Protecting Financial Stability:

Lessons from the Coronavirus Pandemic

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(forthcoming *Harvard Business Law Review* (2021))

June 30, 2020
(revised Oct. 16, 2020)

Abstract

The coronavirus 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 has precipitated – a systemic event for our financial system. This still unfolding systemic shock comes a little more than a decade after the last financial crisis. In the intervening years, much as 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 today's 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 are currently responding to the coronavirus 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 poses 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, recent regulatory measures have been largely ad hoc and reactive, drawing heavily on the regulatory toolkits devised in response to the last financial crisis. But this response has inherently been suboptimal as government authorities have had to worked 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 effectively 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 system 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.[1]

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

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[1] For more complete descriptions of our views on systemic risk in financial regulation, see Steven L. Schwarcz, *Systematic Regulation of Systemic Risk*, 2019 WIS. L. REV. 1, 2–3 [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, Emilios Avgouleas, Danny Busch & Steven L. Schwarcz, eds., Centre for International Governance Innovation, 2019). See also MICHAEL S. BARR, HOWELL E. JACKSON, & MARGARET E. TAYHAR, FINANCIAL REGULATION: LAW AND POLICY 738-46 (2d ed. 2018) (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 Risk App. A (Apr. 21, 2020) (avail. at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3580425).

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.[2] The coronavirus pandemic is providing 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 and AIG and a number of other pillars of the global economy. In that sense, the last 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 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.[3] Early in the summer of 2008, Congress adopted legislation that lay

[2] *See, e.g.*, Hal S. Scott, Connectedness and Contagion: Protecting the Financial System from Panics (2016).

[3] See Congressional Budget Office, Report on the Troubled Asset Relief Program (Mar. 2020).

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.[4]

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 dramatic 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.[5] Those prior market expectations shifted starting in 2007 and dramatically readjusted 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 uncertainty led to massive contagion effects, concerns about complexity, and ultimately a collapse of the financial system, resulting in a worldwide recession.[6]

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[4] 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 subsequently political reactions, such as the Occupy Wall Street movement that emerged in the fall of 2011.

[5] Cf. CORELOGIC, EVALUATING THE HOUSING MARKET SINCE THE GREAT RECESSION 4 (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).

[6] Steven L. Schwarcz, The Financial Crisis and Credit Unavailability: Cause or Effect?, 72 BUS. LAW. 409, 410–11 (Spring 2017). Note that recent downgrades by credit-rating agencies have renewed concerns about the accuracy of credit ratings. Patrick Temple-West, Rating agencies brace for backlash after rash of downgrades, FINANCIAL TIMES (Apr. 2, 2020), https://www.ft.com/content/253210d5-4a2d-439f-a4a6-204a7f66d445.

Viewing today's 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.[7] 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.[8] And the dramatic swings in capital market pricing and the evaporation of liquidity in certain markets in March of this year 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 has the potential for imposing further disruptions on the financial system in a manner that differs from the spread of economic losses during the last financial crisis. It is not the direct effects of the coronavirus itself (through deaths or illness) that threaten systemic consequences to the financial system, but rather the behavioral responses of households and firms and governments that are having dramatic consequences on the economy on several levels. Early in 2020, we witnessed abrupt shifts in consumer demand for services associated with increased perceived risk of infections, like cruises and transportation and entertainment.[9] Employee sickness and employer concern to avoid such sickness then started causing firms to minimize their in-person workforces. With few exceptions (e.g., delivery services such as Amazon[10] and firms supplying medical supplies), customer

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[7] 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, https://www.investopedia.com/terms/b/blackswan.asp (last visited Apr. 17, 2020) ("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.").

[8] *Cf. supra* note **Error! Bookmark not defined.** (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).

[9] *Cf.* Claire Bushey, *US Airlines Seek to Delay Day of Reckoning with $50bn Bailout*, FINANCIAL 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 . . . .").

[10] 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.

contagion and fear of such contagion have been reducing the number of buyers—and thus impairing the demand side of the economy.[11]

Government edicts to implement social distancing and self-isolation further reduced business interactions, cancelling public events and large gatherings and effectively closing many non-essential businesses for lengthy time periods. As a result, we have seen wide-scale lay-offs, skyrocketing unemployment, and the grinding to a halt of many sectors of the economy.[12] The result is the beginning of an unprecedented economic collapse and a disruption of still unknown duration. At times, supply chains have broken down, but even with inventory, businesses are finding it difficult to continue to manufacture and to sell products — especially to retail customers. Small-to-medium-sized businesses are especially hurt.[13] As a result, we are seeing wide-scale lay-offs, skyrocketing unemployment, and the grinding to a halt of many sectors of the economy.[14]

The accumulation of these bottom-up effects threatens 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 in March of 2020. As is evidenced by the specific focus of congressional action earlier this year, airlines, the hospitality industry, and entertainment concerns have all faced acute difficulties. Many small business, especially those in retail or dining, face dramatic reductions in customer traffic and must scramble to devise online or remote distribution channels to maintain any cash flow. State and local governments are facing 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.

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[11] *Cf.* Veronica Guerrier, et al., Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages (Apr. 2020) (NBER Working Paper 26918) (characterizing the shut-downs 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.

[12] *Cf.* Hiba Hafiz, Shu-Yi Oei, Diane Ring, & Natalya Shnitser, "Regulating in Pandemic: Evaluating Economic and Financial Policy Responses to the Coronavirus" 15 (Mar. 19, 2020 draft, on file with authors) (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").

[13] *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.*

[14] *Cf.* Hiba Hafiz, Shu-Yi Oei, Diane Ring, & Natalya Shnitser, "Regulating in Pandemic: Evaluating Economic and Financial Policy Responses to the Coronavirus" 15 (Mar. 19, 2020 draft, on file with authors) (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").

To date, the financial services sector has not experienced top-down failures of the sort we saw with Lehman and AIG in 2008. To be sure, stock markets had fluctuated dramatically and continue to experience a high degree of volatility. Not surprisingly, credit markets – especially for small scale enterprises most hard hit by pandemic induced declines in demand – have dried up, and liquidity in fixed income trading markets was disrupted for periods of time and remains heavily restricted for certain firms. Certain segments of financial markets, such as marketplace lending, may be suffering even more extreme reductions in intermediation. It is not clear that the solvency of any major financial firm is threatened, but the authorization of new guarantee facilities for money market funds and the expansion of FDIC support for bank liabilities suggests that federal authorities are concerned about the potential of runs. Especially in March and April of 2020, there have been surges towards cash and cash-equivalents, which can lead to a loss of liquidity for some financial firms and a challenge for those exposed to significant duration mismatches. Eventually, the abrupt decline in interest rates – including the possibility of negative rates for the indefinite future – will pose challenges for financial firms dependent on margins.

Depending how long the disruption of the real economy persists – which is inexorably linked to how long our current period of social isolation remains 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)[15] could have significant and far-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

[15] *See* Will Parker, *Nearly a Third of U.S. Apartment Renters Didn't Pay April Rent*, WALL ST. J. (Apr. 8, 2020) ("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, Moody's Analytics, COVID-19: Top 10 Questions and Answers, Webinar Presentation (Apr. 2020), https://www.economy.com/getlocal?q=EBF5F2CD-1E1A-48D9-99A5-41EC7B1D5789&app=download. *See also* Jim Zarroli, *America's Largest Bank, JP Morgan Chase, Prepares for A Massive Round of Defaults*, NPR (Apr. 14, 2020) (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).

restructurings and further impairing the health of the country's financial system.[16]

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. And if such failures are to occur, the pandemic of 2020 may well 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 – several months into the pandemic -- it is too early to assess the long-term impact of the pandemic on the economy or the financial system. Our 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 ongoing responses to the coronavirus pandemic. 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

[16] *See* Kenneth Ayotte & David Skeel, *Bankruptcy Law Needs a Boost for Coronavirus*, WALL ST. J. (Mar. 30, 2020); David Skeel, Bankruptcy and the Coronavirus (Apr. 2020) (Brookings Economic Studies Paper). 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 (June 26, 2020), avail. at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3624529;

with systemic events, because *ex ante* restraints have proven insufficient to insulate the financial system.[17] 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 pandemic or other unexpected events. To that extent, these *ex post* measures will have some degree of *ex ante* effects.[18]

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.[19] 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 government payments are outright grants or loans that should be repaid is often unclear. In addition, many recent interventions contemplate 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 consists 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.

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[17] 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.

[18] *Cf.* Douglas G. Baird, *Bankruptcy's Uncontested Axioms*, 108 YALE LJ. 573, 578 (1998) (observing that "[s]ubstantive rules implemented exclusively in bankruptcy . . . may have [effects] on investment beforehand").

[19] In Appendix B to our earlier paper, our research assembled a list of government responses through early April and labelled them according to these categories. See https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3580425. We have not attempted to update for current purposes but have simply reproduced it below as Appendix A. For a current and comprehensive effort to track developments in this area see Program on Financial Stability, *COVID-19 Crisis*, YALE SCHOOL OF MANAGEMENT (visited June 30, 2020), https://som.yale.edu/faculty-research-centers/centers-initiatives/program-on-financial-stability/covid-19-crisis. See also *Davis Polk Opens FinReg Tracker to All*, DAVIS POLK & WARDWELL LLP (Mar. 25, 2020), https://www.davispolk.com/news/davis-polk-opens-finreg-tracker-all; *Financial Regulatory Response to COVID-19*, MAYER BROWN (Apr. 3, 2020), https://covid19.mayerbrown.com/financial-regulatory/; *US Financial Regulatory Action on COVID-19*, STEPTOE & JOHNSON LLP, https://www.steptoe.com/en/news-publications/us-financial-regulatory-agency-action-on-covid-19.html (last visited Apr. 6, 2020); Duane Wall et al., COVID-19 Response: US Financial Services Regulation, White & Case LLP (Apr. 6, 2020), https://www.whitecase.com/sites/default/files/2020-04/4-Federal-regulatory-response-060420-v2.pdf.

