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Extended Shareholder Liability for Systemically Important Financial Institutions

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October 2019

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Abstract

Regulators generally have tried to address the problems posed by the excessive risk-taking of Systemically Important Financial Institutions (SIFIs) by placing restrictions on the activities in which SIFIs engage. However, the complexity of these institutions makes such attempts necessarily imperfect. This article proposes to address the problem at its very source, which is the incentives that SIFI owners have to push for excessive risk-taking by managers. Building on the traditional rule of "double liability," we propose to modify the current (general) rule limiting the liability of SIFI shareholders to the amount of their initial investments in such companies. We propose replacing the extant limited liability regime with a new system that imposes additional liability over and above what SIFI shareholders already have invested in a pre-set amount that varies with a SIFI's centrality in the financial network. Our liability regime has a number of advantages. First, by increasing shareholder exposure to downside risk, it discourages excessive risk-taking. At the same time, by placing a clearly defined ceiling on shareholders' total liability exposure, it will not obliterate shareholders' incentives to invest in the first place. Second, the liability to which shareholders are exposed is carefully tailored to the level of systemic risk that their institution creates. Thus, our rule induces shareholders to account for the negative externality SIFIs can impose without unduly stifling such financial institutions' role within the financial system and in the wider economy. Third, as the amount of liability is clearly defined ex ante using the rigorous tools of network theory, our rule minimizes the influence of interest groups and the impact of idiosyncratic government decisions. Last, as markets know in advance the amount of liability to which shareholders are exposed, our rule favors the creation of a vibrant insurance and derivative market so that the risk of SIFIs defaults can be allocated to those who can better bear it.

Keywords: Corporate Law, Financial Regulation, Systemically Important Financial Institutions, Limited Liability, Too-Big-To-Fail, Shareholder Liability

JEL Classifications: G18, G28, G38, K22, K29

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Abstract

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Introduction

The default of a systemically important financial institution (SIFI) imposes significant negative externalities.[1] Such a default inevitably propagates through the financial system with dramatic and fatal consequences for even the most prudently run businesses. It is understood that the risk of a national or global economic meltdown attributable to the failure of a systemically important financial institution justifies aggressive regulation as well as significant departure from ordinary and customary corporate governance norms for SIFIs.[2] Perhaps the most telling manifestation of the public policy implications of being considered systemically important is the entrenched policy of governments around the world to bail out financially distressed SIFIs, despite the massive costs and perverse incentives associated with these bailouts. No one has devised a functional plan to enable governments credibly to commit to refrain from carrying out such bailouts.[3]

[1] *See e.g.* FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT: FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL AND ECONOMIC CRISIS IN THE UNITED STATES xviii–xix (2011) (arguing that one of the main causes of the 2007 financial crisis was SIFIs' excessive risk taking).

[2] *See* Financial Stability Board, *Thematic Review on Corporate Governance* 3 (2017) (https://www.fsb.org/wp-content/uploads/Thematic-Review-on-Corporate-Governance.pdf) (noting that jurisdictions routinely impose additional limitations to the activities of systemically important financial institutions); Basel Committee on Banking Supervision, *Corporate Governance Principles for Banks* 6 (2015) (https://www.bis.org/bcbs/publ/d328.pdf) ("SIFIs are expected to have in place the corporate governance structure and practices commensurate with their role in and potential impact on national and global financial stability").

[3] For instance, the Dodd Frank Act (Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, (2010) [hereinafter Dodd-Frank]) was introduced with the specific goal of putting an end to bailouts. *See* Stephen J. Lubben & Arthur E. Jr. Wilmarth, *Too Big and Unable to Fail*, 69 FLA. L. REV. 1205, 1205 (2017). However, the broad consensus is that the Dodd-Frank has failed to achieve this goal and it might even have backfired. *See generally* Roberta Romano, *Dodd-Frank's Regulatory Morass*, REG. REV. (Nov. 10, 2014), http://www.theregreview.org/2o14/11/10/romano-dodd-frank-consequences (reporting the widely held belief that the Dodd-Frank Act "has not resolved the "too-big-to-fail" syndrome. In fact, it could well exacerbate it." On a similar note, Christopher M. Bruner, *Corporate Governance Reform in Post-Crisis Financial Firms: Two Fundamental Tensions*, 60 ARIZ. L. REV. 959, 961 (2018). ("the predominant bank holding companies remain so large and so complex that the legislative claim to have statutorily foreclosed future bailouts lacks credibility"), and Arthur E. Wilmarth, Jr., *The Dodd-Frank Act: A Flawed and Inadequate Response to the Too-Big –To-Fail Problem*, 89 OR. L. REV. 951 *passim* (2011).

It is well known that the near certainty that SIFIs will be bailed out creates acute moral hazard.[4] Specifically, SIFI creditors, shareholders, directors and managers, knowing that their firm will be bailed out if too many risky investments turn out badly, have incentives to take excessive risk [5] and refrain from engaging in monitoring. [6] To inhibit such excessive risk-taking, policymakers consistently pledge that there will be "no more tax-funded bailouts."[7] But such pledges are unconvincing because, unlike Ulysses, regulators and politicians cannot credibly tie themselves to the mast.[8] Bailouts are therefore a fact of life.[9]

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[4] *See e.g.* HEIDI MANDANIS SCHOONER & MICHAEL W. TAYLOR, GLOBAL BANK REGULATION: PRINCIPLES AND POLICIES 60 (2009); Jonathan R. Macey, *Commercial Banking and Democracy: The Illusive Quest for Deregulation*, 23 YALE J. REG. 1 (2006); Saule T. Omarova, *The "Too Big To Fail" Problem*, 103 MINN. L. REV. 2495, 2500 (2019) ("The well-known notion of "moral hazard" captures the economic inefficiencies associated with this implicit subsidy: large firms shielded from the negative consequences of their risk-taking have an incentive to take greater risks than they otherwise would").

[5] The term "excessive" is defined with respect to social welfare. *See* Steven L. Schwarcz & Aleaha Jones, *Corporate Governance of SIFI Risk-Taking: An International Research Agenda*, *in* CROSS-BORDER BANK RESOLUTION (Bob Wessels & Matthias Haentjens eds., forthcoming).

> From a traditional corporate governance perspective, risk-taking would be considered excessive if it has a negative expected value to the firm and its investors—primarily the shareholders … From a broader perspective, however, "excessive" risk-taking might also take into account societal consequences. One of us has argued that—at least for SIFIs—traditional corporate governance misaligns corporate interests and societal interests, and that any assessment of SIFI risk-taking should also take into account systemic externalities that could harm the public.

[6] Adam J. Levitin, *In Defense of Bailouts*, 99 GEO. L.J. 435, 439 (2011) ("if either or both creditors and shareholders of such a T[oo]B[ig]T[o]F[ail] institution believe they will be made whole in a bailout– or not bear all the losses – they will have a reduced incentive to monitor the [too-big-to-fail] institution's risk-taking, and they will not demand as great of a risk premium when they extend credit."). *But see* Steven L Schwarcz, *Too Big To Fool: Moral Hazard, Bailouts, and Corporate Responsibility*, 102 MINN. L. REV. 761, 765 (2017) ("There is no evidence, much less proof, that [too-big-to-fail] causes firms to engage in morally hazardous behavior. Most studies discussing such behavior merely assume it without actually offering evidence").

[7] See President Barack Obama, Remarks by the President at Signing of Dodd-Frank Wall Street Reform and Consumer Protection Act (July 21, 2010) (transcript available at https://obamawhitehouse.archives.gov/the-press-office/remarks-president-signing-dodd-frank-wall-street-reform-and-consumer-protection-act):

> [B]ecause of this law, the American people will never again be asked to foot the bill for Wall Street's mistakes. There will be no more tax-funded bailouts-period. If a large financial institution should ever fail, this reform gives us the ability to wind it down without endangering the broader economy. And there will be new rules to make clear that no firm is somehow protected because it is "too big to fail."

