.edu/author/lev-menand/>.

<sup>21</sup> For an early endorsement of robust central bank intervention as well as immediate capital preservation measures and other governmental actions, see *Systemic Risk Council Statement on Financial Systems Actions for Covid-19* (Mar. 19, 2020), <https://www.systemicriskcouncil.org/2020/03/src-statement-on-financial-system-actions-for-covid-19/>. For a recent (and prescient) article both anticipating and endorsing (with caveats) widespread guarantees on the part of the federal government, see Kathryn Judge, *Guarantor of Last Resort*, 97 TEX. L. REV. 707 (2019).

in the last financial crisis, updated with new model numbers (for example, TALF 2.0), and in certain cases, such as haircut requirements for the 2020 version of TALF collateral, the new term sheets track those used in the last financial crisis.<sup>22</sup>

For those of us who have engaged in debates over the virtues of the Dodd-Frank Act of 2010, it is striking that these prompt Fed actions, in response to the pandemic, do not appear to be inhibited by that Act's limitations on Federal Reserve Board powers. Particularly as the White House and Treasury Department were focused on economic consequences of the coronavirus, political leadership did not hesitate to pull the triggers necessary to bypass those limitations.<sup>23</sup> And, as mentioned earlier, the CARES legislation includes a number of temporary reversals of Dodd-Frank Act limitations on uses of the Treasury Department's Exchange Fund and the FDIC's powers to increase bank guarantees.<sup>24</sup> So, fears that political inhibitions regarding emergency Fed actions appear not to have been borne out in the current crisis.

One open question, of course, is whether the Federal Reserve exposed itself to substantial credit risks as a result of these liquidity and guarantee responses. In the last financial crisis, the Federal Reserve Board avoided credit losses on its emergency vehicles, and conceivably that experience informed 2020 actions by Board leadership. But the duration and intensity of the COVID-19 pandemic was unknowable, and it is possible that the models and assumptions used to justify 2020's liquidity facilities could have proven inaccurate. Were significant losses to have accrued down the road, political backlash was a possibility, as nominally many of these responses are formally limited to transactions where adequate collateral is provided. Even if the Fed does not suffer losses, it is conceivable that the consequences of its interventions could impose losses or gains (on creditors, shareholders, or some other parties) that in retrospect seem inappropriate or improper. As such, the Fed likely assumed a degree of political risk in 2020 that may play out in uncertain ways down the road.

Another point to be emphasized about Federal Reserve Board actions in 2020 is the extent to which they represent active collaboration with the Trea-

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<sup>22</sup> See Press Release, Term Asset-Backed Securities Loan Facility, Fed. Reserve Bd. (effective July 28, 2020), <https://www.federalreserve.gov/newsevents/pressreleases/files/money20200728a6.pdf> ("The haircut schedule is consistent with the haircut schedule[ ] used for the TALF established in 2008."); see also VAN DER WEIDE & ZHANG, *supra* note 19, at 18.

<sup>23</sup> For a case study outlining the considerations that the Federal Reserve Board would have had to undertake before invoking section 13(3), see generally Margaret E. Tahyar & Howell E. Jackson, *The Future of Affiliate Transaction Restrictions for Banks and the Federal Reserve's Emergency Intervention Authority*, HLS Case Study CSP035 (2017), <https://casestudies.law.harvard.edu/the-future-of-affiliate-transaction-restrictions-for-banks-and-the-federal-reserves-emergency-intervention-authority/>.

<sup>24</sup> For a helpful summary of the CARES Act provisions, see generally *Congress Passes CARES Act Fiscal Stimulus Package to Combat the Coronavirus Pandemic's Economic Impact*, DAVIS POLK & WARDWELL LLP (Mar. 27, 2020), [https://www.davispolk.com/files/2020-03-26\\_senate\\_passes\\_cares\\_act\\_fiscal\\_stimulus\\_package.pdf](https://www.davispolk.com/files/2020-03-26_senate_passes_cares_act_fiscal_stimulus_package.pdf).

sury Department. The CARES Act explicitly authorizes the use of public funds to support Fed liquidity facilities, and section 13(3) also requires signoff from the Secretary of the Treasury in most cases. So, what happened in practice and on an extremely accelerated schedule was that a task force of top Federal Reserve Board officials worked closely with the Treasury Department to roll out new liquidity facilities, often at a pace of more than one per week. Whereas prior academic writing of the post-Dodd Frank Act section 13(3) requirements conceptualized the Treasury as serving as a political check on Federal Reserve Board intervention, the two entities seem to have engaged in something that looks much more like a joint venture: no doubt expedient and well-intentioned, but also a novel way of doing crisis management in the United States.

### *B. Regulatory & Supervisory Accommodations*

Beyond providing liquidity and guarantees, financial regulators engaged in a wide range of regulatory and supervisory accommodations. On a number of different dimensions, banking regulators have signaled a willingness to relax standards to encourage loan modifications and forbearance. Similarly, the application of capital and liquidity rules is being adjusted to prevent pro-cyclical effects (that is, to prevent balance sheets from shrinking and credit lines from reducing in times of financial stress). The SEC has made a number of similarly spirited announcements, relaxing filing requirements, reducing the need for individuals to be in close proximity on exchange floors or board meetings, and offering accommodations from affiliated party rules in order to increase liquidity in money market and other mutual funds.<sup>25</sup>

Regulatory authorities in the pandemic appear to have been mindful of the critique that many components of the regulatory regime in place at the time of the last financial crisis were pro-cyclical. While the loosening of underwriting standards and affiliated-party rules may be ill-advised in ordinary times—when preventing fraud and abuse are primary goals—temporary accommodations in periods of crisis may reflect an appropriate, albeit short-term, rebalancing of costs and benefits. To the extent these accommodations encourage the flow of credit, or at least reduce loan defaults, they effectively substitute for the provision of public liquidity and thereby reduce demands on the Federal Reserve Board's balance sheet.

These accommodations, however, also carry their own risks, potentially shifting losses onto (or retaining losses on) the balance sheets of financial institutions. More than a decade after the last financial crisis, some believe,

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<sup>25</sup> Note that some regulatory pronouncements—e.g., early warnings that financial firms should review their pandemic contingency plans and SEC warnings about the need for corporate issuer to attend to disclosure obligations and insider trading oversight in the face of the pandemic—are probably not best understood as accommodations, but rather as regulatory or supervisory adjustments in the face of the pandemic.

many such losses are still carried on the balance sheets of European banks. What can be seen in the moment as well-advised counter-cyclical adjustments can be recharacterized in the future as ill-advised regulatory forbearance of the sort associated with regulatory practices throughout the savings and loan debacle of the 1980s.<sup>26</sup> In theory, counter-cyclical adjustments should be limited to those accommodations that relax buffers specifically designed for relaxation in times of financial distress, whereas inappropriate forbearances are motivated principally by a desire to avoid the embarrassment and costs of financial failures. But applying these distinctions in practice is difficult and contestable, if only because government authorities can plausibly support propping up marginal institutions in the hopes of sustaining market confidence and muddling through until the real economy recovers.<sup>27</sup> How these regulatory accommodations will be understood in the years ahead remains an open question.

### C. Public Relief to Households

No doubt one of the most striking features of recent public interventions has been robust government efforts to provide relief for households. While limited payroll-tax holidays and extensions of federal support for unemployment insurance also figured into public responses to the last financial crisis, relatively little was done in a systematic way to help individuals shoulder their financial burdens. Although some consumer advocates lobbied during that crisis for wide-ranging loan forgiveness, and some proposed changes to federal bankruptcy laws to facilitate a reduction in mortgage

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<sup>26</sup> The line between the two characterizations is blurry, but in theory counter-cyclical buffers are designed to be worked down in the midst of a crisis and ill-advised forbearance is regulatory accommodation beyond that point. But, there exists no magic meter that turns red when this point is passed in the real world. One of the most prominent of these accommodations was the decision of federal bank regulators to temporarily waive the application of the supplementary leverage ratio for banking organizations, a waiver which was granted in May of 2020 and expired at the end of March 2021. See Interim Final Rule and Request for Comments, 85 FED. REG. 32,980 (June 1, 2020). The waiver was granted in response to the growth in banking organization balance sheets that resulted from a surge in deposits following a flight to safe assets in the spring of 2020.

<sup>27</sup> This tension played out in public policy debates over Federal Reserve stress testing and whether the Fed should impose and report on stringent stress tests that reveal potential weaknesses in major institutions or adapt a more accommodative posture and refrain from criticisms of specific institutions in order to maintain market confidence. See, e.g., Daniel K. Tarullo, *Are We Seeing the Demise of Stress Testing*, BROOKINGS UP FRONT (June 25, 2020), <https://www.brookings.edu/blog/up-front/2020/06/25/stress-testing/>. For an overview of Federal Reserve stress tests in 2020, see *Federal Reserve Board, Financial Stability Report*, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM (May 2021), <https://www.federalreserve.gov/publications/files/financial-stability-report-20210506.pdf> (reporting on second round of stress tests undertaken in the fall of 2020 as well as the relaxation of capital distribution restraints in 2021); see also Alice Abboud et al., COVID-19 as a Stress Test: Assessing the Bank Regulatory Framework, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM (Mar. 2021) (Federal Reserve Board Finance and Economics Discussion Series Paper No. 2021-024); Jeremy C. Kress & Matthew C. Turk, *Rethinking Countercyclical Financial Regulation*, 56 GA. L. REV. (forthcoming 2022).

debt, the public response was largely limited to only marginally successful loan modification efforts, administered through a complicated series of programs that largely relied on modest use of TARP funds to encourage loan servicers to facilitate the modification process. Most likely mindful of the limited success of these earlier efforts, the Trump Administration and Congress were much more forceful in providing direct relief to individuals.