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. Being a precedent that 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. Today, in 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 current 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 has not yet been manifested 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.[20] Congress in the CARES Act has also 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.[21]

[20] For a helpful summary of these actions, see DavisPolk Webpage on Government Support for Business (visited June 30, 2020), avail. at https://www.davispolk.com/practices/corporate/government-support-business?utm_source=vuture&utm_medium=v_email&utm_campaign=vuture_emails. For a summary review of Federal Reserve of Federal Reserve Board actions in the last financial crisis, see MICHAEL S. BARR, HOWELL E. JACKSON, & MARGARET E. TAYHAR, FINANCIAL REGULATION: LAW AND POLICY 939-53 (2d ed. 2018) (hereinafter BARR-JACKSON-TAHYAR).

[21] For an excellent overview of the Federal Reserve Interventions and their relationship to the CARES Act, see Lev Menand, Unappropriated Dollars: The Fed's Ad Hoc Lending Facilities and the Rules That Govern Them (May 22,

While neither of these powers has been 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. [22] As such, the Fed may well have prevented immediate market responses to the pandemic from causing 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 action are 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 has 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 in the last financial crisis, updated with new model numbers (e.g., TALF 2.0), and in certain cases, such as haircut requirements for TALF 2.0 collateral, the new term sheets track those used in the last financial crisis.[23]

2020), avail. at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3602740. See also Lev Menand, Fed to the Rescue: Unprescedent Scope, Stretched Authority (Apr. 27, 2020) (The CLS Blue Sky Blog, with comments), avail. at https://clsbluesky.law.columbia.edu/author/lev-menand/.

[22] 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 2020) (avail. at 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) wide-spread guarantees on the part of the federal government, *see* Kathryn Judge, *Guarantor of Last Resort*, 97 TEX. L. REV. 707 (2019).

[23] 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 2020) (avail. at 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) wide-spread

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.[24] 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.[25] 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 has exposed itself to substantial credit risks as a result of these liquidity/guarantee responses. In the last financial crisis, the Federal Reserve Board avoided credit losses on its emergency vehicles, and conceivably that experience is informing current actions by Board leadership. But the duration and intensity of the current economic crisis is unknowable, and it is possible that the models and assumptions used to justify today's liquidity facilities will prove inaccurate. Were significant losses to accrue down the road, political backlash remains 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 or shareholders or some other parties) that in retrospect seem inappropriate or improper. As such, the Fed has likely assumed a degree of political risk that may play out in uncertain ways down the road.

Another point to be emphasized about recent Federal Reserve Board actions is the extent to which they represent active collaboration with the Treasury 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

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guarantees on the part of the federal government, *see* Kathryn Judge, *Guarantor of Last Resort*, 97 TEX. L. REV. 707 (2019).

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

[25] For a helpful summary of the CARES Act provisions, see Davis Polk, Congress Passes CARES Act Fiscal Stimulus Package to Combat the Coronavirus Pandemic's Economic Impact (Mar. 27, 2020) (avail. at https://www.davispolk.com/files/2020-03-26_senate_passes_cares_act_fiscal_stimulus_package.pdf).

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 be engaging 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 have 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.[26]

Regulatory authorities in the current crisis appear to be 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,

[26] 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 regulatory or supervisory adjustments in the face of the pandemic. Accordingly, in Appendix A, we have demarked these initiatives with the word "Adjustment."

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.[27] 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 till the real economy recovers.[28] 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 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 have been much more forceful in providing direct relief to individuals.

Most prominently with the $2.2 trillion CARES Act or Phase III legislation, this relief includes direct cash payments to households, an expansion of unemployment insurance, mandated sick leave for government workers and employees of large private employers (under Phase II

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[27] 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 crises 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.

[28] This tension is starting to play 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. [Insert citations.]

legislation), and what are effectively interest-free loans through the delay of federal (and most state) tax payments. The CARES Act has already been supplemented once, and further congressional funding later in 2020 remains a possibility notwithstanding of the complexities of election year politics. 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 poses 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 relief efforts. Early reports on the mechanics of current 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 provides 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 supports 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.[29]

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 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, current reform 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

[29] *Cf.* Mario Draghi, *We Face a War Against Coronavirus and must Mobilize Accordingly*, FIN. TIMES, Mar. 25, 2020, available at 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.").

conclusions.[30] And the CARES Act itself includes 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 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 are intended to be used to support Federal Reserve Board programs, apparently 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.[31] Under the CARES Act, the Federal Reserve Board seems headed 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.[32] 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 be struck by the extent to which the CARES Act programs for supporting businesses – big and small --- enlists the 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 governments 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 to distribution of credit was likely seen as an efficient mechanisms to get funds out of the door, but it also creates a complicated mixture of shared

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[30] 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" (Mar. 24, 2020), avail. https://promarket.org/economics-and-finance-professors-from-major-universities-write-to-congress-barccil-out-people-before-large-corporations/).

[31] A very limited amount of the Federal Reserve Board's 2008/2009 interventions (e.g., TALF) may also incorporated a limited degree of financial support from the Treasury Department. [confirm this point.]

[32] 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 facilitates 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.

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.[33] Perhaps motivated by the threat of the Defense Procurement Act, some manufacturers have 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 administered 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.[34] 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

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[33] 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 https://portal.ct.gov/CID/Public-Notices/Notice-April-6-of-2020-Covid-19 (statement of the Connecticut Insurance Department).

[34] 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).

same firms for violations of law or contractual breaches that had taken place before 2008 in the failed firms that were acquired.[35] 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.[36] 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 proceed 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.

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 eventual implementation of liquidity facilities is novel and far-reaching. Especially if these facilities ultimately expose the Fed to credit losses, public and political reactions may be intense.[37] How exactly these coordinated responses will be judged in retrospect is an open question.

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[35] *See also* BARR-JACKSON-TAHYAR, *supra* note 2, at 977 (discussing litigation related to JPMorgan Chase acquisition of Washington Mutual). See also Guhan Subramanian & Nithyasri Sharma, Bank of America-Merrill Lynch, HBS Case No. 910-026, Harvard Business School NOM Unit (2010) (avail. at https://ssrn.com/abstract=1486106)..

[36] *See, e.g.,* Wachtell Lipton Memo: Litigation and Enforcement Lessons from the Financial Crisis (Mar. 30, 2020) ("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.").

[37] For an interesting exploring 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).

IV. REFORMING FINANCIAL REGULATION IN RESPONSE TO THE CORONAVIRUS PANDEMIC

While we are no doubt many months – or 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 (FBS) 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.[38] 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 and system 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 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.[39]

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[38] *See e.g.,* INT'L MONETARY FUND, A FAIR AND SUBSTANTIAL CONTRIBUTION BY THE FINANCIAL SECTOR: FINAL REPORT FOR THE G-20 (2010), available at http://www.imf.org/external/np/g20/pdf/062710b.pdf, and FIN. STABILITY BD., GUIDANCE TO ASSESS THE SYSTEMIC IMPORTANCE OF FINANCIAL INSTITUTIONS, MARKETS AND INSTRUMENTS: INITIAL CONSIDERATIONS (Oct. 2009), https://www.bis.org/publ/othp07.pdf (visited Apr. 4, 2020), for examples of comparable reports. *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).

[39] [cross-reference or cite]

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 by 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. 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 into 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 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 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 that did not.[40] 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 – that would include force majeure provisions that would facilitate transitional relief in the case of pandemics or other specific national emergencies.[41] 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 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.[42]

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

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[40] 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.

[41] 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 2000's. Howell E. Jackson. Presentation on Embedding Call Options into Mortgages, FRBNY Conference on Mortgage Contract Design: Implications for Households, Monetary Policy, and Financial Stability (May 21,2015); Howell E. Jackson, Building a Better Bailout, CHRISTIAN SCIENCE MONITOR, Sept. 25, 2008. See also 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). Robert C. Hockett, *It Takes a Village*, 18 STAN. J. L. BUS. & FIN. 121 (2012) (exploring municipal condemnation procedures for subprime mortgages).

[42] 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.

lack even modest levels of emergency savings,[43] 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.[44] 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-absorbing capacities – of financial firms.[45] 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.

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.[46] Certainly, one could

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[43] BOARD OF THE FEDERAL RESERVE SYSTEM, REPORT ON ECONOMIC WELL-BEING OF U.S. HOUSEHOLDS IN 2017, 1–56, 2 (May 2018), https://www.federalreserve.gov/publications/files/2017-report-economic-well-being-us-households-201805.pdf. (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).

[44] For an overview of the issue, see Employee Benefits—Emergency Savings Account, HLS Case Study No. CSP054 (Mar. 2020), https://casestudies.law.harvard.edu/employee-benefits-emergency-savings-account/.

[45] *Systematic Regulation of Systemic Risk*, *supra* note **Error! Bookmark not defined.**, at 5-6.

[46] 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

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 will 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.[47] Furthermore, in a world still dominated by shareholder primacy,[48] 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-reserve 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.[49] How that debate is resolved will to a 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. The skin-in-the-game rules for securitization transactions fall into this category,[50] as do

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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").

[47] *See* Part V, *infra*.

[48] *See infra* notes **Error! Bookmark not defined.-Error! Bookmark not defined.** and accompanying text.

[49] For a flavor of the different views articulated in the summer of 2019, *compare* Fed Vice Governor Randall K. Quarles, Stress Testing: A Decade of Continuity and Change (July 8, 2019) ("[O]ur financial system remains resilient and that 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 to 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 entirely unnecessary and unjustified from a policy perspective. The debate over these issues continues to be mired in flawed arguments and excuses.").

[50] *Systematic Regulation of Systemic Risk*, *supra* note **Error! Bookmark not defined.**, at 10.

the requirement of centralized clearing for many derivatives transactions[51] and even the imposition of bail-in-able debt instruments to increase larger firms' total loss absorbing capital.[52]

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 appropriate 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 into the class of risks that are sometimes defined as "uninsurable," at least by private markets.[53] 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 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 beneficiaries.[54]

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[51] *Id*. at 11.