[8] Levitin, *supra* note 6, at 439 (footnote omitted):

> Law is an insufficient commitment device for avoiding bailouts altogether. It is impossible to produce binding commitment to a preset resolution process, irrespective of the results. The financial Ulysses cannot be bound to the mast. Although we may want Ulysses to be bound to the mast when the sailing is smooth to avoid the sirens' call of politically directed state intervention in the market, the situation changes once the ship has hit the rocks. Once the ship is foundering, we do not want Ulysses to be bound to the mast, lest go down [*sic*] with the ship and drown. Instead, we want to be sure his hands are free to bail. The question then, is not whether to have bailouts but how bailouts should be structured.

[9] *See* Peter Conti-Brown, *Elective Shareholder Liability*, 64 STAN. L. REV. 409, 423-425 (2012) (discussing the impossibility of "Never Again" for bailouts).

Regulators generally have tried to mitigate SIFI's proclivity to engage in excessive risk-taking by imposing strict capital requirements and placing restrictions on the activities in which SIFIs can engage.[10] Yet, the high costs and sheer complexity of these regulations make such attempts necessarily imperfect.[11] This Article proposes an important new addition to these standard regulatory approaches by addressing the problem at its very source, which is the market-based incentives that SIFI owners have to encourage and incentivize excessive risk-taking by managers. Our proposal is to modify the current practice of limiting the liability of SIFI shareholders to the amount of their investment in such companies.

We propose replacing the extant limited liability regime with a new system that imposes a fixed and stable amount of potential additional liability over and above what SIFI shareholders already have invested in case the SIFI is resolved or bailed out. By increasing shareholder exposure to downside risk, our proposal strongly discourages excessive risk-taking. At the same time, by placing a fixed ceiling on shareholders' total liability exposure, it will not eradicate shareholders' incentives to invest in the first place.[12] The advantage of our approach is that, *by realigning shareholders' incentives to reduce SIFI risk-taking to more societally acceptable levels*, it provides a measured and proportionate complement to existing, highly imperfect regulatory initiatives to reduce excessive risk-taking. Thus, our approach is unique in that it will create an operating

[10] *See e.g.* Alexander W. Salter, Vipin Veetil & Lawrence H. White, *Extended Shareholder Liability as a Means to Constrain Moral Hazard in Insured Banks*, 63 QUART. REV. ECON. & FIN. 153, 153 (2017).

[11] Thomas Hoenig, the former vice chairman of the FDIC and the former President of the Federal Reserve Bank of Kansas City, noted that "[t]he problem is not that banks take risk, but that some are too complex for anyone to assess and control that risk." Thomas Hoenig, *Why the Sign Must Say: No UBS in the USA*, FIN. TIMES, June 16, 2011, at 9.

[12] Bainbridge and Henderson note that "there is considerable truth to the widely shared view that limited liability was, and remains, essential to attracting the enormous amount of investment capital necessary for industrial corporations to arise and flourish." *See* STEPHEN M. BAINBRIDGE & M. TODD HENDERSON, LIMITED LIABILITY A LEGAL AND ECONOMIC ANALYSIS 51 (2016). In Section II.B, we argue that unlimited liability would lead to overdeterrence and shrink the size of the financial sector beyond what is optimal.

environment in which bankers with properly aligned incentives will voluntarily engage in societally beneficial self-discipline and avoid excessive risk-taking in the first place.

The legal regime of extended liability that we propose for SIFIs is different from both unlimited and "classic" limited liability systems. Under the former, which is traditionally the rule for general partners in partnerships, partners are liable for the partnership's unsatisfied debts, whether deriving from contractual obligations or torts, with no cap on the amount of the liability.[13] In the classic limited liability system, which has been the rule for corporations in the last couple of centuries, shareholders are not liable for any of the unpaid corporate debts. Hence, their loss is limited to their investment in the company if this goes bankrupt. Extended liability is located in between these two extremes because shareholders stand to lose more than their investment in the company, but their downside exposure is still capped at a pre-set amount.

The main claim of this article is that for SIFIs a carefully crafted extended liability regime is superior to both unlimited and traditional limited liability. To be clear, we do not argue that an extended liability rule can induce shareholders to internalize all the possible externalities caused by the distress of a SIFI. As we argue in Section II.B, this result is both impossible to achieve under any liability rule, and undesirable. Instead, the more modest goal of our rule is neutralizing the moral hazard created by the expectation of SIFI bailouts.

Extended liability has a long and illustrious tradition in the United States. For roughly three quarters of a century shareholders of banks faced a rule of "double liability," which made

[13] *See e.g.* ROBERT C. CLARK, CORPORATE LAW 6-7 (1986) (describing the liability regime for general partners).

them liable for more than they had invested in the bank.[14] Scholars, including one of us with Geoffrey Miller, have argued that it is important to investigate "whether double liability – or some variant on the idea – offers promise for coping with contemporary problems in the banking industry."[15] We return to this question showing that the current features of the financial system (namely, the presence of capital ratios for financial institutions, the dominance of institutional share ownership, and the availability of well-developed insurance and derivatives markets) create the perfect conditions for implementing a special form of extended liability. Against this background, the argument advanced in this paper is then articulated in four steps: first, limited liability is inadequate for SIFIs. Second, due to the specific features of SIFIs it is possible to avoid the theoretical and practical shortcomings that are usually associated with extending shareholder liability. Third, unlimited shareholder liability for SIFIs would be inefficient. Fourth, a carefully designed, "network-sensitive" rule of extended liability would outperform both limited and unlimited liability.

The structure of the Article is as follows. Section I explains why it is important to ensure that systemically important financial institutions do not engage in excessive risk-taking. Moreover, this Section sketches the proposals that have been advanced by the literature to increase shareholders' liability, and hence reduce their risk propensity. Section II explains why the traditional limited liability rule and a regime of unlimited liability for shareholders are both undesirable for SIFIs. Section III is the core of the Article, and describes in detail the liability rule that we propose. Section IV tries to anticipate the effect that our liability rule would have on equity markets and SIFI ownership. Section V shows how traditional objections to unlimited shareholder

[14] For a discussion of double liability *see* Jonathan R. Macey & Geoffrey P. Miller, *Double Liability of Bank Shareholders: History and Implications*, 27 WAKE FOREST L. REV. 31 (1992).

[15] Macey & Miller, *supra* note 14, at 62.

liability either do not apply to our proposed rule or can be easily addressed and outlines how shareholders of SIFIs transitioning to the proposed regime could be compensated for the losses it imposes on them. Section VI briefly concludes.

I. The Challenge of Taming SIFIs

To set the stage for our analysis, we start by explaining why policymakers still face a serious challenge in providing for an effective regulatory framework for tackling SIFIs and their tendency to engage in excessive risk-taking and next, we briefly review previous proposals to dispense with shareholder limited liability. We cover both general recommendations in that direction, namely Henry Hansmann and Reinier Kraakman's proposal to make shareholder liable towards tort creditors,[16] and the more recent, post-crisis suggestions to extend shareholder liability in specific respect of (some) financial institutions, explaining why each of them would be inadequate as a tool to prevent SIFIs' excessive risk-taking. The same we do with regard to the double shareholder liability regime which applied to banks for a considerable period of U.S. history.

A. SIFIs and Interconnections within the Financial Network

The recent financial crisis has been a stunning reminder of the fragility of the financial system. As its various parts are increasingly intertwined, large shocks can quickly propagate throughout the financial system and to the real economy and have catastrophic consequences.[17] National and supranational policymakers reacted by tightening up the regulatory framework with the aim of

[16] Henry Hansmann & Reinier Kraakman, *Toward Unlimited Shareholder Liability for Corporate Torts*, 100 YALE L.J. 1879 (1990).