Most prominently with the roughly \$2 trillion CARES Act legislation, this relief included direct cash payments to households, an expansion of unemployment insurance, mandated sick leave for government workers and employees of large private employers, and what were effectively interest-free loans through the delay of federal (and most state) tax payments. The CARES Act was supplemented several times later in 2020, most significantly by the Consolidated Appropriations Act enacted in December of 2020.<sup>28</sup> All of these efforts serve to reduce the financial stress of American households, especially those in which household members have lost employment as a result of the pandemic and mitigation efforts. This relief supports the financial system by increasing the ability of households to service their financial obligations and reducing the need of some households for emergency credit—thereby adding liquidity to the financial system. As noted below, several other government interventions are also intended to improve the financial position of households and could have a similar, positive effect on the financial system.

The prompt adoption of support measures directly to individuals and households reflects, properly in our view, the absence of any sense of individual personal responsibility for the financial distress that the pandemic has produced. The prominence of this category of intervention again distinguishes the current crisis from the last financial crisis, where mismanagement of household finances was thought by some to be a contributing factor to excessive debt levels and inflated housing pricings, and only limited amounts of TARP funding and other public resources were allocated to household support. But even absent moral hazard concerns, the logistics of getting support to the right households in a timely manner posed considerable administrative challenges, and there remains a possibility that households will conserve at least some portion of any relief payments rather than spend them to increase demand, as government officials intend.

Household relief also raises concerns over strategic behavior—that is, individuals not truly needing financial assistance may purport to be in financial distress in order, for example, to avoid making loan payments. In addition to forcing additional losses onto the financial system, this behavior would increase government costs and eventually weaken public support for

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<sup>28</sup> For an overview of COVID-19 relief legislation through year-end 2020, see COMMITTEE FOR A RESPONSIBLE FEDERAL BUDGET, *Breaking Down \$3.4 Trillion in COVID Relief* (Jan. 7, 2021), <https://www.crfb.org/blogs/breaking-down-3-4-trillion-covid-relief>; see also Congressional Budget Office, *supra* note 15, at 8–9.

relief efforts. Early reports on the mechanics of pandemic relief efforts for households evidence some concerns on the part of government officials about balancing the trade-off between prompt distribution of resources and the desire to maintain fiscal discipline. How this balance will be assessed after the current crisis is over could well shape the structure of future reforms and our understanding of the success of these initiatives.

#### *D. Public Relief to Business Enterprises*

If anything, the pandemic-related public relief to business enterprises is even more extensive than the relief programs for households. In contrast to the last financial crisis, when only a small fraction of TARP funding was directed outside the financial services industry (with the Obama Administration supporting automobile industry loans only after much agonizing and internal debate), the CARES Act and supplemental legislation provided for extensive loans and guarantees to a wide range of distressed industries and most notably small businesses (as discussed, the bulk of the Federal Reserve pandemic-related interventions supported the financial services industry). In part, the allocation of resources to distressed industries and small businesses reflects differences in the location of losses in the current crisis. Even before the scale and scope of human consequences was clear, many sectors of the economy were showing weaknesses (like the hospitality industry and airlines), and as soon as widespread stay-at-home orders went into effect, those losses spread across the economy, including to retail and restaurants, where small business dominates. Direct public support for business enterprises in this environment can have long-term value by avoiding the transaction costs of wholesale bankruptcies and also by positioning the economy to recover once public health issues have been addressed.<sup>29</sup>

Household relief is, beyond a doubt, also an indirect goal of the support being provided to business enterprises, including (we suspect) some of the Federal Reserve Board's liquidity facilities. This dual mandate is evident in the terms of some of the programs, such as loan forgiveness for small businesses that keep employees on the payroll. But even if payrolls are not maintained during the height of the pandemic, the preservation of business enterprises and the human capital they contain can have positive effects on household welfare down the road. Again, there exists a risk that, in the aftermath of the crisis, critical voices will complain that businesses did not appropriately support employees or that government officials did not insist on

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<sup>29</sup> Cf. Mario Draghi, *We Face a War Against Coronavirus and must Mobilize Accordingly*, FIN. TIMES (Mar. 25, 2020), <https://www.ft.com/content/c6d2de3a-6ec5-11ea-89df-41bea055720b> (arguing that it is "the proper role of the state to deploy its balance sheet to protect citizens and the economy against shocks that the private sector is not responsible for and cannot absorb. States have always done so in the face of national emergencies," such as wars. If the government does not "protect people from losing their jobs in the first place," we will "emerge from this crisis with permanently lower employment and capacity").

such support with sufficient rigor. In addition—and to some degree related—backlashes can focus on the ways in which businesses utilized public support (or their own resources) during the pandemic. Mindful of complaints about executive bonuses and wage differentials, 2020 relief efforts have included some measures to limit what may be perceived to be abuses. But these controls are no guarantee that later investigations—whether from congressional oversight committees or the press—will not reach other conclusions.<sup>30</sup> And the CARES Act itself included substantially more oversight mechanisms than did TARP or other legislation adopted in the aftermath of the last financial crisis.

A further point to be made about public relief of business enterprises is the extent to which these relief actions have been designed to interact with Federal Reserve Board actions discussed earlier. Some of the funds allocated under the CARES Act were intended to be used to support Federal Reserve Board programs, to supply first-dollar loss protection for some of the Fed's lending facilities. Something akin to this happened back in the last financial crisis, when TARP funds were used to buy out Federal Reserve Board loans to AIG, but that transaction was done on a one-off basis after the TARP legislation passed.<sup>31</sup> Under the CARES Act, the Federal Reserve Board was called upon to maintain an ongoing programmatic arrangement with the Treasury Department, blurring the line between the central bank and the executive department in an unprecedented manner.<sup>32</sup> Over the long term—particularly if these interventions come under criticism—this collaboration might undermine the preservation of Fed independence. That is a risk, but perhaps one that is worth taking under the circumstances.

Finally, one cannot help but be struck by the extent to which the CARES Act programs for supporting businesses—big and small—enlist the

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<sup>30</sup> For a prominently circulated letter from leading academics raising early questions about the appropriateness of some proposals to support large businesses, see *Economics, Law and Finance Professors from Major Universities Write to Congress: "Bail Out People Before Large Corporations"*, PROMARKET (Mar. 24, 2020), <https://promarket.org/2020/03/24/economics-and-finance-professors-from-major-universities-write-to-congress-bail-out-people-before-large-corporations/>.

<sup>31</sup> A very limited amount of the Federal Reserve Board's 2008/2009 interventions (e.g., TALF) also incorporated a limited degree of financial support from the Treasury Department. See Press Release of the Board of Governors of the Federal Reserve System (Nov. 25, 2008) ("The U.S. Treasury Department—under the Troubled Assets Relief Program (TARP) of the Emergency Economic Stabilization Act of 2008—will provide \$20 billion of credit protection to the FRBNY in connection with the TALF."). For a comparison of Federal Reserve Board interventions in both crises, see VAN DER WEIDE & ZHANG, *supra* note 19, at 17–19.

<sup>32</sup> For an example of the kind of ex post scrutiny that may arise, consider a finding that Federal Reserve Board economists erred in concluding that the Fed's liquidity facilities are protected by adequate collateral. Critics may challenge the assumptions on which those estimates were based. They might also subject the Fed's program to the kind of scoring that the Congressional Budget Office would provide for similar extensions of credit if extended through federal lending programs administered by an executive agency. As the CBO's estimates are probabilistic as opposed to the Fed's binary designation as good or bad collateral, this comparison would highlight the extent to which Fed facilities had exposed the federal fisc to losses and could pose further challenges to Fed independence.

assistance of regulated financial entities to identify recipients and administer the disbursement of funds. In some instances, the Payroll Protection Program financial firms serve merely as the government's agent, receiving a fee for service but with credit exposure borne by the Small Business Administration. With some of the Federal Reserve Board vehicles, financial institutions are also required to bear some degree of credit exposure, although the preponderance of losses would be borne by the Treasury Department and Federal Reserve. Again, this enlistment of established channels for the distribution of credit was likely seen as an efficient mechanism to get funds out of the door, but it also creates a complicated mixture of shared responsibilities, potentially subject to criticism down the road. And it may be difficult for supervisory authorities to force financial firms to recognize losses on credits that the government encouraged the firms to undertake in the first place, another possible source of arguably inappropriate forbearance.

#### *E. Official Encouragement of Private-Sector Relief*

A further feature that distinguishes the current pandemic from the last financial crisis is the outpouring of mutual support and private-sector relief efforts. Spontaneous efforts to produce masks for healthcare workers, and neighborhood organizations emerging to share grocery shopping and to do errands for the elderly, are examples of this phenomenon. But a notable feature of the public-sector response to the pandemic has been official encouragement of these private-sector relief efforts. Though the mechanisms by which this encouragement has been voiced remain unclear (at least to us), the Trump Administration has apparently persuaded insurance companies to waive co-pays and deductibles not just for coronavirus testing but for its treatment as well.<sup>33</sup> Perhaps motivated by the threat of the Defense Procurement Act, some manufacturers agreed to produce medical devices and personal protective equipment even though doing so may not maximize shareholder returns. With respect to the financial services sector, the Administration has also harnessed some degree of voluntary participation, particularly in terms of helping to manage the distribution of public support to small businesses.