[52] *Id*. at 9.

[53] *See* Dwight M. Jaffee & Thomas Russell, *Catastrophe Insurance, Capital Markets, and Uninsurable Risks*, 64 J. RISK & INS. 205, 206 (1997) (explaining that private insurers are reluctant to insure "low-probability high-consequence" catastrophic events, known by insurance textbook writers as "uninsurable risk"); 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).

[54] For an additional view on justifications for government relief in the face of large risks, see Steven Shavell, *A General Rationale for a Government Role in the Relief of Large Risks*, 49 J. RISK & UNCERTAIN. 213 (2014).

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.[55]

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").[56] 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.[57] The SPV would invest the proceeds of its bond issuance in liquid and highly-rated debt securities, including U.S. Treasury money-market instruments.[58] The SPV would then guarantee certain payments to the hedged entity should the extreme event—i.e., a pandemic—of specified magnitude occur.[59] 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.[60]

Risk securitization increasingly is being used to cover extreme risks that insurance and reinsurance markets may be incapable or unwilling to bear alone.[61] Risk securitization utilizes the "deep pockets" of the global capital

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[55] *Cf.* Steven L. Schwarcz, *Regulating Financial Guarantors*, forthcoming 11 HARV. BUS. L. REV. issue no. 1 (examining how abstraction bias can distort the assessment of risks that lack rigorous statistical and actuarial data).

[56] *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, "Catastrophe Bonds, Pandemics, and Risk Securitization," June 30, 2020 draft on file with authors.

[57] 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 Northbridge 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* JAN JOB DE VRIES ROBBE ET AL., INNOVATIONS IN SECURITISATION 36 (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. *Id*. at 35.

[58] Andy Polacek, Senior Research Analyst, Fed. Res. Bk. Chicago, *Catastrophe Bonds: A Primer and Retrospective*, Chicago Fed Letter No. 405, 2018 (available at https://www.chicagofed.org/publications/chicago-fed-letter/2018/405).

[59] *Id*.

[60] *Id*.

[61] *See* Neil A. Doherty & Harris Schlesinger, *Insurance Contracts and Securitization* J. RISK & INS. 69 (2002) 45, at 45-46; J. David Cummins, Neil A. Doherty, & Anita Lo, *Can Insurers pay for the 'Big One'? Measuring the Capacity of the Insurance Market to respond to Catastrophic Losses* J. BANKING & FIN. 26 (2002) 557, at 557-55 (the foregoing sources observing that a series of catastrophes on the scale of Hurricane Katrina or the 9/11 terrorist

markets, which have a far greater capacity than the global insurance and reinsurance markets to absorb these risks.[62] Capital market 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[63]; therefore, CAT-bond returns are largely uncorrelated to the returns of equity securities and conventional bonds.[64]

Furthermore, CAT bonds have "provided strong returns" to investors.[65] 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.[66] 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.[67] $9.1 billion of CAT bonds were issued in 2018, and $10.3

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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).

[62] *See* Neil A. Doherty, *Financial Innovation in the Management of Catastrophic Risk* J. APP. CORP. FIN. 10 (1997) 84, at 84; Johannes S. Tynes, *Catastrophe Risk Securitization* J. INS. REG. 19 (2000) 3, at 7-8. *Cf.* Polacek, supra note 58 (observing that "By 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 $65 trillion debt securities outstanding as at 30 September 2006) are many times larger than the global reinsurance market (with capital of approximately $400 billion as at 31 December 2005): BANK FOR INTERNATIONAL SETTLEMENTS, BIS QUARTERLY REVIEW A85-A100 (DECEMBER 2006); GUY CARPENTER, THE WORLD CATASTROPHE REINSURANCE MARKET 6 (2006).

[63] 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.

[64] *See* Christopher M. Lewis & Peter O. Davis, *Capital Market Instruments for Financing Catastrophe Risk: New Directions?* 17 J. INS. REG. 110, 114 (1998); Angelika Schochlin, *Where's the Cat going? Some Observations on Catastrophe Bonds*, 14 J. APP. CORP. FIN. 100, 102-103 (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 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.* at 87-88. 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 549-552 (2002).

[65] Polacek, *supra* note 58.

[66] *Id*.

[67] *Cf. id*. (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.").

billion (a record high) were issued in 2017.[68] The risk-capital outstanding under CAT bonds increased during that same period from $25.2 billion to $28.7 billion.[69]

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.[70] As a response to coronavirus pandemic, governments might promote the socialization of pandemic risks through the creation of similar catastrophe funds and using 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.

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.[71] Many of these reforms have been implemented through the oversight of living wills (that is institution-drafted resolution plans) for major firms[72] and through the creation of legal structures to facilitate the much debated Single Point of Entry (SPOE) system of resolution.[73] 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 re-assessment and reform.[74] Whether

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[68] Insurance Information Institute, "Facts + Statistics: Catastrophe Bonds," available at https://www.iii.org/fact-statistic/facts-statistics-catastrophe-bonds (visited May 28,2020) (reporting data from GC Securities, a division of MMC Securities Corp.).

[69] *Id*. The "majority" of CAT bonds issued in 2018 covered U.S.-based catastrophe risks. *Id*.

[70] In 2005, for example, a total of $1.99 billion debt securities were issued worldwide in securitizations of catastrophic risk, covering risk events such as European windstorms, Japanese earthquakes, US earthquakes and US 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).

[71] *Systematic Regulation of Systemic Risk*, *supra* note **Error! Bookmark not defined.**, at 9.

[72] *Id*.

[73] *Id*. For one view on the SPOE approach and potential limitations, see Howell E. Jackson & Stephanie Massman, *The Resolution of Distressed Financial Conglomerates* in FINANCIAL REFORM: PREVENTING THE NEXT CRISIS (Russell Sage Foundation Journal of Social Sciences 2017) (Michael S. Barr, ed.)

[74] 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

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.[75]

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 from providing public support in the event of future financial crisis.[76] 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.[77] 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.[78] At a minimum,

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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).

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[76] *Systematic Regulation of Systemic Risk*, *supra* note **Error! Bookmark not defined.**, at 17.

[77] 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 provide *ex post* interventions in normal times but then being open to *ex post* intervention when crisis 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). 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 systemic risks, thereby reducing political resistance to Section13(3).

[78] The optimal level of public *ex post* interventions could well vary with policy choices made on other 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 influence the perceived need for other forms of public support, especially if

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.

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.[79] 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 on-going 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[80] – 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 responses 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 the next crisis – could be seen as having perverse incentive effects in terms of private market risk-taking.

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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*, NPR (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 Explainer on the ESM's Role in there European Response*, EUROPEAN STABILITY MECHANISM, https://www.esm.europa.eu/content/europe-response-corona-crisis (last visited Apr. 17, 2020).

[79] For an interesting suggestion that Congress inoculate the Fed by endorsing the Fed's use of its section13(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). 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.

[80] See Hal S. Scott, An Essay on the Fed and the U.S. Treasury: Lender of Last Resort and Fiscal Policy (May 21, 2020), avail. at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3607192 .

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.[81] 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, which we now touch on, 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 macroprudential financial regulation that 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 micro-prudential, 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 macro-prudential regulation as "macromedical" regulation. In a separate article, one of us is working with a healthcare regulation expert to explore the design and implementation of macromedical regulation.[82]

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

[81] 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, see https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3580425, and have reproduced that analysis here in Appendix B.

[82] *See* Barak D. Richman & Steven L. Schwarcz, "Macromedical Regulation" (draft on file with authors).

disease 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.[83] Certain macroprudential regulatory approaches that are applicable to reducing the financial system's interconnectedness could also inform public health regulation.[84]

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.[85] Macroprudential financial regulation does this for essential financial service providers, for example, through ring-fencing.[86]

Macroprudential regulatory approaches also could help to address market failures that increase the transmission of infections among interconnected people.[87] These market failures include not only collective action problems[88] 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.[89]

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.[90] This means that these providers engage in activities that sometimes have positive expected value to their investors but negative expected value to the public.[91] This conflict between private and public interests calls into question, for example, whether managers of critical healthcare providers should have some

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[83] *Id*.

[84] *Id*. (showing, for example, how macroprudential regulation can reduce tight coupling and interactive complexity of the healthcare system, and thus its interconnectedness).

[85] *Id*.

[86] *Id*.

[87] *Id*.

[88] *See id*. (discussing collective action problems not only among people but also among nations).

[89] *See id*. (discussing behavioral limitations including those discussed in *Systematic Regulation of Systemic Risk*, *supra* note **Error! Bookmark not defined.**, at 29).

[90] *Id*.

[91] *See id.* and *supra* note 1 and accompanying text.

type of a public governance duty, including an obligation to consider not only profits but also protecting public health.[92]

G. Creating Greater Resilience Across the Board

Another potential public reaction to the pandemic crisis may arise out of its fiscal implications.[93] 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.[94] 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 peace-time 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 for the next few years. Beyond these familiar disputes, the current crisis may spark public debate over whether the federal government has not 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 it 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 pandemics. 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

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92 "Macromedical Regulation," *supra* note **Error! Bookmark not defined.**.

93 See, e.g., Carl Hulse, No Fight Over Red Ink Now, but Virus Spending Will Force Tough Choices, N.Y. TIMES (Apr. 18, 2020).

94 *See* http://www.crfb.org/blogs/new-projections-debt-will-exceed-size-economy-year.

the financial system from systemic risks.[95] The coronavirus pandemic has, if nothing else, exposed a previously underappreciated degree of fragility in 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 currently being deployed to safeguard the financial system. Nonetheless, we hope this essay will help to foster an ongoing dialogue about protecting financial stability against future possible pandemics.

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[95] 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 Taking Banks Properly*, 35 YALE J. REG. 181 (2018).