[17] *See* Steven L. Schwarcz, *Systemic risk*, 97 GEO. L.J. 193, 199 (2008); John C. Jr. Coffee, *Systemic Risk after Dodd-Frank: Contingent Capital and the Need for Regulatory Strategies Beyond Oversight*, 111 COLUM. L. REV. 795, 847 (2011) (defining systemic risk as "the risk that a localized economic shock can have worldwide repercussions because of the interconnections between financial institutions").

minimizing the risk of future financial crises.[18] The main targets of these regulations have been so-called systemically important financial institutions (SIFIs), that is, banks and other financial institutions the failure of which, due to their size and interconnectedness, can bring down the entire financial system.[19]

Describing the new regulatory framework lies outside the scope of this article,[20] but two facts are worth mentioning. First, policymakers have significantly expanded the portfolio of regulatory tools to preserve financial stability. Before the crisis most of the regulations aimed at ensuring the solvency of the individual financial institutions, without paying attention to the interconnections among them.[21] Departing from this "microprudential" approach, policymakers have now introduced a new family of "macroprudential" policies that attempt to protect the financial system as a whole.[22] These new policies have significantly complicated the regulatory landscape,[23] and yet have not eliminated the risk of a systemic crisis. Regardless of how carefully

[18] *See e.g.* Daniel K. Tarullo, *Financial Regulation: Still Unsettled A Decade After the Crisis*, 33 J. ECON. PERSP. 61, 64-70 (2019).

[19] In fact, the Dodd Frank Act states, in its preamble, that one of its primary objectives is ending the too-big-to-fail problem. *See* Dodd-Frank, *preamble* (stating that the Dodd-Frank intends to "to end 'too big to fail,' [and] to protect the American taxpayer by ending bailouts").

[20] For an excellent introduction *see* DAVID SKEEL, THE NEW FINANCIAL DEAL: UNDERSTANDING THE DODD-FRANK ACT AND ITS (UNINTENDED) CONSEQUENCES (2011).

[21] *See generally* MICHAEL S. BARR, HOWELL E. JACKSON & MARGARET E. TAHYAR, FINANCIAL REGULATION: LAW AND POLICY 310 (2d ed. 2018) (arguing that one of the main problems of the capital requirements that were imposed before the crisis was that they did not account for the interconnectedness of financial institutions). *See also* Samuel G. Hanson, Anil K. Kashyap & Jeremy C. Stein, *A Macroprudential Approach to Financial Regulation*, 25 J. ECON. PERSP. 3, 3 (2011) (describing a microprudential approach as "one in which regulation is … aimed at preventing the costly failure of individual financial institutions").

[22] *See generally* Ben Bernanke, *Implementing a Macroprudential Approach to Supervision and Regulation*, 47th Annual Conference on Bank Structure and Competition, Chicago, Illinois, May 05, 2011, https://www.federalreserve.gov/newsevents/speech/bernanke20110505a.htm ("a central element of the [post-crisis] legislation is the requirement that the Federal Reserve and other financial regulatory agencies adopt a so-called macroprudential approach—that is, an approach that supplements traditional supervision and regulation of individual firms or markets with explicit consideration of threats to the stability of the financial system as a whole"); *see also* Kristin N. Johnson, *Macroprudential Regulation: A Sustainable Approach to Regulating Financial Markets*, 2013 U. ILL. L. REV. 881 *passim* (2013).

[23] As noted by Daniel Tarullo, a former member of the Board of Governors of the United States Federal Reserve Board, the Dodd Frank Act alone "called for literally hundreds of new regulations, an approach that entailed protracted and often complicated rulemakings." Tarullo, *supra* note 18, at 70.

they are devised, ex ante regulations – be they micro or macro – cannot eliminate systemic risk: "[f]ailure is a fact of economic life."[24] Moreover, regulators suffer from a chronic lack of information that impairs their ability to produce effective policies.[25] For instance, leading financial economists have suggested that the capital requirements for SIFIs should be greatly increased.[26] Capital reserves constitute a fundamental buffer that allows banks to be more resilient during times of stress, thereby increasing the stability of the financial system.[27] The higher the capital reserves, the greater the losses banks are able to absorb. This is especially true for tier 1 capital, which includes only capital elements of the highest quality.[28] But identifying the optimal capital requirement for each SIFI requires a level of information that regulators simply cannot have. Hence, capital requirements imposed by regulators are likely to be either too lax, in which case they fail to ensure the stability of the financial system, or too strict, in which case they impose unnecessary

[24] Levitin, *supra* note 6, at 478 ("crises are bound to occur in complex, tightly-coupled systems, such as the financial system"); Iman Anabtawi & Steven L. Schwarcz, *Regulating Ex Post: How Law Can Address the Inevitability of Financial Failure*, 92 TEX. L. REV. 75, 102 (2013). *See also* YAIR LISTOKIN, LAW AND MACROECONOMICS 6 (2019) ("even the best financial regulation is doomed to periodic failure").

[25] *See e.g.* JOHN ARMOUR ET AL., PRINCIPLES OF FINANCIAL REGULATION 579-80 (2016).

[26] ANAT ADMATI & MARTIN HELLWIG, THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT 79-166 (2014).

[27] ID. at 6:

> Capital regulation requires that a sufficient fraction of a bank's investments or assets be funded with unborrowed money. … Having a minimal ratio of unborrowed funds relative to total assets is a way to limit the share of assets that is funded by borrowing. Because unborrowed funds are obtained without any promise to make specific payments at particular times, having more equity enhances the bank's ability to absorb losses on its assets").

See also Tarullo, *supra* note 18, at 65 (noting that capital requirement "are … recognized as an especially supple prudential tool, insofar as they are available to absorb losses from sources both anticipated and unanticipated by bankers and regulators." For an overview of capital bank regulation *see* RICHARD SCOTT CARNELL, JONATHAN R. MACEY & GEOFFREY P. MILLER, THE LAW OF FINANCIAL INSTITUTIONS 238–67 (6th ed. 2017).

[28] More precisely, tier 1 capital is divided in Common Equity tier 1 capital (CET1) and Additional tier 1 capital. The former is composed of

> qualifying common stock and related surplus net of treasury stock; retained earnings; certain accumulated other comprehensive income (AOCI) elements if the institution does not make an AOCI opt-out election … plus or minus regulatory deductions or adjustments as appropriate; and qualifying common equity tier 1 minority interests". The latter is composed of "qualifying noncumulative perpetual preferred stock, bank-issued Small Business Lending Fund and Troubled Asset Relief Program instruments that previously qualified for tier 1 capital, and qualifying tier 1 minority interests, less certain investments in other unconsolidated financial institutions' instruments that would otherwise qualify as additional tier 1 capital.

Federal Deposit Insurance Corporation (FDIC), *Risk Management Manual of Examination Policies* § 2.1, 3 (2015) https://www.fdic.gov/regulations/safety/manual/section2-1.pdf (last accessed 7/29/2019).

constraints on SIFIs activities.[29] Our liability rule is an attempt to bypass these informational problems by improving the incentives of shareholders on the one hand, and by enlisting markets in the monitoring of SIFIs' solvency, on the other.

Second, regulators have attempted to mitigate the moral hazard problem created by bailouts. The financial crisis has reminded SIFIs once more that they are just too-big-to-fail, and hence regulators are forced to intervene if a SIFI is in distress.[30] In this vein, anticipating that governments will bail them out in case of need, SIFIs have incentives to engage in excessive risk taking, while their creditors have weaker incentives to monitor them.[31] To prevent this moral hazard problem regulators have attempted to tie their own hands by introducing mechanisms to prevent future bailouts. The most important of these mechanisms are the Orderly Liquidation provisions in Dodd Frank Act's Title II, which aim to facilitate the resolution of large, complex financial institutions by providing for a new bankruptcy procedure to be used for bank holding companies and their subsidiaries as an alternative to the Bankruptcy Code.[32] A failing institution is placed in receivership under the control of the Federal Deposit Insurance Corporation ("FDIC"). The FDIC has the power to act swiftly in order to find a new owner for the "good" parts of the failing institution, with access to government money to finance the operations of a "bridge bank"

[29] *See* Harry DeAngelo & René M. Stulz, *Liquid-Claim Production, Risk Management, and Bank Capital Structure: Why High Leverage is Optimal for Banks*, 16 J. FIN. ECON. 219, 231-233 (2015) (discussing why exceedingly high capital requirements can impose substantial costs).

[30] *See* GARY H. STERN, & RON J. FELDMAN, TOO BIG TO FAIL: THE HAZARDS OF BANK CH. 3 (2004) for a discussion of the too-big-to-fail problem.