While one cannot help but be moved by the scale of generosity and solidarity that these private relief efforts represent, one need also acknowledge the complexity of harnessing private enterprise for public purposes in the absence of strict guidelines and effective oversight. The risks run in both directions. Public officials can face criticism if private relief is not adminis-

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<sup>33</sup> For an example of state insurance authorities encouraging automobile insurance companies to give customer rebates in light of lower levels of driving during the crisis, see State of Conn. Ins. Dep't, *Covid19 and Auto Insurance Premiums: Personal Auto and Commercial Hired and Non-owned Auto Insurance*, Ct.GOV (Apr. 6, 2020), <https://portal.ct.gov/CID/Public-Notices/Notice-April-6-of-2020-Covid-19> (statement of the Connecticut Insurance Department).

tered as extensively and evenhandedly as initially envisioned, producing the same kind of political backlash discussed above with respect to public support for business enterprises. But the enterprises themselves also face risks.<sup>34</sup> As financial firms discovered after the last financial crisis, public authorities were initially grateful to institutions (such as Bank of America) that agreed to take over failing thrifts and banks, but in later years, other public officials were zealous in bringing enforcement actions against those same firms for violations of law or contractual breaches that had taken place before 2008 in the failed firms that were acquired.<sup>35</sup> Lawyers who lived through the last crisis are already (quietly) advising clients to be careful about the extent of their participation in current relief efforts so as to avoid liability and recriminations down the road.<sup>36</sup> On yet another dimension, public authorities are facing a tradeoff between encouraging prompt and robust participation and minimizing the possibility of future criticism regarding abuse or misuse of public resources.

#### F. Overarching Themes and Potential Concerns

As the forgoing discussion illustrates, public ex post responses to the coronavirus pandemic have been multi-faceted, interconnected, and massive. Many address systemic risks to the financial system and rival in scale and ambition the responses we witnessed in the fall of 2008. But the interventions proceeded on numerous different levels, making it difficult to predict with confidence how they will interact with each other and likely complicating future efforts to determine with confidence which measures were effective and which were less useful or even possibly counterproductive. A particularly striking feature of these interventions is the degree of coordination across government actors, financial firms, and private firms.

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<sup>34</sup> For an example of the kinds of press coverage that may become common, see Aaron Gregg & Renae Merle, *Big banks took 'free money' in 2008. They're turning their backs now on small businesses*, SBA official says, WASH. POST (Apr. 8, 2020), <https://www.washingtonpost.com/business/2020/04/08/video-sba-official-blasts-big-banks-over-failure-quickly-distribute-loans/>.

<sup>35</sup> See BARR-JACKSON-TAHYAR, *supra* note 1, at 1057 (discussing litigation related to JPMorgan Chase acquisition of Washington Mutual); see also Guhan Subramanian & Nithyasri Sharma, *Bank of America-Merrill Lynch*, in HBS Case Collection No. 910-026 (Mar. 2010, rev. Jan. 2012), <https://www.hbs.edu/faculty/Pages/item.aspx?num=38513>.

<sup>36</sup> See, e.g., Memorandum from Wachtell, Lipton, Rosen & Katz, *The CARES Act: Litigation and Enforcement Lessons from the Financial Crisis* (Mar. 30, 2020), <https://www.wlrk.com/webdocs/wlrknew/WLRKMemos/WLRK/WLRK.26885.20.pdf> (“The creation of th[e] new Special Inspector General under the CARES Act] parallels the creation of an inspector general for the Troubled Asset Relief Program (“TARP”) following the 2008 financial crisis. A change in administration combined with retroactive changes to various rescue programs transformed the office into a highly aggressive law enforcement agency. In the decade following the financial crisis, investigations by the TARP inspector general led to significant civil or criminal penalties against hundreds of defendants. The duties and powers of the Special Inspector General for Pandemic Recovery generally mirror those of the inspector general for TARP. Although enforcement activities may be slow during the crisis itself, it is a truism that the creation of an investigative arm will eventually lead to investigations.”).

While this all-hands-on-deck approach is understandable under the circumstances, it carries with it a number of risks to both public and private parties. In particular, the active collaboration between the Federal Reserve Board and the Treasury Department in the design and implementation of liquidity facilities is novel and far-reaching. Especially if these facilities ultimately had exposed the Fed to credit losses, public and political reactions could have been intense.<sup>37</sup> How exactly these coordinated responses will be judged in retrospect is an open question.

#### IV. REFORMING FINANCIAL REGULATION IN RESPONSE TO THE COVID-19 PANDEMIC

While we are no doubt some time—and perhaps even years—away from a time when it will be possible to offer a serious assessment of plausible reforms of financial regulation in light of the coronavirus pandemic, there may still be value to engage in the following thought experiment: imagine, at some point down the road once the dust has settled, our Financial Stability Oversight Council (FSOC), or perhaps the Financial Stability Board (FSB) operating on a global level, were to put together a report of recommendations of best practices with respect to pandemic risks for the financial system, a document designed to inform reform efforts of national governments as well as country evaluations that the International Monetary Fund (IMF) undertakes with its Financial Sector Assessment Program (FSAP) programs.<sup>38</sup> What topics might that document cover? To give this discussion a bit of coherence, we organize our speculative response to this question around the basic categories of recommendations that were floated and to a considerable degree implemented following the last financial crisis.

At the outset and as mentioned earlier, we readily acknowledge that the current pandemic and the last financial crisis differ in significant respects. Most obviously, the trigger for the current crisis was not, in the first stance, some failing in the financial system itself (like an asset bubble or a flawed clearing system). The trigger was the spread of COVID-19. No doubt the responses will differ materially as well. The premise of our analysis, however, is that our framework for analyzing systemic financial risks is a helpful

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<sup>37</sup> Even without losses, the winding down of these facilities generated controversy. See Steven Kelly, *Redux: Outlook for 13(3) and Fed Crisis Response*, Yale School of Management Program on Financial Stability Blog (Dec. 22, 2020). For an interesting exploration of the concerns that may arise when federal instrumentalities pool their resources and evade statutory mandates, see Daphna Renan, *Pooling Powers*, 115 COLUM. L. REV. 211 (2015).

<sup>38</sup> For examples of comparable reports, see e.g., IMF, *A Fair and Substantial Contribution by the Financial Sector*, Final Report for the G-20 (June 2010), <http://www.imf.org/external/np/g20/pdf/062710b.pdf>; Fin. Stability Bd., *Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations*, Report to G20 Finance Ministers and Governors (Oct. 2009), <https://www.bis.org/publ/othp07.pdf> (last visited Apr. 4, 2020); see also *Financial Sector Assessment Program (FSAP)*, INT'L MONETARY FUND (June 3, 2019), <https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/16/14/Financial-Sector-Assessment-Program> (describing the FSAP program).

structure for considering and comparing reforms of financial regulation in both contexts. Our analysis thus focuses on macroprudential financial regulation, to protect against systemic financial risk as a result of pandemics in the future. As discussed earlier, this is risk to the financial system, as a system, as opposed to risk to individual components of the financial system that do not spread beyond those components to threaten the broader economy.<sup>39</sup>

A final caveat concerns the admitted uncertainty as to the full impact of the coronavirus pandemic on the financial system. Conceivably, if the economy recovers from the pandemic relatively promptly, the main financial effects of the pandemic could be market volatility in the spring of 2020 following a sharp but short economic downturn that caused considerable suffering to many individuals and firms but did not have a profound impact on financial firms or a long-term distribution of financial markets.<sup>40</sup> Even then, the pandemic will likely be remembered as a significant economic event, but the government interventions may well be understood as effective and well-designed, especially if the major Federal Reserve Board facilities and Treasury support efforts do not incur substantial credit losses. On the other hand, if the economic downturn persists through 2021 or beyond, if losses continue to accumulate throughout the financial system, or if major financial firms fail or suffer substantial challenges to solvency, then implications for the financial system could be profoundly different. However quickly the economy recovers, there also remains uncertainty as to how the very substantial fiscal expenditures to address the pandemic will be understood: whether as appropriately allocated across all sectors of the economy or inefficiently deployed on the basis of corporate favoritism and insufficient attention to the challenges of households and small firms. In short, uncertainty exists along many dimensions.

#### A. *Improve Consumer Decisions*

One group of recommended reforms following the 2008 financial crisis focused on improving consumer decision-making, on the theory that poor consumer choices—arguably exacerbated by aggressive sales practices—contributed to excessive borrowing and unsustainable loans in the years leading up to the financial crisis. The imposition on lenders of “ability-to-repay” assessments would be one illustration of such a reform as would

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<sup>39</sup> See *supra* Part I.

<sup>40</sup> A number of retrospective analyses published in late 2020 have, in fact, focused on spring 2020 market volatility and identified the performance of treasury markets, money market funds, and the performance of commercial paper and other debt markets as areas for potential reform. See, e.g., Financial Stability Board, *COVID-19 Pandemic: Financial Stability Implications and Policy Measures Taken* (July 15, 2020); SEC Division of Economic and Risk Analysis, *U.S. Credit Markets: Interconnectedness and the Effects of the COVID-19 Economic Shock* (Oct. 2020); President’s Working Group on Financial Markets, *Overview of Recent Events and Potential Reform Options for Money Market Funds* (Dec. 2020).

place limitations on compensation arrangements for mortgage originators likely to incentivize inappropriate loans. One could also put into this category mandated changes in loan servicing arrangements, designed to limit opportunistic behavior in contracts that consumers are unlikely to read or to understand if they did. This category also includes various regulatory nudges of the sort written into the CARD Act to encourage households to pay down their credit card balances more rapidly.

Whether one could envision a similarly spirited set of rules for the financial services sector being adopted in the aftermath of the coronavirus pandemic is an open question. For the same reason that public health authorities face challenges in encouraging members of the public to protect themselves from pandemic risks before those risks become manifest, financial firms or regulatory authorities would face challenges in devising coherent and administrable underwriting standards that would encourage individuals to mitigate pandemic risks or that would allow financial firms to distinguish between those who adjusted their pandemic risk exposures from those who did not.<sup>41</sup> And if direct interventions to force mitigation of pandemic risks at the individual consumer level seem implausible, resort to nudges in this context seems, *a fortiori*, less promising.

Perhaps more practical might be mandated adoption of specific terms of consumer financial contracts—including mortgage loans, student loans, or other debt contracts—which would include force majeure provisions that would facilitate transitional relief in the case of pandemics or other specific national emergencies.<sup>42</sup> As discussed earlier, one of the current policy responses to the coronavirus pandemic has been official encouragement of such adjustments on a voluntary basis on the part of landlords and others, as well as some discussion, at least in policy circles, of changes in bankruptcy rules to facilitate a prompt resolution of individual and perhaps small business insolvency. While it is too soon to evaluate the effectiveness of these

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<sup>41</sup> Underwriting standards for pandemic risks might be slightly more plausible in the area of commercial lending as there may be some measures—such as vender diversification or contingency planning—where commercial borrowers might creditably prepare to withstand pandemics with less disruptions and economic losses in the future.