APPENDIX A

SUMMARY OF GOVERNMENT RESPONSES TO COVID-19[***]

To try to contain the COVID-19 pandemic's threat to the financial system, the federal government and state regulators have been intervening through a variety of measures. Below, we have listed chronologically the most important interventions to date, focusing on federal regulation of the financial system. We acknowledge but omit important responses by state and local governments. This appendix is illustrative, not comprehensive, and it supplements similar, thoughtful efforts underway at the Yale School of Management and Davis Polk and Wardwell LLP.[96] It is current through April 10, 2020. Further drafts of this essay will further update this Appendix.

To some extent, these government responses reflect the "top-down"/"bottom-up" dichotomy discussed in the text of this essay. For example, the Federal Reserve's March 15, 2020 rate cut and its March 19, 2020 establishment of swap lines for international central banks exemplify "top-down" responses. The CARES Act's provisions for stimulus checks to individual Americans and Small Business Administration loans are more in the nature of "bottom-up" responses. Some responses combine top-down and bottom-up approaches, such as the efforts of the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation to guide banks to prudently accommodate consumer and business borrowers.

Additionally, we have classified these *ex post* measures according to the categories in Part IV of this essay. As we acknowledged,[97] some measures may overlap across categories, and the content of other measures remains unresolved. Nonetheless, we hope these categories can provide a helpful heuristic. To contextualize the pandemic-related financial regulatory efforts,

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[***] This appendix was prepared by Emma Wheeler and Theodore L. Leonhardt, then JD candidates at Duke Law School (and now recipients of that degree).

[96] *See* Program on Financial Stability, *COVID-19 Crisis*, YALE SCHOOL OF MANAGEMENT (Apr. 2, 2020), https://som.yale.edu/faculty-research-centers/centers-initiatives/program-on-financial-stability/covid-19-crisis; *Davis Polk Opens FinReg Tracker to All*, DAVIS POLK & WARDWELL LLP (Mar. 25, 2020), https://www.davispolk.com/news/davis-polk-opens-finreg-tracker-all. Other law firms have undertaken similar efforts. *See, e.g.*, *Financial Regulatory Response to COVID-19*, MAYER BROWN (Apr. 3, 2020), https://covid19.mayerbrown.com/financial-regulatory/; *US Financial Regulatory Action on COVID-19*, STEPTOE & JOHNSON LLP, https://www.steptoe.com/en/news-publications/us-financial-regulatory-agency-action-on-covid-19.html (last visited Apr. 6, 2020); Duane Wall et al., *COVID-19 Response: US Financial Services Regulation*, WHITE & CASE LLP (Apr. 6, 2020), https://www.whitecase.com/sites/default/files/2020-04/4-Federal-regulatory-response-060420-v2.pdf.

[97] *See supra* Part IV.

we have also provided at the end of this Appendix a separate list of public health milestones and government interventions.

Financial Regulatory Interventions

- February 27, 2020: Vice President Mike Pence and Health and Human Services Secretary Azar expand the White House Coronavirus Task Force to include Treasury Secretary Steven Mnuchin and Director of the National Economic Council Larry Kudlow.[98] (**Official Encouragement of Private-Sector Relief)**.
- March 4, 2020: The Securities and Exchange Commission ("SEC") issues an order extending certain Securities Exchange Act of 1934 filing deadlines by forty-five days for filings due between March 1 and April 30.[99] **(Regulatory & Supervisory Accommodations)**.
- March 6, 2020: The Office of the Comptroller of the Currency ("OCC"), Board of Governors of the Federal Reserve System ("Federal Reserve"), and Federal Deposit Insurance Corporation ("FDIC") issue updated general pandemic preparedness guidance, following earlier pandemic preparedness guidance in December 2007.[100] **(Official Encouragement of Private-Sector Relief)**.
- March 6, 2020: The New York Department of Financial Services ("NYDFS") issues pandemic preparedness letters.[101] **(Official Encouragement of Private-Sector Relief)**.
- March 10, 2020: NYDFS issues a statement calling for customer contact to promote reasonable and prudent accommodations to customers such as loan modifications, waiving overdraft and late

[98] Press Release, The White House, Vice President Pence and Secretary Azar Add Key Administration Officials to the Coronavirus Task Force (Feb. 27, 2020), https://www.whitehouse.gov/briefings-statements/vice-president-pence-secretary-azar-add-key-administration-officials-coronavirus-task-force/.

[99] Press Release, U.S. Sec. & Exch. Comm'n, SEC Provides Conditional Regulatory Relief and Assistance for Companies Affected by the Coronavirus Disease 2019 (Mar. 4, 2020), https://www.sec.gov/news/press-release/2020-53.

[100] Press Release, Fed. Fin. Inst. Examination Council, FFIEC Highlights Pandemic Preparedness Guidance (Mar. 6, 2020), https://www.ffiec.gov/press/pr030620.htm.

[101] Industry Letter, N.Y. Dep't Fin. Servs., Guidance to New York State Regulated Institutions and Request for Assurance of Operational Preparedness Relating to the Outbreak of the Novel Coronavirus (Mar. 10, 2020), https://www.dfs.ny.gov/industry_guidance/industry_letters/il20200310_risk_coronavirus; Industry Letter, N.Y. Dep't Fin. Servs., Guidance to New York State Regulated Institutions and Request for Assurance Relating to Potential Financial Risk Arising from the Outbreak of the Novel Coronavirus (Mar. 10, 2020), https://www.dfs.ny.gov/industry_guidance/industry_letters/il20200310_financial_risk_coronavirus; Letter, N.Y. Dep't Fin. Servs., Guidance to Department of Financial Services ("DFS") Regulated Institutions Engaged in Virtual Currency Business Activity and Request for Assurance Relating to Operational and Financial Risk Arising from the Outbreak of the Novel Coronavirus (COVID-19) (Mar. 10, 2020), https://www.dfs.ny.gov/industry_guidance/industry_letters/il20200310_coronavirus_vc_business_oper_fin_risk.

fees, and reducing credit terms on new loans.[102] **(Official Encouragement of Private-Sector Relief)**.

- March 13, 2020: The OCC and FDIC release similar statements favoring prudently accommodating customers affected by COVID-19, with measures including 1) fee waivers, 2) increased withdrawal caps, 3) payment accommodations, 4) higher credit card limits, 5) flexibility for out-of-state and non-customer checks, and 6) flexibility for customers afflicted by illness or business interruptions.[103] **(Official Encouragement of Private-Sector Relief)**.
- March 13, 2020: The SEC "publishe[s] guidance to assist public companies, investment companies, shareholders, and other market participants affected by COVID-19 with their upcoming annual shareholder meetings . . . . to facilitate the ability of companies to hold these important meetings, including through the use of technology, and engage with shareholders while complying with the federal securities laws."[104] The SEC provides similar relief from in-person meeting requirements for investment funds and investment advisors.[105] **(Regulatory & Supervisory Accommodations)**.
- March 14, 2020: The SEC provides "notice for immediate effectiveness a proposed rule filing submitted by Cboe Exchange, Inc. to facilitate the continued operation of Cboe's options exchange in light of Cboe's decision to temporarily suspend open outcry trading on its Chicago trading floor."[106] **(Regulatory & Supervisory Accommodations)**.
- March 15, 2020: The Federal Reserve cuts the target range for the federal funds rate to 0–0.25% and announces plan to buy at least $500 billion in Treasury securities and $200 billion in mortgage-

[102] Letter, N.Y. Dep't Fin. Servs., Guidance to New York State Regulated Financial Institutions Regarding Support for Consumers and Businesses Impacted by the Novel Coronavirus (COVID-19) (Mar. 10, 2020), https://www.dfs.ny.gov/industry_guidance/industry_letters/il20200319_consumer_support_coronavirus.

[103] Office of the Comptroller of the Currency, Bull. No. 2020-15, Pandemic Planning: Working with Customers Affected by Coronavirus and Regulatory Assistance (Mar. 13, 2020), https://www.occ.gov/news-issuances/bulletins/2020/bulletin-2020-15.html; Financial Institution Letter, FIL-17-2020, Fed. Deposit Ins. Corp., Regulatory Relief: Working with Customers Affected by the Coronavirus (Mar. 13, 2020), https://www.fdic.gov/news/news/financial/2020/fil20017.html.

[104] Press Release, U.S. Sec. & Exch. Comm'n, SEC Staff Provides Guidance to Promote Continued Shareholder Engagement, Including at Virtual Annual Meetings, for Companies and Funds Affected by the Coronavirus Disease 2019 (COVID-19) (Mar. 13, 2020), https://www.sec.gov/news/press-release/2020-62.

[105] Press Release, U.S. Sec. & Exch. Comm'n, SEC Takes Targeted Action to Assist Funds and Advisers, Permits Virtual Board Meetings and Provides Conditional Relief from Certain Filing Procedures (Mar. 13, 2020), https://www.sec.gov/news/press-release/2020-63.

[106] Press Release, U.S. Sec. & Exch. Comm'n, Cboe Options Exchange Temporarily Shifts to Fully Electronic Trading – SEC Enables Immediate Effectiveness of Proposed Rule Change to Facilitate Continued Operations in Light of Temporary Suspension of Cboe Physical Trading Floor (Mar. 14, 2020), https://www.sec.gov/news/press-release/2020-64.

backed debt.[107] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.

- March 17, 2020: Small Business Administration ("SBA") relaxes criteria for states accessing small business loan assistance.[108] **(Public Relief to Business Enterprises)**.
- March 17, 2020: The Federal Reserve establishes the Commercial Paper Funding Facility ("CPFF"), a funding facility to purchase commercial paper directly from eligible companies.[109] The Federal Reserve also establishes a Primary Dealer Credit Facility ("PDCF") to "offer overnight and term funding with maturities up to 90 days" to primary dealers.[110] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.
- March 17, 2020: The Commodity Futures Trading Commission ("CFTC") announces issuance of no-action letters for compliance challenges due to COVID-19.[111] **(Regulatory & Supervisory Accommodations)**.
- March 18, 2020: The Federal Reserve establishes the Money Market Mutual Fund Liquidity Facility.[112] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.
- March 19, 2020: FDIC, Federal Reserve, and OCC clarify that banks should "use their own capital and liquidity buffers as they respond to the challenges presented by the effects of the coronavirus."[113] The agencies also revise the definition of "eligible retained income" for bank capital requirements to prevent sudden limitations on capital

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[107] Jeanna Smialek & Neil Irwin, *Fed Cuts Rates to Near Zero; Virus Toll Soars*, N.Y. TIMES, Mar. 15, 2020, at A1.