[31] *See e.g.* Levitin, *supra* note 6, at 439 ("if either or both creditors and shareholders of such a TBTF [Too-big-to-fail] institution believe they will be made whole in a bailout – or not bear all the losses – they will have a reduced incentive to monitor the TBTF institution's risk-taking, and they will not demand as great of a risk premium when they extend credit").

[32] 12 U.S.C. § 5381-5394.

until the buyer for the good parts has been found.[33] That should ensure continuity of operations and therefore avoid the negative effects on other financial institutions of a SIFI bankruptcy.

Yet, serious doubts have been raised as to whether the OLA would be sufficient to resolve a major SIFI, such as, *e.g.*, Bank of America, which is not only orders of magnitude larger than any of the commercial banks the FDIC usually deals with, but also active across different businesses and jurisdictions.[34] Even more doubtful is whether OLA would work in the event of a systemic crisis in which the survival of not one, but many, if not all, the existing SIFIs was at stake.[35] In such a case, it will be virtually impossible to find a buyer for the good parts of the failing SIFIs. Moreover, SIFIs' operating companies may also face illiquidity, if not insolvency problems, due to their credit or balance sheet interconnections, which may make a government recapitalization the only viable solution.[36]

Ultimately, committing not to bail out SIFIs is impossible. The Darwinian proclivity for survival that characterizes political behavior in democracies leads politicians and policymakers to offer bailouts no matter how tough the ex-ante rules on using taxpayers' money to prop up banks: the immediate political benefits of a bailout, namely, the avoidance of the doomsday scenario of a financial and economic meltdown are bound to appear superior to navigating the political consequences of such an outcome.[37] As noted by The Financial Crisis Inquiry Commission, "if

[33] 12 U.S.C. § 5390 (h) (describing the functioning and the purpose of bridge financial companies).

[34] *See* Stephen J. Lubben, *Resolution, Orderly and Otherwise: B of A in OLA*, 81 U. CIN. L. REV. 485, 513-16 (2012). The OLA procedure also raises thorny constitutional problems: *see* Thomas W. Merrill & Margaret L. Merrill, *Dodd-Frank Orderly Liquidation Authority: Too Big for the Constitution?*, 163 U. PA. L. REV. 165 (2014).

[35] Lubben & Wilmarth, *supra* note 3, at 1205 (arguing that the resolution procedures introduced with the Dodd-Frank Act are "unlikely to work as intended during a future global crisis that involves multiple failing SIFIs operating thousands of subsidiaries across dozens of national boundaries").

[36] Stephen J. Lubben, *OLA after Single Point of Entry: Has Anything Changed?*, (Seton Hall Public Law Research Paper 2013), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2353035.

[37] *See e.g.* Oliver Hart & Luigi Zingales, *A New Capital Regulation for Large Financial Institutions*, 13 AM. L. & ECON. REV 453, 482 (2011); Tarullo, *supra* note 18,at 69 (on the special insolvency mechanism Tarullo notes

you bail out AIG and you're wrong, you will have wasted taxpayer money and provoked public outrage. If you don't bail out AIG and you're wrong, the whole financial system collapses."[38] In sum, "[b]ailouts are an inevitable feature of modern economies, in which the interconnectedness of firms means that the entire economy bears the risk of an individual firm's failure."[39] Therefore, realistically, policymakers should attempt to minimize the moral hazard created by bailouts instead of hoping to convince the markets that bailouts will not happen in the future. This is exactly what our extended liability rule attempts to do.

The fact that firms are tightly interconnected has another fundamental implication that economists have fully appreciated, while legal scholars have sometimes overlooked: the structure of the financial sector, and in particular the pattern of connections among financial institutions, has a fundamental impact on the stability of the financial system.[40] In order to study these inter-bank connections and the network they form, scholars of different fields have relied on network theory.[41] Within the framework of network theory, the building blocks of a network are its *nodes* and the *connections* among them. Thus, if one models the financial sector as a network, the banks and the other financial intermediaries represent the nodes, while the financial flows among them

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that "the risks of an untested resolution regime are real, and officials may not be willing to take even a modest chance that a systemically important firm placed into resolution would implode").

[38] THE FINANCIAL CRISIS INQUIRY REPORT, *supra* note 1, at 433.

[39] Levitin, *supra* note 6. *See also* Conti-Brown, *supra* note 9, at 424.

[40] *See e.g.* Daron Acemoglu, Asuman Ozdaglar & Alireza Tahbaz-Salehi, *Systemic Risk and Stability in Financial Networks*, 105 AM. ECON. REV. 564, 564 (2015) ("Since the global financial crisis of 2008, the view that the architecture of the financial system plays a central role in shaping systemic risk has become conventional wisdom").

[41] For an introduction to network theory *see* MARK NEWMAN, NETWORKS 2ND ED (2018); SANJEEV GOYAL, CONNECTIONS: AN INTRODUCTION TO THE ECONOMICS OF NETWORKS (2012). Despite the enormous influence of network theory on many fields, legal scholars have generally overlooked its insights. Some exceptions include Alan Schwartz & Robert E. Scott, *Third-Party Beneficiaries and Contractual Networks*, 7 J. LEGAL ANALYSIS 325 (2015); Luca Enriques & Alessandro Romano, *Institutional Investor Voting Behavior: A Network Theory Perspective*, 2019 U. ILL. L. REV. 223 (2019); Alessandro Romano, *Horizontal Shareholding*: *The End of Markets and the Rise of Networks* (2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3255948.

represent the connections.[42] One important finding of this strand of literature is that, besides size, also the position and the level of interconnections of a financial institution determine its ability to impose negative externalities on the financial sector and the economy in general.[43] In fact, policymakers and economists alike have acknowledged that some institutions are too-interconnected-to-fail.[44] For instance, Bear Stearns, a relatively small financial institution, was rescued by the Federal Reserve due to the interconnections that it had with other key financial actors.[45]

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[42] *See e.g.* Marco Galbiati, Danilo Delpini & Stefano Battiston, *The Power to Control*, 9 NATURE PHYSICS 126, 126 (2013).

[43] Robin L. Lumsdaine et al., *The Intrafirm Complexity of Systemically Important Financial Institutions* 1 (2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2604166 ("while size-based thresholds are appealing from a regulatory perspective […], they are overly simplistic in the presumption that risk can be evaluated via a single value"); Serafin Martinez-Jaramillo et al., *An Empirical Study of the Mexican Banking System's Network and Its Implications for Systemic Risk*, 40 J. ECON. DYNAMICS & CONTROL 242, 256 (2014); (centrality measures "go beyond size and, in some cases, are not correlated or even negatively correlated with the size of an institution"); Steven L. Schwarcz, *Derivatives and Collateral: Balancing Remedies and Systemic Risk*, 2015 U. ILL. L. REV. 699, 706-711, 713-715 (2015) (discussing interconnectedness and substitutability of an institution as determinants of the systemic risk it poses).

[44] *See e.g.* Ben S. Bernanke, Chairman, Bd. of Governors of the Fed. Res. Sys., Statement Before the Financial Crisis Inquiry Commission 20 (Sept. 2, 2010), http://perma.cc/ZNF8-DHJT (arguing that the status of too-big-to-fail depends also on the complexity, interconnectedness and the critical functions that a financial institution performs); Sheri Markose, Simone Giansante & Ali Rais Shaghaghi. *'Too Interconnected to Fail' Financial Network of US CDS Market: Topological Fragility and Systemic Risk*, 83 J. ECON. BEHAV. & ORG. 627 (2012); Michael Gofman, *Efficiency and Stability of a Financial Architecture with Too-Interconnected-To-Fail Institutions*, 124 J. FIN. ECON. 113 *passim* (2017).

[45] *See* The Economic Outlook: Hearing Before the Joint Economic Committee, 110th Congress (2008) (statement of Ben S. Bernanke, Chairman, Bd. of Governors of the Fed. Reserve Sys.):

> Normally, the market sorts out which companies survive and which fail, and that is as it should be. However, the issues raised here extended well beyond the fate of one company. Our financial system is extremely complex and interconnected, and Bear Stearns participated extensively in a range of critical markets. With financial conditions fragile, the sudden failure of Bear Stearns likely would have led to a chaotic unwinding of positions in those markets and could have severely shaken confidence. The company's failure could also have cast doubt on the financial positions of some of Bear Stearns thousands of counterparties and perhaps of companies with similar businesses. Given the current exceptional pressures on the global economy and the financial system, the damage caused by a default by Bear Stearns would have been severe and extremely difficult to contain. Moreover, the adverse effects would not have been confined to the financial system but would have been felt broadly in the real economy through its effects on asset values and credit availability.