<sup>42</sup> In the aftermath of the financial crisis, one of us recommended—but with a noticeable absence of public uptake—similarly spirited terms in mortgage loans to grant the government authority to modify loan terms in the event of future nationwide downturns of housing markets similar to what occurred in the late 2000s. See Howell E. Jackson & Nicholas Kypriotakis, Presentation on Embedding Call Options in Mortgages at the Fed. Rsrv. Bank of N.Y. Conference on Mortgage Contract Design: Implications for Households, Monetary Policy, and Financial Stability (May 21, 2015); Howell E. Jackson, *Build a Better Bailout*, CHRISTIAN SCI. MONITOR (Sept. 25, 2008), <https://www.csmonitor.com/Commentary/Opinion/2008/0925/p09s02-coop.html>; Vicki Been, Howell Jackson, & Mark Willis, *Essay: Sticky Seconds—The Problems Second Liens Pose to the Resolution of Distressed Mortgages*, 9 N.Y.U. J. L. & BUS. 71, 118 (2012) (proposing that second liens on residences should be automatically stripped down under certain circumstances); see generally Robert Hockett, *It Takes a Village: Municipal Condemnation Proceedings and Public/Private Partnerships for Mortgage Loan Modification, Value Preservation, and Local Economic Recovery*, 18 STAN. J. L. BUS. & FIN. 121 (2012) (exploring municipal condemnation procedures for subprime mortgages).

measures, voluntary programs are difficult to administer and prone to have uneven and unpredictable effects. Lessons learned from these adjustment efforts could well inform future proposals to require automatic adjustment mechanisms for important consumer (and potentially also commercial) financial contracts, such as the bankruptcy reforms that have recently been floated.<sup>43</sup>

Another potential focus for future policy reforms could address the profound lack of financial resiliency on the part of many American households, as the current pandemic is exposing. While experts in consumer finance have long known and decried that fact that many American families lack even modest levels of emergency savings,<sup>44</sup> that shortcoming has traditionally been understood to represent a problem of consumer financial protection, leaving many individuals vulnerable to abusive payday lenders and other usurious forms of short-term credit.<sup>45</sup> But the current pandemic is also revealing the widespread absence of emergency savings to pose systemic risks as well, and many current interventions can be understood as serving to mitigate the consequences of limited financial resiliency at the household level. Just as the last financial crisis led to increased focus on the financial resiliency of systemically important financial firms, perhaps the current crisis will lead to efforts to increase the financial resiliency of the country's households.

### *B. Reduce Risk-Taking/Increase Loss-Absorption Capacity of Financial Firms*

Another line of regulatory reform could focus on reducing risk-taking efforts—or increasing loss-absorption capacities—of financial firms.<sup>46</sup> Certainly this approach has been the dominant response to the last financial crisis, as evidenced by upward recalibrations of requirements for asset classes that suffered losses in the last crisis, higher capital requirements for systemically important firms, and the introduction of new forms of liquidity requirements. Restrictions such as the Volcker Rule were intended, rightly or wrongly, to prohibit certain kinds of investments associated with excessive risk-taking in the years leading up to the last crisis.

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<sup>43</sup> Of course, one of the challenges of revising “emergency” bankruptcy procedures for future crises is the difficulty of defining the scope of eligible emergencies and preventing opportunistic (and inefficient) innovation of these procedures in ordinary times.

<sup>44</sup> BD. OF GOVERNORS OF THE FED. RESRV. SYS., REPORT ON ECONOMIC WELL-BEING OF U.S. HOUSEHOLDS IN 2017 2 (May 2018), <https://www.federalreserve.gov/publications/files/2017-report-economic-well-being-us-households-201805.pdf> (noting that four in ten adults self-reported that, if faced with an unexpected expense of \$400, they either would be unable, or else would have to borrow money or sell something, to pay it).

<sup>45</sup> For an overview of the issue, see Adam Spiegel, *Employee Benefits – Emergency Savings Account*, in Harvard Law School Case Studies Program No. CSP054 (Apr. 2020), <https://casestudies.law.harvard.edu/employee-benefits-emergency-savings-account/>.

<sup>46</sup> SCHWARCZ, *supra* note 1, at 5–6.

The development of firm-level risk mitigation strategies would be more difficult to devise in the pandemic context than they have been for mortgage and securitization products in the aftermath of the last financial crisis. As with underwriting standards for pandemic risks, reforms designed to limit exposures to asset classes associated with pandemic risks would face challenges in distinguishing between high and low pandemic risk profiles. In addition, pandemics are low-probability, high-consequence events with a substantial degree of correlation across asset classes.<sup>47</sup> Certainly, one could imagine an absolute increase in firm-level capital and liquidity requirements in light of the current crisis; but capital buffers and liquidity reserves set at expected value levels for individual firms would still quite likely be insufficient if another pandemic were to occur of roughly comparable magnitude of the coronavirus, at least without substantial changes in public health interventions, a topic to which we will revert below.<sup>48</sup> Furthermore, in a world still dominated by shareholder primacy,<sup>49</sup> strong incentives will likely exist to resist or minimize capital buffers for such low-probability events; and as years pass without re-occurrence, the political pressure to under-serve for pandemics may become substantial.

In sum, once the current pandemic subsides, there will no doubt be heated debate over whether capital reserves and liquidity requirements of financial firms were set too low.<sup>50</sup> How that debate is resolved will to a

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<sup>47</sup> Rather than analogizing pandemic risks to the kind of credit risk associated with diversified loan portfolios, it might be more apt to compare it to operational risk (such as losses imposed by rogue traders or major cyber security breaches). While modern capital requirements incorporate components related to operational risk, these components have received much less attention from the academic community and substantial questions have been raised about their theoretical coherence and efficacy. *See generally* Jeremy C. Kress, *Solving Banking's Too Big to Manage Problem*, 104 MINN. L. REV. 171, 176 (2019) (claiming to be “the first scholarly analysis of the [“Too Big to Manage”] issue”).

<sup>48</sup> *See infra* Section IV.F.

<sup>49</sup> Interestingly, there may also be discussions as to whether some aspects of prudential requirements, most notably the supplemental leverage ratio, should be permanently revised to incorporate the waivers implemented in the spring of 2020. *See supra* note 26 (discussing waiver); Francisco Covas & Anna Harrington, *Regulators Need to Revisit the Calibration of Leverage Ratios*, Bank Policy Institute (Mar. 3, 2021).

<sup>50</sup> For a flavor of the different views articulated in the summer of 2019, compare Randall K. Quarles, Federal Reserve System Vice Chair for Supervision, *Stress Testing: A Decade of Continuity and Change* (July 8, 2019) (“[O]ur financial system remains resilient and . . . capital planning by banks continues to improve. The largest and most complex banks were tested against a severe hypothetical recession and retained strong capital levels, well above their minimum requirements. They demonstrated the ability to withstand a severe and lasting economic downturn and still be able to lend to households and businesses. Additionally, most firms are now meeting the high expectations we have set to make sure capital planning takes into account their specific risks and vulnerabilities. This is an improvement from last year. Overall, these results are good news that confirm our financial system is significantly stronger than before the crisis.”), with Letter from Professor Anat R. Admati, Professor, Stanford School of Business, to Dietrich Domanski, Secretariat to the Financial Stability Board (June 21, 2019) (“The current capital regulations are inadequate and poorly designed in general, and they do not ‘solve’ the [“Too-Big-To-Fail”] problem. Neither do resolution plans. In particular, the use of loss-absorbing debt instruments as a substitute of much higher (as well as properly defined and measured) equity buffers is unlikely to work as planned and, moreover, is

considerable degree turn on how well those firms withstand the crisis, but even if much of the financial services industry survives unscathed, advocates of higher requirements will no doubt complain that unnecessarily generous public interventions made that survival possible.

### C. Mandate Third-Party Monitoring & Loss Absorption

Another strategy employed in the aftermath of the last financial crisis was the imposition of third-party arrangements to assist financial firms in the monitoring of risks and to expand their loss-absorption capacity. “Skin-in-the-game” rules for securitization transactions fall into this category,<sup>51</sup> as does the requirement of centralized clearing for many derivatives transactions<sup>52</sup> and even the imposition of “bail-in-able” debt instruments to increase larger firms’ total loss-absorbing capital.<sup>53</sup>

One could imagine future reform proposals of a similar nature, such as a requirement that regulated entities, and perhaps also certain individual and corporate borrowers, obtain some sort of pandemic insurance. Like bonding requirements used in other contexts or other kinds of gatekeeper strategies, the premise would presumably be that expert third parties could then set underwriting standards and rate tables reflecting the level of pandemic risks of each firm or borrower. Unfortunately, as the foregoing discussion suggests, this approach would likely run into similar problems not only in distinguishing among insured parties but also in maintaining a viable insurance market with respect to such a low-probability category of risk that would likely be highly correlated among the insureds.

Indeed, pandemic risks might well be located within the class of risks that are sometimes defined as “uninsurable,” at least by private markets.<sup>54</sup> This category includes the risk of nuclear accidents, the risks of war and terrorism, and various other extraordinary catastrophes such as meteorite strikes and sudden shifts in the gulf stream caused by climate change. There are a number of customary ways to address uninsurable risks. One, to which we alluded earlier, is the force majeure clause or other exceptions from contractual obligations in the face of “Acts of God.” Another is some form of mandatory insurance markets, underwritten to some degree by a public authority but potentially pre-funded or post-funded by parties that benefit from

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entirely unnecessary and unjustified from a policy perspective. The debate over these issues continues to be mired in flawed arguments and excuses.”)