[108] Press Release No. 20-26, U.S. Small Bus. Admin., SBA Updates Criteria on States for Requesting Disaster Assistance Loans for Small Businesses Impacted by Coronavirus (Mar. 17, 2020), https://www.sba.gov/about-sba/sba-newsroom/press-releases-media-advisories/sba-updates-criteria-states-requesting-disaster-assistance-loans-small-businesses-impacted.

[109] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Board Announces Establishment of a Commercial Paper Funding Facility (CPFF) to Support the Flow of Credit to Households and Businesses (Mar. 17, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200317a.htm.

[110] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Board Announces Establishment of a Primary Dealer Credit Facility (PDCF) to Support the Credit Needs of Households and Businesses (Mar. 17, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200317b.htm.

[111] Press Release, Commodity Futures Trading Comm'n, CFTC Provides Relief to Market Participants in Response to COVID-19, Release No. 8132-20 (Mar. 17, 2020), https://www.cftc.gov/PressRoom/PressReleases/8132-20.

[112] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Board Broadens Program of Support for the Flow of Credit to Households and Businesses by Establishing a Money Market Mutual Fund Liquidity Facility (MMLF) (Mar. 18, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200318a.htm.

[113] Financial Institution Letter, FIL-20-2020, Fed. Deposit Ins. Corp., Regulatory Capital Rule: Clarification on the Use of Buffers (Mar. 19, 2020), https://www.fdic.gov/news/news/financial/2020/fil20020.html?source=govdelivery&utm_medium=email&utm_source=govdelivery.

distributions.[114] **(Regulatory & Supervisory Accommodations) / (Official Encouragement of Private-Sector Relief)**.

- March 19, 2020: The Federal Reserve establishes swap lines providing temporary liquidity in U.S. dollars to several international central banks.[115] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.
- March 19, 2020: The Federal Reserve, the FDIC, the National Credit Union Administration ("NCUA"), the OCC, Consumer Financial Protection Bureau ("CFPB"), and State Banking Regulators issue initial guidance on modified loan terms, expressing that modified loans would not be past due (requiring reporting) if the borrower complied with modified loan terms. **(Regulatory & Supervisory Accommodations)**.
- March 21, 2020: The SEC "notice[s] for immediate effectiveness a proposed rule filing submitted by New York Stock Exchange LLC ("NYSE") to facilitate electronic auctions in light of its decision to temporarily close its New York trading floor."[116] **(Regulatory & Supervisory Accommodations)**.
- March 22, 2020: The Federal Reserve, the FDIC, the NCUA, the OCC, CFPB, and State Banking Regulators update and expand their inter-agency guidance by relaxing accounting requirements to encourage short-term, good faith loan modifications.[117] **(Regulatory & Supervisory Accommodations)**.
- March 22, 2020: The SEC provides regulatory relief for transfer agents, who still must adequately safeguard securities and funds in their custody or possession according to Exchange Act Rule 17Ad-12.[118] **(Regulatory & Supervisory Accommodations)**.
- March 22, 2020: OCC promulgates an interim final rule extending maturity limits in short-term investment funds for national banks

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[114] Financial Institution Letter, FIL-21-2020, Fed. Deposit Ins. Corp., Regulatory Capital Rule: Eligible Retained Income (Mar. 19, 2020), https://www.fdic.gov/news/news/financial/2020/fil20021.html?source=govdelivery&utm_medium=email&utm_source=govdelivery.

[115] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Announces the Establishment of Temporary U.S. Dollar Liquidity Arrangements with Other Central Banks (Mar. 19, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200319b.htm.

[116] Press Release, U.S. Sec. & Exch. Comm'n, SEC Enables Immediate Effectiveness of Proposed Rule Change to Facilitate NYSE Electronic Auctions in Light of Temporary Closure of Physical Trading Floor (Mar. 21, 2020), https://www.sec.gov/news/press-release/2020-67.

[117] Financial Institution Letter, FIL-22-2020, Fed. Deposit Ins. Corp., Interagency Statement on Loan Modifications by Financial Institutions Working with Customers Affected by Coronavirus (Mar. 22, 2020), https://www.fdic.gov/news/news/financial/2020/fil20022.html.

[118] Press Release, U.S. Sec. & Exch. Comm'n, SEC Provides Conditional Regulatory Relief for Registered Transfer Agents and Certain Other Persons Affected by the Coronavirus Disease 2019 (COVID-19) (Mar. 22, 2020), https://www.sec.gov/news/press-release/2020-68.

acting as fiduciaries.[119] **(Regulatory & Supervisory Accommodations)**.

- March 23, 2020: The Federal Reserve announces several measures to address economic disruption, including a plan to purchase an unlimited amount of government-backed Treasury securities and mortgage-backed securities.[120] The Federal Reserve also commits to establishing up to $300 billion in financing for employers, consumers, and business, and to establishing three new credit facilities: a Primary Market Corporate Credit Facility ("PMCCF") for bond and loan issuance; a Secondary Market Corporate Credit Facility ("SMCCF") to buy corporate bonds and invest in debt; and a Term Asset-Backed Securities Loan Facility ("TALF") to support assets backed by certain consumer loans.[121] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.
- March 23, 2020: SEC issues a public statement emphasizing the importance of market integrity and of preventing misuse of material non-public information as related to COVID-19.[122] **(Official Encouragement of Private-Sector Relief)**. The SEC also allows lending arrangements between registered funds and their affiliates to provide support for funds and their investors during portfolio rebalancing.[123] **(Regulatory & Supervisory Accommodations)**.
- March 25, 2020: SEC offers a forty-five-day extension for certain covered filings under the Securities Exchange Act of 1934, the Investment Company Act of 1940, and the Investment Advisers Act of 1940 to businesses unable to meet deadlines due to COVID-19.[124] The SEC also issues guidance on disclosures and other securities law obligations with respect to COVID-19 business and market disruptions.[125] **(Regulatory & Supervisory Accommodations)**.

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[119] 85 Fed. Reg. 16,887 (Mar. 25, 2020) (amending 12 C.F.R. § 9.18).

[120] Jeanna Smialek, *Fed Flexes Muscle as Senate Battles Over Aid*, N.Y. TIMES, Mar. 24, 2020, at A1.

[121] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Announces Extensive New Measures to Support the Economy (Mar. 23, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200323b.htm.

[122] U.S. Sec. & Exch. Comm'n, Statement from Stephanie Avakian and Steven Peikin, Co-Directors of the SEC's Division of Enforcement Regarding Market Integrity (Mar. 23, 2020), https://www.sec.gov/news/public-statement/statement-enforcement-co-directors-market-integrity.

[123] Press Release, U.S. Sec. & Exch. Comm'n, SEC Provides Temporary Additional Flexibility to Registered Investment Companies Affected by Coronavirus (Mar. 23, 2020), https://www.sec.gov/news/press-release/2020-70.

[124] U.S. Sec. & Exch. Comm'n, Release No. 34-88465, Order Under Section 36 of the Securities Exchange Act of 1934 Modifying Exemptions from the Reporting and Proxy Delivery Requirements for Public Companies (Mar. 25, 2020), https://www.sec.gov/rules/exorders/2020/34-88465.pdf.

[125] U.S. Sec. & Exch. Comm'n, CF Disclosure Guidance: Topic No. 9 (Mar. 25, 2020), https://www.sec.gov/corpfin/coronavirus-covid-19.

- March 26, 2020: CFPB revises reporting requirements for mortgage lenders and credit card providers.[126] **(Regulatory & Supervisory Accommodations)**.
- March 26, 2020: The SEC provides additional relief from the notarization requirement for its online EDGAR filing system, extends filing deadlines for Regulation A and Regulation Crowdfunding, and extends the Form MA filing deadline for municipal advisors.[127] **(Regulatory & Supervisory Accommodations)**.
- March 27, 2020: President Trump signs the Coronavirus Aid, Relief, and Economic Security Act ("CARES Act" or "Phase II") into law, authorizing $2 trillion of relief through small business loans, cash payments to individuals, expanded unemployment insurance, $500 billion in loans and loan guarantees to eligible distressed businesses, and support for Federal Reserve programs.[128] Components of the CARES Act include:
    - SBA loans[129] **(Public Relief to Business Enterprises)**;
    - Infrastructure and transportation support[130] **(Public Relief to Business Enterprises)**;
    - Bank financing[131] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**;
    - Employee benefits policy[132] **(Public Relief to Households)**;

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[126] Consumer Fin. Prot. Bureau, CFPB Provides Flexibility During COVID-19 Pandemic (Mar. 26, 2020), https://www.consumerfinance.gov/about-us/newsroom/cfpb-provides-flexibility-during-covid-19-pandemic/.

[127] Press Release, U.S. Sec. & Exch. Comm'n, SEC Provides Additional Temporary Regulatory Relief and Assistance to Market Participants Affected by COVID-19 (Mar. 26, 2020), https://www.sec.gov/news/press-release/2020-74.

[128] Coronavirus Aid, Relief, and Economic Security Act, Pub. L. No. 116-136 (2020); *Congress Passes Largest Ever Economic Stimulus Package: Key Provisions of CARES Act*, SHEARMAN & STERLING (Mar. 27, 2020), https://www.shearman.com/perspectives/2020/03/congress-passes-largest-ever-economic-stimulus-package-key-provisions-of-cares-act-covid-19.