Network scholars have devised various measures to gauge the relevance of an individual financial institution for the financial network as a whole, that is its "centrality." One of the most commonly used measures of centrality is known as the DebtRank, which measures the dollar value of the harm imposed on the financial system by the distress of a given financial institution.[46] Notably, the DebtRank can be normalized between 0 and 1, so that it captures the fraction of the financial network (in value) that would be affected by the disruption of a node. In a companion paper, two of us have argued that insights from network theory can and should be used to improve on the effectiveness of financial regulation.[47] Consistent with that approach, we suggest below that, in developing an extended liability rule to induce SIFI shareholders to account for the externalities that their firm can impose, measures of centrality should be a key component of the liability regime, as they allow policymakers to tailor shareholder liability to the potential harm an individual SIFI's collapse can impose on the financial system.

B. Other Proposals to Extend Shareholders Liability

Scholars have long acknowledged that thanks to the limited liability of their shareholders firms are able to impose negative externalities on society.[48] To address this concern, proposals to extend the liability of shareholders have cyclically resurfaced. This Section provides a short overview of some of the most influential of these proposals.

In the modern debate about the merits of limited liability the first scholars to question it as a general rule for corporations were Henry Hansmann and Reinier Kraakman in an Article that

[46] *See e.g.* Stefano Battiston et al., *DebtRank: Too Central to Fail? Financial Networks, the Fed and Systemic Risk*, 2 SCI. REP. (2012).

[47] Luca Enriques, Alessandro Romano & Thom Wetzer, *Network-Sensitive Financial Regulation*, J. CORP. L. (forthcoming).

[48] Hansmann & Kraakman, *supra* note 16, at 1879 (noting that limited liability "is generally acknowledged to create incentives for excessive risk-taking by permitting corporations to avoid the full costs of their activities").

spurred great controversy.[49] They noted that shareholders are shielded from liability for two kinds of corporate debts: those having a source in contracts and those deriving from torts, and argued that limited liability is appropriate for the former, but not the latter.[50] In fact, they suggest that contract creditors decide to enter in a relationship with the firm and can therefore assess its creditworthiness and reliability.[51] Moreover, they can contract on the appropriate compensation for bearing the risk of default and can include clauses to protect themselves from opportunistic behavior on the part of the firm.[52] Therefore, contractual creditors would not need the additional protection deriving from unlimited shareholders' liability. Instead, tort creditors have not consented to enter into a relationship with the firm and cannot contract ex-ante about risk allocation. As a consequence, shareholders can impose consequences on creditors that are not internalized via private contracting. Building on these premises, Hansmann and Kraakman concluded that, as a matter of general corporate law, shareholders should face unlimited liability for tort losses.

Their proposal had the great merit of challenging the standard assumption that limited liability is an inherent feature of corporations, and aimed to restore the full force of tort law to tackle externalities. It was not meant to tackle the specific problems arising from too-big-to-fail financial institutions. But it is worth noting here that the kind of externalities that tort law addresses are different from the ones deriving from the failure of a large financial institution. As we explain in Section II.B, most of SIFIs' externalities qualify as pure economic losses, giving no rise to a tort claim. Hence, Hansmann an Kraakman's proposal for unlimited shareholder liability in torts would have little, if any effect on shareholders' incentives ex-ante.

[49] *Id*., at 1919-20.
[50] *Id*.
[51] *Id*.
[52] *Id*.

Fast forward twenty years, and the financial crisis prompted scholars to advance new proposals advance new proposals to extend shareholder liability in order to curb SIFIs' propensity to engage in risky activities. Peter Conti-Brown has advocated for the introduction of an "elective" unlimited liability for the shareholders of systemically important institutions.[53] The gist of his idea is that shareholders would be allowed to collectively choose whether they want to face unlimited liability for the total cost of their SIFI's bailout or hold higher capital reserves (fifteen to twenty percent).[54] The problems with this proposal are two-fold. First, under such a regime, shareholders cannot figure out in advance the value of the expected liability, because the "total cost of bailout" cannot be known ex-ante. Hence, they are unable to set their level of precautions accordingly. Second, Conti-Brown confronts shareholders with the draconian choice between high capital requirements arbitrarily set by a regulator with limited information and a regime of unlimited liability that connects expected liability with the unpredictable and idiosyncratic determinations made by policymakers in times of economic tensions.[55]

Steven Schwarcz's proposal on extended liability focuses instead on "shadow banks" only, arguing that their "investor-managers" should face a liability that is a multiple of their investment in the firm.[56] His proposal, however, does not engage with the questions of how to calculate the "original investment" in the firm or what the multiple should be. Second, his proposal is limited to shadow banking, which Schwarcz defines loosely as including "special purpose entities (SPEs), […] as well as finance companies, hedge funds, money market mutual funds, nonbank government

[53] Conti-Brown, *supra* note 9, at 429-31.

[54] *Id.*

[55] Conti-Brown himself admits "bailouts are political decisions—and politics do not always play according to economic logic." Consequently, under his rule also the amount of liability faced by shareholders might be determined without following "an economic logic." Conti-Brown, *supra* note 9, at 429.

[56] Steven L. Schwarcz, *The Governance Structure of Shadow Banking: Rethinking Assumptions About Limited Liability*, 90 NOTRE DAME L. REV. 1 (2014).

sponsored enterprises, securities lenders, and investment banks."[57] While they may be big taken together, they represent a relatively marginal subset of systemically relevant financial institutions. In fact, since SIFI designation rules entered into force, only one such entity has been designated as a SIFI, GE Capital Holdings, but its designation was rescinded after three years.[58] Finally, the proposal only extends the liability of "investors managers", which are defined as equity investors who also have "significant power to control the firm's actions."[59] However, this limitation raises the issue of defining who has significant power to control the firm's actions, which might not always be straightforward. And, other than at hedge fund management firms, it may simply apply to no one within the relevant organizations.

Most recently, similarly to Schwarcz, but with reference to all SIFIs, Charles Goodhart and Rosa Lastra have proposed an extended liability regime for all "insiders who have both the information and capacity to influence corporate decision-making."[60] In that category they include, in addition to top managers, large shareholders, *i.e.* those with a stake higher than five percent.[61] Shareholders with a stake between two and five percent should be able to choose whether to be treated as "outsiders" or "insiders," in the former case having to commit not to exercise their voting rights. Large shareholders should "have double liability, i.e. for an additional twice par value of their shares,"[62] while insider shareholders (those between two and five percent with voting rights) would "be liable to pay in an additional par value of their shares."[63]

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[57] Schwarcz, *The Governance Structure*, *supra* note 56, at 2.
[58] *See* https://www.treasury.gov/initiatives/fsoc/designations/Pages/default.aspx.
[59] Schwarcz, *Systemic Risk*, *supra* note 17, at 229.
[60] Charles A.E. Goodhart & Rosa M. Lastra, Equity Finance: Matching Liability to Power 23-27, 29, CEPR Discussion Paper No. DP13494 (2019).
[61] *See id*. at 23.
[62] *Id.*
[63] *Id.* at 24.

Leaving aside the inadequacy of par value as a multiplier for extended liability in today's environment,[64] the distinction between large and small shareholders of this proposal would seem to be a troublesome solution to a relatively minor problem. The solution would be troublesome, because it would create a disincentive to invest more than the relevant thresholds, which may be either self-defeating (if no one crosses the threshold) or such that a disproportionate voting power is granted to larger shareholders (if many of the insider shareholders opt for passivity). The problem it solves is to avoid "the unfairness, and political unpopularity, of bankrupting innocent, uninformed and powerless outside shareholders."[65] This outcome would be highly unlikely in today's equity markets, where most individuals do not invest directly in equity shares. And those who do would be unlikely to face financial ruin so long as liability is extended but not unlimited. In addition, very small shareholders would be unlikely to be sued at all for liability, because it would not be cost-effective anyway.