<sup>51</sup> SCHWARCZ, *supra* note 1, at 10.

<sup>52</sup> *Id.* at 11.

<sup>53</sup> *Id.* at 9.

<sup>54</sup> See Dwight M. Jaffee & Thomas Russell, *Catastrophe Insurance, Capital Markets, and Uninsurable Risks*, 64 J. RISK & INS. 205, 205 (1997) (explaining that private insurers are reluctant to insure “low-probability high-consequence” catastrophic events, known by insurance textbook writers as “uninsurable risk”) (quoting Richard Zeckhauser, *Insurance and Catastrophes*, 20 GENEVA PAPERS ON RISK & INS. THEORY, 157, 157 (1995)); Daniel Schwarcz & Steven L. Schwarcz, *Regulating Systemic Risk in Insurance*, 81 U. CHI. L. REV. 1569, 1611–12 (2014) (describing the risk of global pandemic as a catastrophic risk).

the coverage. FDIC insurance for deposit-taking banks in the United States and state-administered guaranty funds for insurance companies would both be examples of this approach. One could imagine, we suppose, a similar arrangement for economic consequences of pandemic risks for either the financial services industry or the economy more broadly.

To a degree, recent legislation providing federal resources to many sectors of the economy could be understood as variants of public insurance, perhaps with more of the costs borne by taxpayers rather than by beneficiaries.<sup>55</sup> The scale of taxpayer support in the current crisis may well prompt calls for prospective reforms with different sources of funding. There would be a critical difference, though. FDIC insurance and state-administered guaranty funds operate in areas where there are at least some ways, albeit imperfect, of statistically predicting losses. Mandatory pandemic insurance would be protecting against losses that are largely *sui generis* and unmeasurable. Realistically, therefore, the cost of publicly underwriting the insurance, or the cost of privately pre- or post-funding the insurance, would be huge.<sup>56</sup>

Another way to address uninsurable risks is through so-called risk securitization, which in this context refers to the issuance of long-term debt securities known as catastrophe bonds (often abbreviated as “CAT bonds”).<sup>57</sup> For example, an insurance company or other entity that wishes to hedge the catastrophic risks of an extreme event, such as an earthquake, a hurricane, or (in our essay’s context) a pandemic, could create a special purpose vehicle (“SPV”) to issue CAT bonds to capital market investors.<sup>58</sup> The SPV would invest the proceeds of its bond issuance in liquid and highly-

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<sup>55</sup> For an additional view on justifications for government relief in the face of large risks, see generally Steven Shavell, *A General Rationale for a Government Role in the Relief of Large Risks*, 49 J. RISK & UNCERTAINTY 213 (2014).

<sup>56</sup> Cf. Steven L. Schwarcz, *Regulating Financial Guarantors*, 11 HARV. BUS. L. REV. 159 (2021) (examining how abstraction bias can distort the assessment of risks that lack rigorous statistical and actuarial data).

<sup>57</sup> See generally Paul U. Ali, *Risk Securitization*, in STEVEN L. SCHWARCZ, *STRUCTURED FINANCE: A GUIDE TO THE PRINCIPLES OF ASSET SECURITIZATION & SUPPS.* (3d. ed. 2002). Portions of this discussion of risk securitization is based on Ali, *supra*. For further analysis of risk securitization, see Steven L. Schwarcz, *Insuring the ‘Uninsurable’: Catastrophe Bonds, Pandemics, and Risk Securitization*, 99 WASH. U. L. REV. (forthcoming 2022), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3712534](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3712534); cf. Lori Medders & Steven L. Schwarcz, “Risk Securitization and Insurance” (on file with author) (analyzing risk securitization from a finance perspective).

<sup>58</sup> CAT bonds were developed as a response to the natural disasters that occurred in the early- to mid-1990’s—including Hurricane Andrew and the Northridge Earthquake—which placed considerable stress on the insurance and reinsurance markets to cope with the losses to life and property that resulted from those disasters. See INNOVATIONS IN SECURITISATION 36 (JAN JOB DE VRIES ROBBÉ & PAUL U. ALI, eds., 2006). More recently, the even greater losses caused by Hurricane Katrina have led to fresh interest in risk securitization, on the part of insurance companies as well as governments, as a means of protecting businesses against catastrophic risk. See, e.g., Ernst N. Csiszar, *An Update on the Use of Modern Financial Instruments in the Insurance Sector*, THE GENEVA PAPERS ON RISK & INS. – ISSUES & PRAC. 319 (2007), <https://doi.org/10.1057/palgrave.gpp.2510134>.

rated debt securities, including U.S. Treasury money-market instruments.<sup>59</sup> The SPV would then guarantee certain payments to the hedged entity should the extreme event—that is, a pandemic of specified magnitude—occur.<sup>60</sup> Because the SPV is pre-funded with the CAT-bond proceeds, its guarantee should be creditworthy, at least up to the amount of the SPV's assets.<sup>61</sup>

Risk securitization increasingly is being used to cover extreme risks that insurance and reinsurance markets may be incapable or unwilling to bear alone.<sup>62</sup> Risk securitization utilizes the deep pockets of the global capital markets, which have a far greater capacity than the global insurance and reinsurance markets to absorb these risks.<sup>63</sup> Capital markets investors have significant interest in CAT bonds because of their diversified return. Pandemics and other natural catastrophes occur randomly and are not directly correlated with other economic risks;<sup>64</sup> therefore, CAT-bond returns are largely uncorrelated to the returns of equity securities and conventional bonds.<sup>65</sup>

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<sup>59</sup> Andy Polacek, Senior Research Analyst, Fed. Res. Bk. Chicago, *Catastrophe Bonds: A Primer and Retrospective*, Chicago Fed Letter No. 405, 2018 (available at <https://doi.org/10.21033/cfl-2018-405>).

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

<sup>62</sup> See Neil A. Doherty & Harris Schlesinger, *Insurance Contracts and Securitization*, 69 J. RISK & INS. 45, 45–46, 60–61 (2002); J. David Cummins, Neil Doherty & Anita Lo, *Can Insurers Pay for the 'Big One'? Measuring the Capacity of the Insurance Market to Respond to Catastrophic Losses*, 26 J. BANKING & FIN. 557, 557–59 (2002). The foregoing sources observe that a series of catastrophes on the scale of Hurricane Andrew or the 9/11 terrorist attack occurring in quick succession could overwhelm the insurance and reinsurance markets, leading to the insolvency of some insurers and reinsurers and placing considerable stress on the market survivors and governments to cover the losses from those disasters.

<sup>63</sup> See Neil A. Doherty, *Financial Innovation in the Management of Catastrophe Risk*, 10.3 J. APPLIED CORP. FIN. 84, 84 (1997); Johannes Skylstad Tynes, *Catastrophe Risk Securitization*, 19 J. INS. REG. 3, 7–8 (2000); cf. Polacek, *supra* note 59, at 3 (observing that “[b]y attracting alternative sources of capital (e.g., hedge funds, sovereign wealth funds, pension funds, and mutual funds) to compete with traditional reinsurance . . . , CAT bonds exert downward pressure on reinsurance prices (and price volatility) while increasing the total capital available for the transfer of insurance risks.”). For instance, the global capital markets, with approximately \$106 trillion of bonds outstanding in 2020, see *Research Quarterly: Fixed Income – Issuance and Trading, Second Quarter 2020*, SIFMA (July 16, 2020), <https://www.sifma.org/resources/research/research-quarterly-fixed-income-issuance-and-trading-second-quarter-2020/>, are many times larger than the global reinsurance market, with capital of \$402.35 billion in 2020, see *Global Reinsurance Market Estimated to Grow by \$32+ Billion Over 2020-2021*, INTRADO GLOBENEWSWIRE (Jan. 27, 2021), available at <https://www.globenewswire.com/news-release/2021/01/27/2164954/0/en/Global-Reinsurance-Market-Estimated-to-Grow-by-32-Billion-Over-2020-2021-Companies-Rearranging-Their-Operations-Amid-COVID-19.html>.

<sup>64</sup> Although a pandemic might, as with COVID-19, lead to an economic decline, during the normal life of CAT bonds there is no correlation if there is no pandemic.

<sup>65</sup> See Christopher M. Lewis & Peter O. Davis, *Capital Market Instruments for Financing Catastrophe Risk: New Directions?*, 17 J. INS. REG. 110, 114 (1998); Angelika Schöchlin, *Where's the Cat Going? Some Observations on Catastrophe Bonds*, 14.4 J. APPLIED CORP. FIN. 100, 102–03 (2002). In principle, therefore, catastrophe bonds follow modern portfolio theory, which focuses on optimizing investment returns through portfolio diversification. See PAUL U. ALI ET AL., CORPORATE GOVERNANCE AND INVESTMENT FIDUCIARIES 87–88 (2003). According to that theory, the extent to which an investor can optimize its returns (that is, maximize

Furthermore, CAT bonds have “provided strong returns” to investors.<sup>66</sup> The returns are based not only on the yield passed through from the SPV’s invested securities but also on the guarantee fee paid by the entity whose risks are being hedged.<sup>67</sup> This combination of diversified and strong returns appears to more than offset investor perception of the risk, if the covered catastrophe occurs, that the hedged entity’s claim under its guarantee would have priority over the investors’ claim under their CAT bonds—in that case, subjecting the investors to a potential loss of principal and/or interest under those bonds. Notwithstanding that risk, the investor demand for CAT bonds is robust.<sup>68</sup> \$16.4 billion of CAT bonds were issued in 2020, up from \$11.1 billion issued in 2019.<sup>69</sup> The risk-capital outstanding under CAT bonds increased during that same period from \$40.7 billion to \$46.4 billion.<sup>70</sup>

To date, risk securitizations have primarily been used by insurance companies, reinsurers, and state catastrophe funds (such as the California Earthquake Authority and the Florida Hurricane Catastrophe Fund) to hedge against the catastrophic risk of natural disasters.<sup>71</sup> As a response to the coronavirus pandemic, governments might promote the socialization of pandemic risks through the creation of similar catastrophe funds and use risk securitization to allocate those risks to global investors who choose to purchase the associated CAT bonds. Or perhaps there are other ways in which modern financial engineering might be deployed to mitigate future pandemics and other wholly unanticipated shocks to the financial system.