[129] Andrew T. Kugler, *Small Business Loans under the CARES Act*, MAYER BROWN (Mar. 27, 2020), https://www.mayerbrown.com/en/perspectives-events/publications/2020/03/small-business-loans-under-the-cares-act.

[130] Joseph Seliga, *Summary of Infrastructure and Transportation Provisions: Coronavirus Aid, Relief, and Economic Security Act*, MAYER BROWN (Mar. 27, 2020), https://www.mayerbrown.com/en/perspectives-events/publications/2020/03/summary-of-infrastructure-and-transportation-provisions-coronavirus-aid-relief-and-economic-security-act.

[131] Allyson B. Baker et al., *The Application is Now Available for CARES Act Small Business Loans: What You Need to Know*, VENABLE LLP (Apr. 1, 2020), https://www.venable.com/insights/publications/2020/03/the-cares-act-what-you-need-to-know-about.

[132] Ryan J. Liebl & Stephanie B. Vasconcellos, *The CARES Act-Compensation and Benefits*, MAYER BROWN (Mar. 27, 2020), https://www.covid19.law/2020/03/the-cares-act-compensation-and-benefits-related-provisions/.

  - Real estate and mortgage relief[133] **(Public Relief to Households)**;
  - Tax policy[134] **(Public Relief to Households)**; and
  - Public health measures[135] **(Public Relief to Households)**;
- March 27, 2020: Bank regulatory agencies authorize early adoption of a new approach to measuring counterparty risk under the "Standardized Approach for Calculating the Exposure Amount of Derivative Contracts" Rule ("SA-CCR Rule"). The agencies also provide a two-year extension on the capital effects of adopting the "current expected credit loss" accounting standard.[136] **(Regulatory & Supervisory Accommodations)**.
- March 27, 2020: President Trump delegates Defense Production Act ("DPA") Title III authority to Secretary Azar "to guarantee loans by private institutions, make loans, make provision for purchases and commitments to purchase, and take additional actions to create, maintain, protect, expand, and restore domestic industrial base capabilities [for medical manufacturing]," as well as activate the DPA's antitrust exemption.[137] **(Public Relief to Business Enterprises)**.
- March 29, 2020: Mortgage Bankers Association ("MBA") urges FINRA and the SEC to "issue guidance to the nation's broker-dealers, making clear that margin calls on mortgage lenders' hedge positions should not be escalated to destabilizing levels. MBA indicates its belief that, absent such guidance and an immediate shift in broker-dealer practices, the U.S. housing market is in danger of large-scale disruption."[138] **(Official Encouragement of Private-Sector Relief)**.

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[133] Faiz Ahmad et al., *CARES Act Provides Much-Needed Stimulus for U.S. Businesses, Individuals*, SKADDEN, ARPS, SLATE, MEAGHER & FLOM LLP (Mar. 27, 2020), https://www.skadden.com/insights/publications/2020/03/cares-act-provides-much-needed-stimulus#real.

[134] James R. Barry et al., *US Tax Relief in CARES Act*, MAYER BROWN (Mar. 27, 2020), https://www.mayerbrown.com/en/perspectives-events/publications/2020/03/us-tax-relief-in-cares-act.

[135] John R. Jacob et al., *CARES Act Summary – Health Care*, AKIN GUMP (Mar. 26, 2020), https://www.akingump.com/en/experience/industries/national-security/covid-19-resource-center/cares-act-summary-health-care.html.

[136] Joint Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Fed. Deposit Ins. Corp., & Office of the Comptroller of the Currency, Agencies Announce Two Actions To Support Households and Businesses (Mar. 27, 2020), https://www.federalreserve.gov/newsevents/pressreleases/bcreg20200327a.htm.

[137] *See also* Boris Bershteyn & Michael E. Leiter, President Trump Uses the Defense Production Act to Compel Production of Ventilators, Prohibit Hoarding in Response to COVID-19, SKADDEN, ARPS, SLATE, MEAGHER & FLOM LLP (Apr. 1, 2020), https://www.skadden.com/insights/publications/2020/04/president-trump-uses-the-defense-production.

[138] *The Response: Federal and State Actions Affecting the Financial Services Industry – Edition 3*, HOLLAND & KNIGHT (Mar. 30, 2020), https://www.hklaw.com/en/insights/publications/2020/03/the-response-federal-and-state-actions-edition-3.

- March 31, 2020: The Federal Reserve establishes a "temporary repurchase agreement facility for foreign and international monetary authorities ('FIMA Repo Facility') . . . to allow FIMA account holders, which consist of central banks and other international monetary authorities with accounts at the Federal Reserve Bank of New York, to enter into repurchase agreements with the Federal Reserve." The Federal Reserve explains, "This facility should help support the smooth functioning of the U.S. Treasury market by providing an alternative temporary source of U.S. dollars other than sales of securities in the open market. It should also serve, along with the U.S. dollar liquidity swap lines the Federal Reserve has established with other central banks, to help ease strains in global U.S. dollar funding markets."[139] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.
- March 31, 2020: The CFTC announces additional no-action relief for its constituent market participants, extending to September 30, 2020.[140] **(Regulatory & Supervisory Accommodations)**.
- March 31, 2020: The SEC announces a virtual meeting of its Small Business Capital Formation Advisory Committee in response to COVID-19.[141] **(Official Encouragement of Private-Sector Relief)**.
- April 1: The Federal Reserve announces a temporary exclusion of Treasury securities and deposits from calculating the supplementary leverage ratio for bank holding companies, reducing tier 1 capital.[142] **(Official Encouragement of Private-Sector Relief)**.
- April 3, 2020: The Federal Reserve, the CFPB, Conference of State Bank Supervisors ("CSBS"), FDIC, NCUA, and OCC issue guidance encouraging mortgage servicers' participation in forbearance programs under the CARES Act.[143] **(Official Encouragement of Private-Sector Relief)**.

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[139] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Announces Establishment of a Temporary FIMA Facility to Help Support the Smooth Functioning of Financial Markets (Mar. 31, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200331a.htm.

[140] Commodity Futures Trading Comm'n, Release No. 8142-20, CFTC Provides Further Relief to Market Participants in Response to COVID-19 (Mar. 31, 2020), https://www.cftc.gov/PressRoom/PressReleases/8142-20.

[141] Press Release, U.S. Sec. & Exch. Comm'n, SEC Announces Ad Hoc Meeting of Small Business Capital Formation Advisory Committee in Response to COVID-19 Challenges Faced By Small Businesses (Mar. 31, 2020), https://www.sec.gov/news/press-release/2020-76.

[142] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Board announces temporary change to its supplementary leverage ratio rule to ease strains in the Treasury market resulting from the coronavirus and increase banking organizations' ability to provide credit to households and businesses (Apr. 1, 2020), https://www.federalreserve.gov/newsevents/pressreleases/bcreg20200401a.htm.

[143] Press Release, Fed. Deposit Ins. Cop., Federal Agencies Encourage Mortgage Servicers to Work With Struggling Homeowners Affected by COVID-19 (Apr. 3, 2020), https://www.fdic.gov/news/news/press/2020/pr20047.html.

- April 6, 2020: The Federal Reserve, FDIC, and OCC announce the issuance of two interim final rules, allowing community banks to lower their community bank leverage ratios to 8% on an interim basis, while planning for a return to the prior 9% ratio.[144] **(Regulatory & Supervisory Accommodations)**.
- April 6, 2020: The Federal Reserve announces that it "will establish a facility to provide term financing backed by [Paycheck Protection Program ("PPP")] loans."[145] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.
- April 6, 2020: The CFTC warns against fraud schemes associated with recent job losses.[146] **(Official Encouragement of Private-Sector Relief)**.
- April 6, 2020: The NYSE suspends shareholder approval rules on issuances to related parties and bona fide private financings under the 20% rule through June 30.[147] **(Regulatory & Supervisory Accommodations)**.
- April 7, 2020: The Federal Reserve, CFPB, FDIC, NCUA, and OCC clarify the interaction of their prior March 22 guidance on loan modifications with Section 4013 of the CARES Act, which suspends rules regarding troubled debt restructuring ("TDR") regulatory classification of loans, and further encourages prudent loan modifications. The regulators also interpreted loan modification and capital reporting rules while emphasizing that examiners "will not criticize" COVID-19 related loan modifications.[148] **(Regulatory & Supervisory Accommodations)**.
- April 7, 2020: The SEC issues risk alerts related to Regulation Best Interest and Form CRS for broker dealers and investment advisers, emphasizing that it will consider the effects of COVID-19 in

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[144] Press Release, Fed. Deposit Ins. Cop., Agencies Announce Changes to the Community Bank Leverage Ratio (Apr. 6, 2020), https://www.fdic.gov/news/news/press/2020/pr20048.html.

[145] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve will establish a facility to facilitate lending to small businesses via the Small Business Administration's Paycheck Protection Program (PPP) by providing term financing backed by PPP loans (Apr. 6, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200406a.htm.

[146] Press Release, Commodity Futures Trading Comm'n, Release No. 8144-20, CFTC Issues COVID-19 Customer Advisory on Fee Scams (Apr. 6, 2020), https://www.cftc.gov/PressRoom/PressReleases/8144-20.

[147] U.S. Sec. & Exch. Comm'n, Self-Regulatory Organizations; New York Stock Exchange LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change to Waive the Application of Certain of the Shareholder Approval Requirements in Section 312.03 of the NYSE Listed Company Manual Through June 30, 2020 Subject to Certain Conditions, Release No. 34-88572 (Apr. 6, 2020), https://www.sec.gov/rules/sro/nyse/2020/34-88572.pdf ; Victor Goldfeld, *NYSE Temporarily Relaxes Shareholder Approval Rules*, WACHTELL, LIPTON, ROSEN & KATZ (Apr. 8, 2020), https://www.wlrk.com/webdocs/wlrknew/WLRKMemos/WLRK/WLRK.26905.20.pdf.