The closest antecedent to our liability rule proposal is in legislation: for roughly three quarters of a century shareholders of American banks were subject to double liability.[66] More precisely, they were liable for an amount in excess to their investment up to the par value of their stock.[67] Empirical studies confirmed that double liability was effective in reducing banks' risk taking.[68] Reviving this rule "as it was" would be problematic. On the one hand, par value has become a meaningless measure of the value of a stock.[69] On the other hand, because of its one-

[64] *See* Section III.A.1. Goodhart and Lastra write with the U.K. in mind, a country where par value is typically not as low as in the U.S., i.e. between one pence and a higher fraction of one pound. *See* EILIS FERRAN, PRINCIPLES OF CORPORATE FINANCE LAW 18 (2008).

[65] Goodhart & Lastra, *supra* note 60, at 27.

[66] Macey & Miller, *supra* note 14, at 31.

[67] Macey & Miller, *supra* note 14, at 31.

[68] Benjamin C. Esty, *The impact of contingent liability on commercial bank risk taking*, 47 J. FIN. ECON. 189 (1998); Richard S. Grossman, *Double Liability and Bank Risk Taking*, J. MONEY, CREDIT & BANKING 143 (2001).

[69] *See* Section III.A.1.

size-fits all approach, the expected liability faced by the shareholders under a hypothetical double liability rule for SIFIs would not vary with the size of the negative externalities that their SIFI can create, and thus would imperfectly mold shareholder incentives.

II. Why Extended Liability?

In this section, we discuss why both traditional limited liability and various versions of an unlimited liability regime for SIFI shareholders are not, or would not be, optimal.

A. Why Limited Liability Is Inappropriate for SIFIs

Limited liability has been the standard for US corporations for over 150 years.[70] If only for that reason, a strong justification is needed for any deviation. This section provides support for the proposition that limited liability should not apply to SIFIs. Let us recall that a SIFI default can have dramatic consequences on the financial system and ultimately on the entire economy. The SIFIs' shareholders will internalize only a small fraction of such losses. Moreover, in order to prevent such a fallout, and no matter what the statutes say about never again using taxpayers money to save financial institutions, the government will be forced to bail out the SIFI.[71] As the SIFI shareholders and creditors are aware of that, they will, respectively, favor and fail to guard against, excessively risky strategies.[72] This moral hazard problem is further worsened because shareholders are unlikely to be completely wiped out during a bailout. Hence, shareholders are likely to bear an even smaller fraction of the losses caused by the distress of their SIFI.

[70] *See* Phillip I. Blumberg, *Limited Liability and Corporate Groups*, 11 J. CORP. L. 573, 604 (1985).

[71] *See supra* notes 3-9 and accompanying text.

[72] Note that while the problem is more severe for SIFIs due to their unique ability to impose large negative externalities and to the prospects of bailouts, limited liability can induce in excessive risk taking in every firm. *See e.g.* William W. Bratton & Michael L. Wachter, *The Case Against Shareholder Empowerment*, 158 U. PA. L. REV. 653, 658-59 (2010).

There is a number of reasons to believe that the expected value of a bailout for the shareholders is larger than zero. First, as a matter of historical fact, the average shareholder has received a positive payoff from bailouts. Even a bailout like that of AIG that was litigated for being exceedingly harsh on shareholders[73] actually prevented holders of AIG common stock from being wiped out.[74] Intuitively, politicians will prefer to intervene too early rather than too late: after all, they act to avoid the catastrophic effects of a systemic meltdown that may easily cause a serious recession and cost them re-election: you are unlikely to wait until the very last moment when such are the stakes. Hence, they will tend to inject money into SIFIs when shareholders still own valuable shares, thereby leaving them in place.

There is an even more fundamental reason to believe that the expected value of government aid for SIFI shareholders cannot be zero, namely that also paths alternative to a bailout have a positive expected value for shareholders. Consider, for instance, the case of "regulation by deal," in which a healthy firm is assisted by the government in the acquisition of a defaulting SIFI. Examples of this practice during the last financial crises are ubiquitous, and involved defaulting financial institutions such as Bear Stearns and Merrill Lynch on one side, and JP Morgan and Bank of America as their saviours, on the other.[75] An intervention of this kind clearly has a positive value for the shareholders of the acquired firm, because they can sell their shares to the aided acquirer instead of being wiped out completely. Most importantly, as they know that by opposing the merger they can impose a large externality on the economy, they are likely to extract a high

[73] *See* Aaron M. Kessler, U.S. Appeals Bailout Ruling in A.I.G. Case, N.Y. TIMES, Aug. 13, 2015, at B5.

[74] Mary G. Patterson, *Starr International Co. v. United States: The AIG Bailout Ruling*, REV. BANKING & FIN. L. 19, 24 ("Despite its harsh terms, however, the Credit Agreement successfully prevented AIG from going bankrupt, and in turn, avoided the otherwise inevitable complete loss of investment return for all AIG common stockholders").

[75] Yair Listokin & Inho Andrew Mun, *Rethinking Corporate Law During a Financial Crisis*, 8 HARV. BUS. L. REV. 349, 366-377 (describing in more details instances of regulation by deal).

price for shares that might otherwise be almost worthless.[76] In short, it is extremely unlikely that the expected value of government aid for SIFI shareholders can be set to zero.

Having established that the benefit of a bailout to shareholders tends to be higher than zero, it becomes even clearer why limited liability cannot be an adequate rule for SIFIs. A fundamental principle of modern corporations is that investors risk what they have invested in the company: when the expected value of government aid is positive, this principle is violated. Most importantly, it is violated exactly for those firms, like SIFIs, that have the potential to impose the greatest negative externalities on the economy. As noted above, this can result in moral hazard problems and induce shareholders (and creditors) to favor excessively risky strategies.[77] Extended liability aims to restore this axiom and prevent this moral hazard problem.

B. Why Not Unlimited Liability?

This section explores why shareholders should not face *unlimited* liability. The first step is defining exactly which losses shareholders would cover with their assets if unlimited liability was the rule. While at first glance trivial, this task becomes very problematic in this context. To clarify this point we divide the losses caused by the distress of a SIFI into three categories: losses to creditors, the cost of the bailout and other externalities.[78]

To begin with, SIFI shareholders could be liable for the losses imposed on (not only tort creditors but also) contract creditors. However, unlimited liability towards contract creditors is opposed even by the staunchest supporters of the idea of extending the liability faced by

[76] *Id*, at 369-374 (describing the hold-up problem created by regulation by deal and giving the example of the Bear Stearns merger to illustrate it).

[77] *See supra* note 4 and accompanying text.

[78] These categories of losses are, of course, interconnected. For instance, a large bailout is likely to reduce creditors losses and the other externalities.

shareholders.[79] Unsurprisingly, to the best of our knowledge, nobody has ever explicitly advocated for an extension of liability toward contract creditors. The basic reasons are that creditors that want higher guarantees can simply contract around limited liability and that the interest rate will incorporate the level of liability chosen by the parties.[80] Nevertheless, it is important to explore this rule in order to have a complete picture of the alternatives available to the regulators.

In particular, in this context unlimited liability towards creditors is simply inadequate to address the problems created by SIFIs. SIFIs are not bailed out because they impose losses on their creditors, but because they have the potential to impose enormous losses onto agents that have not contracted with the corporation. Unlimited liability towards contract creditors would not solve this problem, since neither creditors nor shareholders would have incentives to account for such externalities.

At best, unlimited liability towards contract creditors would merely constitute a transfer of resources from shareholders to creditors. Under limited liability, an insolvent SIFI imposes significant losses on its creditors, whereas under an unlimited liability regime the fact that creditors can rely on shareholders' assets would mitigate these losses. Therefore, making shareholders liable towards creditors might reduce the risk propensity of shareholders, but would also reduce the incentives of creditors to monitor the SIFI.[81] Thus, this form of unlimited liability presents a trade-off in terms of monitoring incentives of shareholders and creditors.[82] It is unclear whether

[79] Hansmann & Kraakman, *supra* note 16, at 1919-20.
[80] *Id.*
[81] Haelim Anderson, Daniel Barth & Dong Beom Choi, *Reducing Moral Hazard at the Expense of Market Discipline: The Effectiveness of Double Liability Before and During the Great Depression*, 2 (Office of Financial Research Research Paper 18-06 2018) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3265163.
[82] *Id.*

shareholders are in a better position than creditors to monitor the SIFI, and hence it cannot be predicted whether unlimited liability towards creditors would make SIFIs safer.