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overall portfolio returns for a given level of risk or minimize the risk borne by the portfolio for a given level of returns) depends upon the extent to which the returns of the different portfolio constituents are correlated to one another. *Id.* In general, the addition to a portfolio of securities whose returns are negatively or weakly correlated, or uncorrelated, to the existing constituents of the portfolio should increase overall portfolio returns (while leaving the riskiness of the portfolio unchanged) or lower the portfolio’s riskiness (while leaving the portfolio’s overall returns unchanged). *Id.* at 88; *see generally* MORTON LANE, ALTERNATIVE RISK STRATEGIES 549–52 (2002).

<sup>66</sup> Polacek, *supra* note 59, at 3.

<sup>67</sup> *See id.* at 2–3.

<sup>68</sup> *Cf. id.* at 4 (observing that the “CAT bond market has seen strong growth during the post-crisis years. For instance, the amount of outstanding CAT bonds more than doubled between 2010 and 2017. . .”).

<sup>69</sup> Insurance Information Institute, FACTS + STATISTICS: CATASTROPHE BONDS AND OTHER INSURANCE-LINKED SECURITIES, <https://www.iii.org/fact-statistic/facts-statistics-catastrophe-bonds> (visited May 29, 2021) (reporting data from Artemis).

<sup>70</sup> *Id.*

<sup>71</sup> In 2005, for example, a total of \$1.99 billion in debt securities were issued worldwide in securitizations of catastrophic risk, covering risk events such as European windstorms, Japanese earthquakes, U.S. earthquakes, and U.S. hurricanes. The originators included insurance companies, such as USAA and Zurich American, and reinsurance companies, such as Munich Re and Swiss Re. *See* MMC SECURITIES, THE CATASTROPHE BOND MARKET AT YEAR-END 2005: RIPPLE EFFECTS FROM RECORD STORMS 17–19 (2006).

*D. Restructuring the Organization & Management of Financial Firms*

Yet another element of regulatory response to the last financial crisis has been reforms to help resolve the operations, management, and capital structure of major financial firms that become troubled.<sup>72</sup> Many of these reforms have been implemented through the oversight of living wills (that are institution-drafted resolution plans) for major firms<sup>73</sup> and through the creation of legal structures to facilitate the much-debated Single Point of Entry (SPOE) system of resolution.<sup>74</sup> The pandemic crisis could provide regulatory authorities the first opportunity to evaluate how well many aspects of these reforms perform under battlefield conditions. To the extent that systemically important financial firms or even a large number of smaller financial institutions ultimately fail, resolution planning and the SPOE approach will quite likely be subject to reassessment and reform.<sup>75</sup>

These resolution-related reforms do not directly apply to pandemics. Additional bankruptcy law reforms, however, may well be worth considering. Consider, for example, a firm-by-firm standstill that Professor Jay Westbrook and Professor Schwarcz proposed as a temporary tool to address COVID-19 in the United States.<sup>76</sup> The concept is straightforward: Many firms may need to file for bankruptcy, which has significant reputational and other costs. The primary reason firms file for bankruptcy is illiquidity. The standstill would temporarily solve the pandemic-caused illiquidity problem at much lower cost than a traditional bankruptcy—and with minimal disruption and uncertainty.

The standstill would impose a freeze on collections and defaults with regard to a debtor that sought standstill relief but would not constitute a bankruptcy filing. (The standstill is *not* an across-the-board moratorium; rather, it is on a *firm-by-firm basis*, so only firms that need it would apply for it.) It would give an otherwise viable debtor a temporary respite, in light of

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<sup>72</sup> SCHWARCZ, *supra* note 1, at 9.

<sup>73</sup> *Id.*

<sup>74</sup> *Id.* at 21 n.115. For one view on the SPOE approach and potential limitations, see generally Howell E. Jackson & Stephanie Massman, *The Resolution of Distressed Financial Conglomerates*, 3 RUSSELL SAGE FOUND. J. SOC. SCI. 48 (2017).

<sup>75</sup> Whether or not there are institutional failures, there will certainly be considerable focus on the operation of business continuity plans, which have been triggered across the financial services sector as large numbers of employees have been relocated to work from home. Whether a planning mechanism designed initially to address 9/11-style risks and later expanded upon to address natural disasters, British-Petroleum-style industrial accidents, and cyber security issues proves adaptable to pandemic risks will be an interesting and important issue for supervisory officials. For an early indication that this issue is likely to receive supervisory attention, see Jill Gregorie, *SEC Probing Shops' Disaster Responses*, *Ignites*, Apr. 9, 2020 (discussing reports of SEC inquiries into mutual fund groups).

<sup>76</sup> We proposed this firm-by-firm standstill to the Bankruptcy and COVID-19 Working Group, of which we are members. The Working Group includes leading bankruptcy scholars, both legal- and finance-based, whose mission is to study and make recommendations to Congress as to how the bankruptcy system should be reformed to address the COVID-19 pandemic.

the COVID-19 pandemic, from the operation of various deadlines and default provisions, including payment deadlines.

This respite would provide an opportunity for a debtor and its creditors to get information and, ideally, reach an out-of-court debt restructuring or other consensual agreement at much less cost than a bankruptcy. It also would temporarily halt a “grab race” by protecting cooperative creditors from being prejudiced by aggressive creditors that might seize property or otherwise take advantage of the situation, thereby motivating creditors to reach consensus. This protection may be especially important vis-a-vis foreign creditors who might seize foreign assets.

### *E. Reconsidering the Role of the Fed and Treasury in Future Crises*

Another reform from the last financial crisis—and one that has been decried in some certain circles—is an effort to constrain the flexibility of the Federal Reserve Board and other government officials in providing public support in the event of future financial crises.<sup>77</sup> Due both to public outrage over the apparent cost of TARP funding (and its tilt towards financial interests) as well as moral hazard concerns that public interventions might incentivize excessive future risk-taking, the Dodd-Frank Act restricted the scope of the Federal Reserve Board’s powers under Section 13(3) of the Federal Reserve Act and also imposed other restrictions on federal actions in the face of future financial crises.<sup>78</sup> As described above, these restrictions did not inhibit aggressive actions by both the Fed and the Treasury in the face of the coronavirus pandemic. But whether the pandemic will generate similar public dissatisfaction with Fed actions remains to be seen.<sup>79</sup> At a minimum,

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<sup>77</sup> SCHWARCZ, *supra* note 1, at 17 (discussing this aspect of post financial crisis reforms).

<sup>78</sup> Within policy and academic circles, there is a longstanding debate over the extent to which systemic risk should be largely (or even entirely) addressed through costly ex ante measures or whether the government should also provide a limited set of ex post measures, such as the central banks’ traditional lender-of-last-resort functions or perhaps even Mario-Draghi-style “whatever it takes” functions. Some experts (privately) favor time-inconsistent policies, denying any intention of providing ex post interventions in normal times but then being open to ex post intervention when crises arise. Our own view is that some degree of ex post capability is the sounder policy, both because a fully effective ex ante system is extraordinarily costly to impose and politically difficult to maintain. See, e.g., Iman Anabtawi & Steven L. Schwarcz, *Regulating Ex Post: How Law Can Address the Inevitability of Financial Failure*, 92 TEX. L. REV. 75 (2013) (arguing that ex ante regulation and ex post regulation should be balanced in setting financial regulatory policy, and offering guidelines for achieving that balance). But whatever one’s personal views of the merits of ex post interventions, the use of substantial public resources in the face of a financial crisis—even one prompted by pandemic risks—may create subsequent political pressure to scale back the structure of ex post support. Admittedly, this assessment is speculative on our part (along with much of this essay), and it is conceivable that the lesson of the current crisis will be to increase public support of ex post interventions in the case of systemic risks, thereby reducing political resistance to Section 13(3).

<sup>79</sup> The optimal level of public ex post interventions could well vary with policy choices made on another dimension. In particular, if some sort of public insurance arrangement for pandemic risks were imposed along the lines outlined above, the existence of that fund could

the close collaboration between the Fed and the Treasury in recent months adds support for claims that the central bank's role is inherently political and should be subject to more direct political control.<sup>80</sup>

While the Federal Reserve Board's robust response to date belies prior concerns that its Section 13(3) powers were irreparably constrained, that fact might prompt some critics of the Fed to push for even further restrictions on the Fed's Section 13(3) powers in the aftermath of this pandemic.<sup>81</sup> On the other hand—at least at this stage of the coronavirus crisis—it seems unlikely that public interventions to date will raise compelling moral hazard concerns. After all, it seems farfetched to suggest that firms or private parties increased their exposure to pandemic risks in anticipation of federal support in a pandemic-driven crisis. Still, as discussed above in connection with our discussion of ongoing interventions to combat the systemic financial effects of the pandemic, many well-intentioned government actions undertaken today could trigger political backlash in the future, especially if the measures prove ineffective, have unforeseen distributional effects, or come to be seen as reflecting political favoritism or other illegitimate considerations. Conceivably—and this sentiment has already gained voice in some quarters<sup>82</sup>—there may be efforts to disentangle prospectively the appropriate assignment of responsibilities between the Fed and the Treasury in emergency interventions of the sort we have seen in response to COVID-19. Presumably, the goal here would be to restrict the Fed to the provision of liquidity to solvent firms, with the Treasury clearly taking on all credit risks associated with emergency vehicles. Of course, for those sensitive to moral hazard concerns, articulating this division of authority—or worse, authorizing it in advance of

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influence the perceived need for other forms of public support, especially if the financing of public support were on a broad taxpayer base that differed from the funding mechanism for the mandatory insurance program. In Europe, finance ministers agreed to use the European Stability Mechanism (ESM), a bailout fund created after the last financial crisis, to provide loans to countries for healthcare costs associated with COVID-19. See H.J. Mai, *EU Finance Ministers Reach \$590 Billion Coronavirus Rescue Deal* (Apr. 9, 2020), <https://www.npr.org/sections/coronavirus-live-updates/2020/04/09/831395411/eu-finance-ministers-reach-590-billion-coronavirus-rescue-deal>. Debates over the terms of the ESM loans were contentious, due to calls from the Netherlands for more oversight of the funds. *Id.*; see also *ESM's Role in the European Response*, EUROPEAN STABILITY MECHANISM, <https://www.esm.europa.eu/content/europe-response-corona-crisis> (last visited Apr. 17, 2020).