[148] Press Release, Fed. Deposit Ins. Cop., Agencies Issue Revised Interagency Statement on Loan Modifications by Financial Institutions Working with Customers Affected by the Coronavirus (Apr. 7, 2020), https://www.fdic.gov/news/news/press/2020/pr20049.html.

implementing the regulations.[149] **(Regulatory & Supervisory Accommodations)**.

- April 8, 2020: The SEC provides exemptions to allow business development companies to issue additional senior securities to finance small and medium-sized businesses.[150] **(Regulatory & Supervisory Accommodations)**.
- April 8, 2020: SEC Chairman Jay Clayton and SEC Director of Corporation Finance William Hinman issue a public statement encouraging companies "to provide as much information as is practicable regarding their current financial and operating status, as well as their future operational and financial planning." The statement explains, "High quality disclosure will not only provide benefits to investors and companies, it also will enhance valuable communication and coordination across our economy—including between the public and private sectors—as together we pursue the fight against COVID-19." Further, the statement observes, "[W]e would not expect good faith attempts to provide appropriately framed forward-looking information to be second guessed by the SEC."[151] **(Official Encouragement of Private-Sector Relief)** / **(Regulatory & Supervisory Accommodations)**.
- April 8, 2020: The Federal Reserve announces that it will temporarily lift limits on Wells Fargo's growth so that Wells Fargo can administer PPP and loans and loans under the Federal Reserve's planned Main Street lending program.[152] **(Regulatory & Supervisory Accommodations)**.
- April 9, 2020: With the Treasury, the Federal Reserve announces further § 13(3) measures to support the economy with $2.3 billion in funding, which will including funding for supporting the SBA's PPP program, buying $600 billion of loans to small and medium-sized

[149] Press Release, U.S. Sec. & Exch. Comm'n, SEC Office of Compliance Inspections and Examinations Publishes Risk Alerts Providing Advance Information Regarding Inspections for Compliance with Regulation Best Interest and Form CRS (Apr. 7, 2020), https://www.sec.gov/news/press-release/2020-82.

[150] Press Release, U.S. Sec. & Exch. Comm'n, SEC Provides Temporary, Conditional Relief for Business Development Companies Making Investments in Small and Medium-sized Businesses (Apr. 8, 2020), https://www.sec.gov/news/press-release/2020-84.

[151] Jay Clayton, Chairman & William Hinman, Director, Division of Corporation Finance, U.S. Sec. & Exch. Comm'n, The Importance of Disclosure – For Investors, Markets and Our Fight Against COVID-19 (Apr. 8, 2020), https://www.sec.gov/news/public-statement/statement-clayton-hinman; Martin Lipton & Sebastian V. Niles, *What to Say on Your Next Earnings Call in the Time of COVID-19 – SEC Chairman Jay Clayton and CorpFin Director Bill Hinman Lead the Way*, WACHTELL, LIPTON, ROSEN & KATZ (Apr. 8, 2020), https://www.wlrk.com/webdocs/wlrknew/WLRKMemos/WLRK/WLRK.26906.20.pdf.

[152] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Board announces, due to the extraordinary disruptions from the coronavirus, that it will temporarily and narrowly modify the growth restriction on Wells Fargo so that it can provide additional support to small businesses (Apr. 8, 2020), https://www.federalreserve.gov/newsevents/pressreleases/enforcement20200408a.htm.

businesses through the Federal Reserve's Main Street Lending Program, expanding the PMCCF, SMCCF, and TALF capital markets programs, and establishing the $500 billion Municipal Liquidity Facility.[153] **(Provision of Liquidity & Public Guarantees of Financial Liabilities)**.

- April 9, 2020: The Treasury announces that more than 300 tax-related deadlines have been extended.[154]
- April 9, 2020: The Federal Reserve, FDIC, and OCC announce an interim final rule to implement the CARES Act's Paycheck Protection Program ("PPP"), providing for neutral capital effects and a 0% risk weight for PPP loans.[155] **(Regulatory & Supervisory Accommodations)**.
- April 10, 2020: The CFTC extends open comment periods for certain derivatives and swaps rules.[156] **(Regulatory & Supervisory Accommodations)**.

Public Health and Other Regulatory Milestones and Interventions

- January 7, 2020: The Centers for Disease Control ("CDC") establish an Incident Management Structure for COVID-19.[157]
- January 21, 2020: The United States reports the first travel-related COVID-19 case in the country.[158]
- January 21, 2020: CDC initiates measures from its Emergency Operations Center.[159]
- January 29, 2020: President Trump forms the President's Coronavirus Task Force, with the National Security Council coordinating.[160]

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[153] Press Release, U.S. Bd. of Governors of the Fed. Reserve Sys., Federal Reserve takes additional actions to provide up to $2.3 trillion in loans to support the economy (Apr. 9, 2020), https://www.federalreserve.gov/newsevents/pressreleases/monetary20200409a.htm; Press Release, Dep't of the Treasury, Treasury and Federal Reserve Board Announce New and Expanded Lending Programs to Provide up to $2.3 Trillion in Financing (Apr. 9, 2020), https://home.treasury.gov/news/press-releases/sm968; Edward D. Herlihy et al., *Federal Reserve Unveils Main Street Lending Program*, WACHTELL, LIPTON, ROSEN & KATZ (Apr. 9, 2020), https://www.wlrk.com/webdocs/wlrknew/WLRKMemos/WLRK/WLRK.26910.20.pdf.

[154] Press Release, Dep't of the Treasury, Treasury and IRS Extend Over 300 Tax Filing, Payment and Administrative Deadlines (Apr. 9, 2020), https://home.treasury.gov/news/press-releases/sm970.

[155] Press Release, Fed. Deposit Ins. Cop., Federal Bank Regulators Issue Interim Final Rule for Paycheck Protection Program Facility (Apr. 9, 2020), https://www.fdic.gov/news/news/press/2020/pr20050.html.

[156] Press Release, Commodity Futures Trading Comm'n, Release No. 8146-20, CFTC Extends Certain Comment Periods in Response to COVID-19 (Apr. 10, 2020), https://www.cftc.gov/PressRoom/PressReleases/8146-20.

[157] Sarah A. Lister, Cong. Research Serv., R46219, Overview of U.S. Domestic Response to the 2019 Novel Coronavirus (2019-nCoV) 2 (Feb. 10, 2020).

[158] *Id.*

[159] Id.

[160] *Id. See also* Press Release, The White House, Statement from the Press Secretary Regarding the President's Coronavirus Task Force (Jan. 29, 2020), https://www.whitehouse.gov/briefings-statements/statement-press-secretary-regarding-presidents-coronavirus-task-force/.

- January 31, 2020: Secretary Alex Azar of the U.S. Department of Health and Human Services ("HHS") declares a Public Health Emergency, retroactive to January 27.[161]
- January 31, 2020: President Trump suspends entry by most foreign nationals who had visited China during the prior two weeks.[162]
- February 4, 2020: The Food and Drug Administration ("FDA") allows emergency use of the CDC's coronavirus testing kit.[163]
- February 26, 2020: President Trump appoints Vice President Pence to lead the Presidential Coronavirus Task Force.[164]
- February 29, 2020: FDA seeks to expand diagnostic capacity by allowing certain laboratories that developed coronavirus tests to begin testing prior to seeking FDA approval.[165]
- March 6, 2020: President Trump signs the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020 ("Phase I"). Phase I provides $8.3 billion in emergency funding for treating and containing the coronavirus, with attention to developing testing and vaccines.[166]
- March 11, 2020: President Trump delivers a nationally-televised address on COVID-19.[167]
- March 13, 2020: President Trump declares a national emergency.[168]
- March 18, 2020: President Trump signs the Families First Coronavirus Response Act ("Phase II"), including free coronavirus testing, a $1 billion appropriation for the National Disaster Medical System, required paid sick leave for workers at governments or

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[161] *Id.* Press Release, Dep't of Health and Human Servs., Secretary Azar Delivers Remarks on Declaration of Public Health Emergency for 2019 Novel Coronavirus (Jan. 31, 2020), https://www.hhs.gov/about/leadership/secretary/speeches/2020-speeches/secretary-azar-delivers-remarks-on-declaration-of-public-health-emergency-2019-novel-coronavirus.html.

[162] Proclamation No. 9984, 85 Fed. Reg. 6709 (Feb. 5, 2020).

[163] Press Release, U.S. Food and Drug Admin., FDA Takes Significant Step in Coronavirus Response Efforts, Issues Emergency Use Authorization for the First 2019 Novel Coronavirus Diagnostic (Feb. 4, 2020), https://www.fda.gov/news-events/press-announcements/fda-takes-significant-step-coronavirus-response-efforts-issues-emergency-use-authorization-first.

[164] Remarks by President Trump, Vice President Pence, and Members of the Coronavirus Task Force in Press Conference, 2020 DAILY COMP. PRES. DOC. (Feb. 26, 2020).

[165] Press Release, U.S. Food & Drug Admin., FDA Issues New Policy to Help Expedite Availability of Diagnostics (Feb. 29, 2020), https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-issues-new-policy-help-expedite-availability-diagnostics.

[166] G. Hunter Bates et al., *Overview of Federal Coronavirus (COVID-19) Stimulus Measures*, AKIN GUMP (Mar. 18, 2020), https://www.akingump.com/en/news-insights/overview-of-federal-coronavirus-covid-19-stimulus-measures.html. https://www.congress.gov/bill/116th-congress/house-bill/6074/actions?KWICView=false.

[167] Philip A. Wallach & Justus Myers, *The federal government's coronavirus response—Public health timeline*, THE BROOKINGS INSTITUTION (Mar. 31, 2020), https://www.brookings.edu/research/the-federal-governments-coronavirus-actions-and-failures-timeline-and-themes/.