At worst, unlimited liability towards creditors would simply achieve nothing. Because lending money to SIFIs would become safer, debtors would ask for lower interest rates. In turn, this would increase the returns to shareholders in good states of the world, which might offset their higher expected losses in bad states of the world (*i.e.* when the SIFI goes bust). The ability of shareholders and creditors to contract around interest rates to account for the level of risk might neutralize any substantial effect of extending liability towards creditors.

Against this background, increasing shareholder liability can only be effective if it forces agents that can affect the behavior of the SIFI to account for externalities imposed on society at large.[83] One possible approach is to make shareholders liable for the cost of actual bailouts, as suggested by Conti-Brown as an alternative—freely chosen by the individual SIFI—to higher capital ratios. However, having shareholders to bear the cost of bailouts creates significant problems. To begin with, it would further politicize the debate around bailouts in a period of political and economic tension. Some politicians might seize the opportunity of earning consent by advocating for very large bailouts funded with shareholder money. The narrative of using the money of large institutional investors to cover the losses caused by the stock market is likely to gain significant traction among a certain part of the electorate. Other politicians, instead, would be exposed to the political pressure of a relatively small and cohesive group of institutional shareholders with a homogeneous interest in minimizing their expected liability, and hence the size of the bailout. The resultant of these conflicting forces would yield policy choices that are

[83] Schwarcz, *Systemic Risk, supra* note 17, at 206 (arguing that "the externalities of systemic failure include social costs that can extend far beyond market participants. Thus, market participants will not want to internalize those costs and will take an insufficient amount of care to prevent them").

unlikely to be functional to financial stability and social welfare-enhancing more broadly, exactly at a time when that would be needed the most.

Furthermore, for a liability rule to provide the right incentives, those facing potential liability must be able to affect the probability and the dimension of such liability by engaging in monitoring, oversight and other risk-reducing activities. However, in this case the liability faced by the shareholders would largely depend on unpredictable political decisions outside their control, and as a consequence they would not be able to adopt the optimal precautions to minimize their liability risk. To be sure, that shareholders might have limited control on the value of the expected harm is a standard objection to unlimited liability. However, the standard objection refers to the partial inability of shareholders to control their own agents, the managers of the corporation.[84] In this context, the inability of shareholders to influence the expected harm runs much deeper because the decision on whether and how to bailout a SIFI depends on agents (the government's) on which shareholders cannot (and should not) exercise *any* control. Therefore, making shareholders liable for the portion of harm that depends on the reaction of the government would not improve financial stability, while it would discourage investment in the financial sector.

The third option, namely making SIFIs' shareholders unlimitedly liable for torts would also be unviable. Current tort rules on causation and pure economic losses would make an unlimited liability rule largely ineffective in inducing SIFIs' shareholders to internalize the losses caused by the distress of their firm. But, on the other hand, coupling shareholder liability for torts with a

[84] This argument was frequently embraced by judges that were preoccupied with the unfairness of assigning a large liability to shareholders who are not in the "capacity to control" or influence the decisions of management. *See* Steven L. Schwarcz, *The Governance Structure supra* note 56, at 9. For an early formulation of this view *see* Spear v. Grant, 16 Mass. (1 Tyng) 9, 14 (1819) ("[I]f [a stockholder] were equally liable to each holder of the notes (which he must be if liable at all; for if the facts agreed create a promise to one, they create a promise to all), then the most palpable injustice would take place. For a stockholder, wholly innocent and ignorant of the mismanagement, which has brought the bank into discredit, might be ruined by reason of owning a single share in the stock of the corporation").

change in tort law that would stretch the concept of causation and allow plaintiffs to recovery pure economic losses, if only in the context of SIFIs, would not be a good solution either: it would open the door to complex and endless litigation, and ultimately result in great uncertainty.

A significant part of the harm caused by the distress of a SIFI qualifies as what in tort parlance are called "pure economic losses," [85] which are generally not recognized by the tort system. That is, compensation will generally be denied to plaintiffs that are unable to establish a direct connection between their physical injury or property damage and the acts or omissions of defendants.[86] Most of the losses that are caused by the distress of a SIFI are likely to be too remote to meet the traditional tests for causation required by the law of torts. Consider for instance the following case. A distressed SIFI cannot meet its obligation to pay one of its creditors, say, a carmaker. Hence, the carmaker cuts its orders from its supplier, which in turn goes bankrupt. Assume also that the carmaker could have kept a steady level of production after hearing of the SIFI's distress by borrowing money at higher interest rates. Would the distress of the SIFI be the proximate cause of the default of the carmaker's supplier? It is true that the supplier of the carmaker would have not gone bankrupt but for the distress of the SIFI, yet there was another event (i.e. the decision of the carmaker not to borrow more money) that likely broke the chain of causation. Given that the spillovers from a SIFI's distress will propagate through the economy, countless instances akin to the one just described are likely to emerge that would fall outside the reach of tort law. Denying compensation for pure economic losses and for losses that are "remote"

[85] John Armour & Jeffrey N. Gordon, *Systemic Harms and Shareholder Value*, 6 J. LEGAL ANALYSIS 35, 46 (2014). *See e.g.* People Express Airlines, Inc. v. Consol. Rail. Corp., 495 A.2d 107, 109 (N.J. 1985) ("[A] virtually per se rule barring recovery for economic loss unless the negligent conduct also caused physical harm has evolved throughout this century, based, in part, on Robins Dry Dock & Repair Co. v. Flint, 275 U.S. 303 (1927), and Cattle v. Stockton Waterworks Co." (internal citations omitted)). One recognized exception is that of fishermen, as they can recover pure economic losses associated with a lost opportunity to fish. *See* RICHARD A. EPSTEIN, TORTS 610 (1999).

[86] Anita Bernstein, *Keep It Simple: An Explanation of the Rule of No Recovery for Pure Economic Loss*, 48 ARIZ. L. REV. 773, 773 (2006).

would again defeat the purpose of extending shareholders' liability, which is inducing shareholders to account for the externalities that a default of their institution would cause on society at large. However, allowing plaintiffs to recover losses that are not proximately caused by the injurer and pure economic losses means that judges should develop a whole new set of rules just for dealing with SIFIs' bankruptcies. It is easy to foresee that this process would involve costly and complex litigation and generate great uncertainty. Thus, unlimited liability seems unworkable with the existing tort rules on harm causation.

The last option would be making SIFI shareholders liable for all the liabilities of their institution, regardless of whether such liabilities are contractual in nature. In this vein, shareholders would have to cover the losses of the creditors, the cost of the bailout and any additional loss caused by the default of the SIFI for which the SIFI itself is liable according to general tort law or other doctrines and rules. In other words, this solution would be a "pure" unlimited liability.