<sup>80</sup> Some have argued that the collaborations between the Fed and the Treasury Department in the spring of 2020 indicate that additional legislation is required to clarify that the Treasury Department has exclusive responsibility for market interventions with fiscal implications. See Hal S. Scott, *An Essay on the Fed and the U.S. Treasury: Lender of Last Resort and Fiscal Policy* (May 21, 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3607192](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3607192).

<sup>81</sup> For an interesting suggestion that Congress should inoculate the Fed by endorsing the Fed's use of its Section 13(3) powers in the current crisis, see Kathryn Judge, *Congress Should Endorse the Federal Reserve's Extraordinary Measures*, THE CLS BLUE SKY BLOG (Mar. 24, 2020), <https://clsbluesky.law.columbia.edu/2020/03/24/congress-should-endorse-the-federal-reserves-extraordinary-measures/>.

<sup>82</sup> See Hal S. Scott, *An Essay on the Fed and the U.S. Treasury: Lender of Last Resort and Fiscal Policy I* (May 21, 2020) (unpublished manuscript) (on file with the Social Science Research Network).

the next crisis—could be seen as having perverse incentive effects in terms of private market risk-taking.

*F. Exporting a Systemic Risk Perspective to the Field of Public Health*

As this essay is primarily concerned with systemic risk in the financial system, we have focused our attention almost exclusively on issues of financial regulation and its reform. It is possible, however, also to think in terms of exporting the lessons of systemic risk regulation in the financial sector to the field of public health.<sup>83</sup> Conceptually, there are two distinct systems of systemic transmission with respect to a pandemic. The first, which has been the focus of this essay so far, is the transmission of a pandemic into systemic risks within the financial system. The second, on which we now touch, is the transmission of an infection that is confined within a small number of individuals or a single community to the broader population; that is, the transmission of localized disease into the pandemic itself.

There is a strong theoretical basis to hypothesize that the macroprudential interventions that financial regulators have devised to police systemic financial risks might help, to some extent, to inform public health measures to control the spread of diseases within human populations. The last financial crisis demanded an expansion of financial regulation from the microprudential, which focuses on specific components of the financial system (such as banks individually), to the macroprudential, which addresses the stability of the financial system *as a system*. Although the medical and healthcare system is also a system, much of its current regulation is microprudential, focusing only on specific components such as individual hospitals and other healthcare providers.

We believe it is important to broaden that regulatory focus, as has been done for the financial system, to address the stability of the medical and healthcare system, *as a system*—a system that pandemics, for example, can destabilize. We refer to that macroprudential regulation as “macromedical” regulation. In a separate article, Professor Schwarcz is working with a healthcare regulation expert to explore the design and implementation of macromedical regulation.<sup>84</sup>

For example, certain channels of transmitting systemic risk in the financial system—interconnectedness, size, and lack of substitutability—and related market failures may also be associated with the transmission of disease

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<sup>83</sup> Another more modest path for combining the two disciplines would be to incorporate the financial costs of pandemics into cost-benefit analyses used to determine, *ex ante*, the appropriate levels of public health safeguards to prevent pandemics. We touched upon this issue in the earlier version of this essay and have reproduced that analysis here in the Appendix. See Howell E. Jackson & Steven L. Schwarcz, *Pandemics and Systemic Financial Risk 2–3* (April 19, 2020) (unpublished manuscript) (on file with the Social Science Research Network).

<sup>84</sup> See Barak D. Richman & Steven L. Schwarcz, *Macromedical Regulation*, 82 OHIO ST. L. J. (forthcoming 2021), available at <http://ssrn.com/abstract=3798810>.

risk. Interconnectedness of people and of healthcare providers can spread a localized infection into a pandemic disease just as interconnectedness of financial institutions can spread a localized default into a systemic economic collapse.<sup>85</sup> Certain macroprudential regulatory approaches that are applicable to reducing the financial system's interconnectedness could also inform public health regulation.<sup>86</sup>

Similarly, just as the failure of an essential financial institution or infrastructure can act as a channel to transmit systemic risk, the lack of substitutability can make the consequences of an infection much worse if hospitals and other essential medical care providers are insufficient to treat ill patients. Regulation could protect against the lack of substitutability by protecting the non-substitutable hospitals and other healthcare providers that provide these essential public services.<sup>87</sup> Macroprudential financial regulation does this for essential financial service providers, for example, through ring-fencing.<sup>88</sup>

Macroprudential regulatory approaches also could help to address market failures that increase the transmission of infections among interconnected people.<sup>89</sup> These market failures include not only collective action problems<sup>90</sup> but also problems of limited human rationality that can exacerbate the transmission of disease, including herd behavior, cognitive biases, overreliance on heuristics, and the tendency to panic.<sup>91</sup>

Additionally, macroprudential regulatory approaches could help to address what might be characterized as a legally created market failure: the fact that the shareholder-primacy rule requires most private healthcare providers to be managed for the primary benefit of their shareholders.<sup>92</sup> This means that these providers engage in activities that sometimes have positive expected value to their investors but negative expected value to the public.<sup>93</sup> This conflict between private and public interests calls into question, for example, whether managers of critical healthcare providers should have some type of a public governance duty, including an obligation to consider not only profits but also protecting public health.<sup>94</sup>

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<sup>85</sup> *Id.*

<sup>86</sup> *Id.* (showing, for example, how macroprudential regulation can reduce tight coupling and interactive complexity of the healthcare system, and thus its interconnectedness).

<sup>87</sup> *Id.*

<sup>88</sup> *Id.*

<sup>89</sup> *Id.*

<sup>90</sup> *See id.* (discussing collective action problems not only among people but also among nations).

<sup>91</sup> *See id.* (discussing behavioral limitations including those discussed in *Systematic Regulation of Systemic Risk*, *supra* note 1, at 29).

<sup>92</sup> *Id.*

<sup>93</sup> *See id.*; *see also supra* note 1 and accompanying text.

<sup>94</sup> Richman & Schwarcz, *supra* note 84.

### G. Creating Greater Resilience Across the Board

Another potential public reaction to the pandemic crisis may arise out of its fiscal implications.<sup>95</sup> While additional and expensive stimulus measures are quite likely to follow, the CARES Act with its \$2.2 trillion price tag, along with inevitable declines in federal revenues, are already expected to push public debt-to-GDP ratios about 100 percent for the first time since the Second World War.<sup>96</sup> Coming into 2020, public debt was not projected to hit that level until the end of the decade. This increase in public debt coupled with annual deficits at an unprecedented peacetime level will likely encourage deficit hawks to push for budgetary stringency in coming years, putting them in conflict with those more focused on Keynesian stimulus packages. Beyond these familiar disputes, the current crisis may spark public debate over whether the federal government has also exposed itself to a degree of national fragility by failing to reserve more fiscal capacity during the sustained economic expansion of the last decade so as to be better prepared to pump up deficit spending when inevitably unforeseen crises arise. To the extent the current crisis is revealing the federal government has become the reinsurer of last resort in times of crisis, the federal government should modify its long-range financial plans accordingly going forward. In effect, one potential response to the pandemic crisis is that we should attempt to improve our national resiliency to withstand pandemics and other unanticipated exogenous shocks.

Indeed, much of our speculation in this part of the essay has been exploring ways in which the resiliency of our financial system might be enhanced in the aftermath of the coronavirus pandemic. Households could be encouraged to increase their emergency savings accounts, financial firms could be required to expand their capital and liquidity buffers beyond those imposed in the aftermath of the last financial crisis, other mechanisms for third party loss absorption (whether catastrophe bonds or some other mechanism) could be promoted, or the public health system itself could be strengthened through judicious incorporation of lessons learned in insulating the financial system from systemic risks.<sup>97</sup> The coronavirus pandemic has, if nothing else, exposed a previously underappreciated degree of fragility in

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<sup>95</sup> See, e.g., Carl Hulse, *No Fight Over Red Ink Now, but Virus Spending Will Force Tough Choices*, N.Y. TIMES (Apr. 18, 2020), <https://www.nytimes.com/2020/04/18/us/coronavirus-deficits-spending.html>.

<sup>96</sup> See Committee for a Responsible Federal Budget, *Budget Projections: Debt Will Exceed the Size of the Economy This Year (2020)*, <http://www.crfb.org/blogs/new-projections-debt-will-exceed-size-economy-year>.

<sup>97</sup> Although beyond the scope of this essay with its focus on the financial system, future reform efforts might focus on the increasingly high amounts of leverage in private firms—arguably exacerbated by the expanding role of private equity investors—as a further source of economic fragility that might possibly be addressed through tax reform. See Mark J. Roe & Michael Troege, *Containing Systemic Risk by Taxing Banks Properly*, 35 YALE J. REG. 181 (2018).

our financial system and economic infrastructure. Quite plausibly, future regulatory responses will focus on improving resiliency across the board.