[168] Remarks by President Trump, Vice President Pence, and Members of the Coronavirus Task Force in Press Conference, 2020 DAILY COMP. PRES. DOC. (Mar. 13, 2020).

businesses with less than 500 employees, increased funding for states' unemployment benefits, food grants, and Medicaid funding.[169]

- March 18, 2020: President Trump issues an executive order under Title I of the DPA to speed ventilator manufacturing and criminalize hoarding of medical supplies.[170]
- March 25, 2020: CVS Health, the parent company of Aetna, waives cost-sharing and co-payments for COVID-19 care.[171]
- March 27, 2020: Centers for Disease Control confirm over 100,000 COVID-19 cases in the United States.[172]
- March 27, 2020: President Trump uses DPA Title I powers to require General Motors to prioritize contracts to manufacture ventilators.[173]
- March 30, 2020: Two large health insurers, Humana and Cigna, join CVS Health's Aetna in waiving co-payments and cost-sharing for COVID-19 treatment.[174]
- April 1, 2020: Anthem, the health insurer, announces it will waive co-payments related to COVID-19 for sixty days.[175]
- April 2, 2020: President Trump issues orders using the DPA to speed ventilator and N-95 mask production.[176]

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[169] Reuters, *Explainer: What's in the U.S. Coronavirus Aid Bill That Just Passed Congress?*, N.Y. TIMES (Mar. 18, 2020), https://www.nytimes.com/reuters/2020/03/18/us/politics/18reuters-health-coronavirus-usa-congress-explainer.html. https://www.congress.gov/bill/116th-congress/house-bill/6201.

[170] Exec. Order No. 13,909, 85 C.F.R. 16,227 (2020). *See also* Bershteyn & Leiter, *supra* note 137.

[171] Press Release, CVS Health, CVS Health announces cost-sharing and co-pay waivers for COVID-19-related treatment for Aetna members (Mar. 25, 2020), https://cvshealth.com/newsroom/press-releases/cvs-health-announces-cost-sharing-and-co-pay-waivers-covid-19-related-treatment-aetna.

[172] *Cases in U.S.*, CENTERS FOR DISEASE CONTROL AND PREVENTION (Mar. 27, 2020), https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html.

[173] *Memorandum on Order Under the Defense Production Act Regarding General Motors Company*, THE WHITE HOUSE (Mar. 27, 2020), https://www.whitehouse.gov/presidential-actions/memorandum-order-defense-production-act-regarding-general-motors-company/.

[174] Press Release, Cigna, Cigna Waives Customer Cost-Sharing For COVID-19 Treatment And Deploys Clinical Teams To Increase Virtual Care Capacity (Mar. 30, 2020), https://www.prnewswire.com/news-releases/cigna-waives-customer-cost-sharing-for-covid-19-treatment-and-deploys-clinical-teams-to-increase-virtual-care-capacity-301031554.html; Press Release, Humana, Humana to Waive Medical Costs Related to Coronavirus Treatment (Mar. 30, 2020), https://press.humana.com/press-release/humana-waive-medical-costs-related-coronavirus-treatment.

[175] Press Release, Anthem, Anthem Waives Cost Share for COVID-19 Treatment (Apr. 1, 2020), https://ir.antheminc.com/news-releases/news-release-details/anthem-waives-cost-share-covid-19-treatment?field_nir_news_date_value%5bmin%5d=.

[176] *Memorandum on Order Under the Defense Production Act Regarding the Purchase of Ventilators*, THE WHITE HOUSE (Apr. 14, 2020), https://www.whitehouse.gov/presidential-actions/memorandum-order-defense-production-act-regarding-purchase-ventilators/.

- April 2, 2020: HHS announces relaxed HIPAA enforcement for COVID-19 data sharing.[177]
- April 3, 2020: President Trump declares masks and other personal protective equipment "scarce" in order to bar their export using the DPA.[178]
- April 6, 2020: HHS expands CDC state and local funding by $186 million.[179]
- April 8, 2020: HHS announces a contract with Philips to manufacture ventilators under the DPA.[180]
- April 8, 2020: HHS designates $1.3 billion in CARES Act funding to health centers.[181]

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[177] Press Release, U.S. Dep't of Health and Human Servs., OCR Announces Notification of Enforcement Discretion to Allow Uses and Disclosures of Protected Health Information by Business Associates for Public Health and Health Oversight Activities During The COVID-19 Nationwide Public Health Emergency (Apr. 2, 2020), https://www.hhs.gov/about/news/2020/04/02/ocr-announces-notification-of-enforcement-discretion.html.

[178] *Memorandum on Allocating Certain Scarce or Threatened Health and Medical Resources to Domestic Use*, THE WHITE HOUSE (Apr. 3, 2020), https://www.whitehouse.gov/presidential-actions/memorandum-allocating-certain-scarce-threatened-health-medical-resources-domestic-use/.

[179] Press Release, U.S. Dep't of Health and Human Servs., HHS Announces Upcoming Funding Action to Provide $186 Million for COVID-19 Response (Apr. 6, 2020), https://www.hhs.gov/about/news/2020/04/06/hhs-announces-upcoming-funding-action-provide-186-million-covid19-response.html.

[180] Press Release, U.S. Dep't of Health and Human Servs., HHS Announces Ventilator Contract with Philips under Defense Production Act (Apr. 8, 2020), https://www.hhs.gov/about/news/2020/04/08/hhs-announces-ventilator-contract-with-philips-under-defense-production-act.html.

[181] Press Release, U.S. Dep't of Health and Human Servs., HHS Awards $1.3 Billion to Health Centers in Historic U.S. Response to COVID-19 (Apr. 8, 2020), https://www.hhs.gov/about/news/2020/04/08/hhs-awards-billion-to-health-centers-in-historic-covid19-response.html.

APPENDIX B

FINANCIAL CBA AND PUBLIC HEALTH POLICY ON PANDEMICS

In this Appendix, 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 unfolding crisis has made painfully clear, pandemics can have serious economic and financial consequences in addition to their tragic costs in terms of human 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 – has 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 official 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.[182] In essence, public health authorities could benefit from input from financial regulators to complete a comprehensive cost-benefit analysis for pandemic risks.[183]

As it turns out, financial cost-benefit analysis has been the subject of considerable academic debate in recent years.[184] While some have been skeptical of the ability to make meaningful estimates of the cost of financial crises or the benefits of reducing the likelihood of such crises, Federal

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[182] 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 decisionmaking 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 Part VI, a more integrated and comprehensive analysis of policy options may be preferable. And, of course, a variety of hybrid approaches for organization input and feedback might also be considered.

[183] For a recent blog post by HKS Professor Robert Stavins endorsing cost effectiveness analysis (as opposed to cost benefit analysis) and titled "What Can Economics Really Have to Say About COVID-19 Policies?, see http://www.robertstavinsblog.org/2020/04/03/what-can-economics-really-have-to-say-about-covid-19-policies/ (including citations to other recent discussions of cost benefit analysis with respect to the current crisis).

[184] *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 cost-benefit analysis has lagged the use of cost-benefit analysis 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 cost-benefit analysis has not extended to the macro-financial consequences of natural disasters or public health crisis on the scale of the current pandemic.

Reserve Board leadership has been more open to the value of such work and the Trump Administration early on committed to promoting cost-benefit analysis (CBA) throughout the financial system.[185] 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 cost-benefit analysis).[186] 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 cost-benefit analysis of systemic risk. Their intuitions on systemic risks to the financial system are thus undoubtedly better informed than that 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 and other medical equipment), 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 making 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, at least going forward.

Ex post – by which we mean right now – there seems also to a role for financial regulators to play in terms of weighing public health measures

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[185] *See* Randal K. Quarles, Vice Chairman for Supervision, Bd. of Governors of the Fed. Reserve Sys., Early Observations on Improving the Effectiveness of Post-Crisis Regulation (Jan. 19, 2018) (calling for assessing post-crisis financial regulation by net costs and benefits). *See also* DEP'T OF THE TREASURY, FINANCIAL STABILITY OVERSIGHT COUNCIL DESIGNATIONS: REPORT TO THE PRESIDENT OF THE UNITED STATES PURSUANT TO THE PRESIDENTIAL MEMORANDUM ISSUED APRIL 21, 2017 13 (2017), https://www.treasury.gov/press-center/press-releases/Documents/PM-FSOC-Designations-Memo-11-17.pdf (recommending the use of cost-benefit analysis to determine if a firm is systemically important).

[186] *See* John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: A Reply*, 124 YALE L.J.F. 305 (2015). Cost-benefit analysis 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 cost-benefit analysis 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.

going forward. That role is distinct from these regulators' central task of mitigating financial losses and protecting financial stability. As the rate of new coronavirus cases and fatalities recedes, there will come a time when public health measures can be relaxed. At first blush, one might think that such relaxation will be good for the economy and that economic considerations will argue in favor of relaxation. But relaxation will also bring with it the possibility of renewed outbreaks and a resurgent pandemic, and the economic consequences of that possibility should also be considered. Quite likely, the financial system will remain in a fragile state for the coming months if not longer, and correctly assessing the systemic financial risks from a second surge 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 cost-benefit analysis 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 cost-benefit analysis 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 cost-benefit analysis. In the real world, we don't and can't 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 Ron Klain[187] recently observed, political decision-making faces an inherent bias against risk

[187] Klain is a Lecturer on Law at Harvard Law School and the former Ebola Czar in the Obama Administration.

reduction measures. As he explained, 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. He gave a fictional example, based on Taleb's The Black Swan, about a congressman who foresees an event like the 9/11 attack and introduces legislation preemptively securing commercial airline cabins. In this hypothetical world, the 9/11 attack is foiled, but with hardened doors, that's merely a counter-factual. The congressman loses his next election.[188] Klain observed that he faced this same 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 value 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,[189] 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 economics costs and human suffering that are now all too obvious and painful.

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[188] Nassim Nicholas Taleb, The Black Swan: The Impact of the Highly Improbable xxvii–xxviii (2nd ed. 2010).

[189] *Cf.* ROBERT MEYER & HOWARD KUNREUTHER, THE OSTRICH PARADOX: WHY WE UNDERPREPARE FOR DISASTERS __-__ (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).