#### CONCLUSION

Because we continue to be affected by the COVID-19 pandemic, our views in this essay must be tentative and subject to revision. With the benefit of further hindsight, future analysis might reveal, for example, a more comprehensive view of the extent to which *ex ante* regulation might profitably reduce systemic financial risk. We might also be able to offer a more complete analysis of the *ex post* interventions that are being deployed to safeguard the financial system. Nonetheless, we hope this essay will help to foster an ongoing dialogue about protecting financial stability against possible future pandemics.

## APPENDIX

## FINANCIAL COST-BENEFIT ANALYSIS AND PUBLIC HEALTH POLICY ON PANDEMICS

In this Box, we explore another potential linkage between the work of financial regulators and the responsibilities of public health officials with respect to the prevention and management of pandemic risks. As the COVID-19 pandemic made painfully clear, pandemics can have serious economic and financial consequences in addition to their tragic costs in terms of loss of life and suffering. While the economic costs of reduced economic output from self-isolation and quarantines are obvious, this direct effect is amplified through the financial systems, precisely because pandemics are a source of systemic financial risk. And financial regulators—most particularly the Federal Reserve Board but also FSOC—have substantial expertise in dealing with systemic risks to the financial system. Quite plausibly then, financial regulators could play a productive role in helping public health officials estimate the aggregate costs of failure to contain pandemic risks and thus the socially optimal amount of resources that should be expended to contain pandemic risks or mitigate them once they have begun to propagate.<sup>98</sup> In essence, public health authorities could benefit from input from financial regulators to complete a comprehensive cost-benefit analysis for pandemic risks.<sup>99</sup>

As it turns out, financial cost-benefit analysis (“CBA”) has been the subject of considerable academic debate in recent years.<sup>100</sup> While some have been skeptical of the ability to make meaningful estimates of the cost of

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<sup>98</sup> We leave to the side, for now, the question of how such input might be organized. One could imagine that financial considerations might be factored in at a higher political level (like the White House) once public health officials weigh in with a provisional recommendation. That would have the benefit of keeping public health analysis separate and focused solely on public health considerations. However, a siloed approach may mean that public health officials ignore important considerations in excluding options early in their decision-making process, options that might have seemed more attractive if the input of financial regulators came at an earlier stage. Moreover, to the extent that one values the kinds of interdisciplinary payoffs explored above in Section IV.F, a more integrated and comprehensive analysis of policy options may be preferable. And, of course, a variety of hybrid approaches for organizational input and feedback might also be considered.

<sup>99</sup> For a 2020 blog post by a Harvard Kennedy School professor endorsing cost-effectiveness analysis (as opposed to cost-benefit analysis), see Robert Stavins, *What Can Economics Really Have to Say About COVID-19 Policies?*, AN ECONOMIC VIEW OF THE ENVIRONMENT: A BLOG BY ROBERT STAVINS (Apr. 3, 2020), <http://www.robertstavinsblog.org/2020/04/03/what-can-economics-really-have-to-say-about-covid-19-policies/>, which includes citations to other recent discussions of cost-benefit analysis with respect to the current crisis.

<sup>100</sup> See Howell E. Jackson & Paul Rothstein, *The Analysis of Benefits in Consumer Protection Regulations*, 9 HARV. BUS. L. REV. 197, 207–09 (2019) (reviewing the CBA literature). While financial CBA has lagged the use of CBA in the areas of environmental protection and worker safety, particularly with the development of standardized estimates of the statistical value of lives, existing work of regulatory CBA has not extended to the macro-financial consequences of natural disasters or public health crises on the scale of the current pandemic.

financial crises or the benefits of reducing the likelihood of such crises, Federal Reserve Board leadership has been more open to the value of such work in recent years and considerable effort now goes into promoting CBA throughout the financial system.<sup>101</sup> Even some of the most prominent critics of financial CBA have acknowledged the merits of systematic thinking about costs and benefits of regulatory actions (sometimes referred to as qualitative CBA).<sup>102</sup> But whatever the academic views on the subject, as a practical matter, whenever federal regulators choose to pursue or not pursue an element of macroprudential financial regulation, officials are engaging in implicit CBA of systemic risk. Their intuitions on systemic risks to the financial system are thus undoubtedly better informed than those of most public health authorities.

Once again, one can think in terms of input on either an *ex ante* or *ex post* basis. *Ex ante* the pandemic—that is, before 2020—public health officials and the politicians to which these officials reported made decisions in how much to invest in a variety of preventative measures, from staffing the National Security Council, to locating CDC personnel in embassies around the world, to stockpiling emergency equipment like ventilators, to developing contingency plans. One wonders, in retrospect, whether these decisions might have been made differently had public health officials been including in their calculations the economic and financial costs of a full-blown pandemic. At a minimum, one wonders whether—had these estimates of economic implications been updated periodically during the first few weeks of 2020—aggressive mitigation efforts might have been put in place sooner. This Monday-morning quarterbacking is, of course, quite difficult to do meaningfully, but it strikes us as eminently sensible to make sure, at least, that linkages be established between senior regulatory officials and public health authorities for purposes of future pandemic planning. Indeed, it seems unimaginable that this will not happen going forward.

*Ex post*—by which we mean while a pandemic is underway—there could also be a role for financial regulators to play in terms of assessing the benefits of public health measures being rolled out and calibrating the

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<sup>101</sup> See Randal K. Quarles, Vice Chairman for Supervision, Board of Governors of the Fed. Res. Sys., *Early Observations on Improving the Effectiveness of Post-Crisis Regulation*, Remarks at the American Bar Association Banking Law Committee Annual Meeting (Jan. 19, 2018) (calling for assessing post-crisis financial regulation by net costs and benefits); see also DEP'T OF THE TREASURY, REPORT TO THE PRESIDENT OF THE UNITED STATES PURSUANT TO THE PRESIDENTIAL MEMORANDUM ISSUED APRIL 21, 2017; FINANCIAL STABILITY OVERSIGHT COUNCIL DESIGNATIONS 13 (2017), <https://www.treasury.gov/press-center/press-releases/Documents/PM-FSOC-Designations-Memo-11-17.pdf> (recommending the use of CBA to determine if a firm is systemically important).

<sup>102</sup> See John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: A Reply*, 124 YALE L.J.F. 305, 313 (2015). CBA can be approached in a number of different ways, including for example, with a precautionary principle or using a break-even analysis or as a measure of cost effectiveness. For current purposes, we do not attempt to suggest how CBA would be best applied in the context of analyzing the risks of pandemics; we only suggest that it should include economic and financial considerations with input from financial authorities.

amount of financial resources being invested in mitigation efforts or vaccine development, all of which have substantial implications for economic activity. Economic analysis could also be relevant as a pandemic winds down. At first blush, one might think that economic considerations will generally counsel in favor of loosening public health measures. But relaxation of public health measures could bring with it the possibility of renewed outbreaks and additional surges and so the economic consequences of these possibilities should also be considered. Especially while the financial system remains in a fragile state, correctly assessing the systemic financial risks from further surges will require careful and nuanced assessments, again a subject on which senior Federal Reserve Board officials would likely have considerable expertise.

In endorsing the possible incorporation of financial CBA into public health calculations, we must address head-on the uncomfortable possibility that this approach has the potential to put a dollar sign on the value of life. And, to the extent that certain political leaders have been hesitant to impose strict public health measures because they would be bad for the economy, or even worse, bad for the stock market, this concern is not entirely unfounded. Anticipating this charge, we would defend ourselves on two grounds. First, all of the examples of financial CBA that we have suggested above would have served to support the increase of expenditures on mitigation efforts or deferral in the relaxation of public health safeguards. Quite clearly, those who thought holding off on mitigation efforts would be good for the economy were wrong, and spectacularly so. Our second defense is to point out that all decisions with respect to public health expenditures—like all decisions with respect to financial regulation—include an implicit CBA. In the real world, society does not and cannot spend unlimited resources to save every life or cure every disease or minimize every financial risk. What public officials can and should do is to think hard and systematically about how best to deploy society's resources to benefit as many of our citizens as much as possible. And to do this task effectively with respect to pandemics, public health authorities need the assistance of financial regulators to evaluate the overall costs of pandemic risks and the overall benefits of their avoidance.

To be sure, the political challenges of factoring hypothetical and necessarily speculative benefits into public policy decisions will always be challenging, whether these benefits concern a more resilient financial system or other initiatives that prevent future harms. As now White House Chief of Staff Ron Klain observed last year, political decision-making faces an inherent bias against risk-reduction measures; the body politic tends not to invest in preventing risk if there is no tangible evidence that the investments will prevent the risk from occurring.<sup>103</sup> Klain observed that he faced this same

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<sup>103</sup> At the time, Klain was a Lecturer on Law at Harvard Law School and was speaking at a 2020 Duke Law Faculty workshop drawing on his experiences as the former Ebola Czar in the Obama Administration.

problem as Ebola Czar: when you invest and stop Ebola, there is no dramatic end and no political payoff. Without denying the force of these concerns, we remain convinced that there is benefit to bringing the most relevant expertise to the table to estimate the full value of reducing system risks—and that includes the expertise of financial regulators. Producing expert estimates on the full range of material benefits may not overcome political resistance of the sort Klain identifies, but it will add another shoulder to the wheel leaning in the right direction.

Klain also speculated that public memories of pandemics tend to fade more quickly than our collective recollection of other national crises,<sup>104</sup> noting the existence of only one public memorial to the Spanish Flu Pandemic of 1918 as compared to the innumerable memorials to World War I with only a fraction of the fatalities. Keeping financial regulators focused on the risks and financial consequences of future pandemics could serve to combat collective amnesia of economic costs and human suffering that are at this moment all too obvious and painful.

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<sup>104</sup> Cf. ROBERT MEYER & HOWARD KUNREUTHER, *THE OSTRICH PARADOX: WHY WE UNDERPREPARE FOR DISASTERS* 23–24 (2017) (observing that the “hedonic impact of past losses, [such as] the acute sense of tragedy that one feels when seeing one’s house destroyed, or the fear one feels in the immediate wake of a terrorist attack” is forgotten quickly).