And yet, this solution is not workable either: it compounds the flaws of all the forms of unlimited liability analyzed so far, while also creating four additional problems. First, due to the draconian risk associated with this form of shareholders' liability, it will be difficult if not impossible for SIFIs to find equity investors. A lack of investment in them would damage the economy, because SIFIs, like financial firms more generally, create positive externalities by making the allocation of capital within the economy more efficient and moving economic resources to more productive uses.[87] Already Schumpeter noted that "the services provided by financial intermediaries—mobilizing savings, evaluating projects, managing risk, monitoring

[87] Jeffrey Wurgler, *Financial Markets and the Allocation of Capital*, 58 J. FIN. ECON. 187, 188 (2000). ("Financially developed countries increase investment more in their growing industries and decrease investment more in their declining industries. Thus, although financially developed countries might not invest at a higher level they do seem to allocate their investment better" (citations omitted).

managers, and facilitating transactions—are essential for technological innovation and economic development."[88] A large fraction of the benefit created by these activities is thus not internalized by financial intermediaries, and it spills over to the most productive sectors of the economy.[89] And, while economists have at times questioned the idea that financial development can facilitate economic growth, "[a] growing body of work would push even most skeptics toward the belief that the development of financial markets and institutions is a critical and inextricable part of the growth process".[90]

When an activity produces positive externalities, an unlimited liability rule thus results in over-deterrence, excessively discouraging parties from engaging in it.[91] Consider a simple example. Assume that by contributing to the efficient allocation of capital within an economy a SIFI can make profits of $70 and produce a positive externality of $40, provided that it does not go bankrupt. Moreover, assume that the SIFI has a 50 percent chance of going bankrupt, and that by defaulting it would cause a systemic harm equal to $100, for which the SIFI would be liable

[88] Robert G., King & Ross Levine, *Finance and Growth: Schumpeter Might Be Right*, 108 Q.J. ECON. 717, 717 (1993) (describing Schumpeter's view as expressed in JOSEPH A. SCHUMPETER, THE THEORY OF ECONOMIC DEVELOPMENT (1911), and providing empirical evidence in its support).

[89] The idea that firms produce positive externalities due to their activity and that therefore it is important to enhance their ability to attract capital is a traditional argument in favor of limited liability. The key role that the financial sector plays in the economy further strengthens this argument for SIFIs. For a general formulation of the argument *see e.g.* BAINBRIDGE & HENDERSON *supra* note 12, at 51-52 ("there is considerable truth to the widely shared view that limited liability was, and remains, essential to attracting the enormous amount of investment capital necessary for industrial corporations to arise and flourish. … By allowing the public corporation to develop, limited liability thus was in large measure responsible for the development of our modern economic system."). For similar arguments, *see* HERBERT HOVENKAMP, ENTERPRISE AND AMERICAN LAW: 1836–1937, 54 (1991). ("Limited liability clearly encouraged the flow of capital into new enterprise."); Henry G. Manne, *Our Two Corporation Systems: Law and Economics*, 53 VA. L. REV. 259, 262 (1967) ("Limited liability is probably an essential aspect of a large corporate system with widespread public participation."); Jonathan R. Macey, *The Limited Liability Company: Lessons for Corporate Law*, 73 WASH. U. L. Q. 433, 451 (1995) ("granting limited liability helps firms not only to raise capital, but also to encourage investments in human and firm-specific capital.").

[90] ROSS LEVINE, FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH 2 (1996).

[91] Robert D. Cooter, & Ariel Porat, *Liability Externalities and Mandatory Choices: Should Doctors Pay Less?*, 1 J. TORT L. 1, 9 (2006) (noting that when an activity produces a positive externality the damages should be set below 100 percent).

according to general tort law rules. From a social perspective, it is optimal if the SIFI engages in its activity, because its expected value is positive.[92] However, under an unlimited liability rule that does not account for positive externalities, the SIFI will find it unprofitable to conduct its activity. Therefore, unlimited liability would lead financial markets to shrink beyond what is optimal. In turn, this might have a negative impact on many other sectors of the economy.

A second drawback of unlimited liability is that it would create the perverse incentive of pressuring SIFIs to reduce their equity to the bare minimum required by regulation and to limit the extent of potential damage by concentrating ownership in the hands of a small number of shareholders. At present, most SIFIs hold reserves in excess of the minimum threshold imposed by the law.[93] As unlimited liability increases the cost of equity vis-à-vis the cost of debt, it is less likely that SIFIs would continue to hold extra reserves if such rule were passed.

The third problem with unlimited liability stems from the fact that bailouts take place in times of economic tensions; SIFI defaults, if a bailout is not engineered, create these tensions themselves. During these times policymakers (and, to a lesser degree, courts) are exposed to great pressure from various interest groups and public opinion in general. As a result, political decisions taken in the proximity of a financial crisis tend to be, "to put it mildly, less than optimal."[94] This

[92] The expected value of this activity would be equal to (70+40)*0.5-100*0.5=5. Hence, the activity creates a positive value.

[93] *See e.g.* Maheen Khan, Capital and RWA for Tier 1 US Banks – 2Q 2018, https://www.clarusft.com/capital-and-rwa-for-tier-1-us-banks-2q-2018/ (showing that top U.S. banks all had Common Equity Tier 1 capital ratios well above the statutory minimum at the end of the second quarter of 2018, ranging from 11.1 percent for Goldman Sachs to 16.0 percent for Morgan Stanley, well above the 7 percent minimum).

[94] Roberta Romano, *The Sarbanes-Oxley Act and the Making of Quack Corporate Governance*, 114 YALE L.J. 1521, 1527 (2005) (discussing the case of the Sarbanes-Oxley Act). *See also* Adam C. Pritchard, *The SEC at 70: Time for Retirement?*, 80 NOTRE DAME L. REV. 1073, 1081-82 (2005) ("Scandal driven reform followed by political neglect has been a recurring pattern in the securities markets .... [D]emands for financial market regulation will arise in times of crisis. … Crisis however, does not create the ideal environment for developing balanced, cost-effective policy interventions. Politicians will want to 'do something,' even if the proposed something may prove to be costly, ineffective or counterproductive").

is a significant drawback of any possible form of unlimited liability rule, because the quantification of the harm is bound to be made ex-post (i.e. during a time of economic and political tension), and hence to be driven by political considerations. In this vein, the amount of liability that shareholders will face is unpredictable ex-ante and unlikely to be an accurate measure of the harm. Consequently, the deterrence effects of unlimited liability rules are highly imperfect.

But, finally, perhaps the biggest drawback of a regime of unlimited liability as compared with our preferred approach of extended, but bounded, liability is that private liability insurance markets would be far more likely to emerge to protect investors in bounded liability regimes than in unlimited liability regimes. Just as liability insurance is available from private carriers in a variety of contexts, such as for officers and directors public companies, we believe that insurance markets would generate liability coverage for shareholders facing heightened (but not unlimited) liability for the failure of the SIFIs they are invested in. As we further argue in Section IV.A, we are dubious that an active or vibrant insurance market for such a risk would exist if liability were unlimited because of the difficulty of calculating the risks of loss.

III. The Proposed Extended Liability Rule

This Section describes how we propose to shape an extended liability rule that accounts for the features of present-day financial markets and better serves the goal of neutralizing the moral hazard created by bailout expectations. With that goal in mind, we devise a liability regime specifically aimed to provide shareholders with greater incentives to monitor management so as to avoid excessive risk-taking. Its main function is deterrence rather than compensation. The regime we envisage is one of SIFI shareholder liability for up to the average share price in the period preceding SIFI's bailout or orderly liquidation, with the precise amount depending on the SIFI's

systemic relevance as proxied by its position within the financial network and on shareholders' choice as to whether to increase that amount to higher than the statutory minimum so determined.

A. The Building Blocks of the Rule

To define the contours of our proposed extended liability rule for SIFI shareholders, we identify and answer seven questions: (1) What should be the upper bound to liability? (2) How can the extent of liability be made sensitive to the specific systemic relevance of the individual SIFI, so that shareholders have greater incentives to monitor those SIFIs that endanger the financial system more? (3) What would trigger extended SIFI shareholders liability? (4) Which shareholders should be liable? (5) What should be the standard for liability? (6) How would the new rule coordinate with the existing capital requirements regime? (7) Who should recover and where would the money go?

The basic element of our proposal for an extended liability regime is the liability cap, or the maximum amount of liability SIFI shareholders should be required to bear. Under the traditional double liability rule, a bank's shareholders were liable in excess to their investment in the bank up to the par value of their stocks.[95] In today's markets, the par value is no longer a reliable proxy of the value of a firm. Suffices it to notice that, as of August 6, 2019, the price of Apple shares was $193.34, whereas their par value was just $0.00001.[96] Hence, the stock price is over 19 million times higher than the par value. Similarly, the stock price of Goldman Sachs share

[95] Macey & Miller, *supra* note 14, at 31.

[96] [96] U.S. SEC. & EXCH. COMM'N, FORM 10-K: REGISTRATION STATEMENT FOR APPLE, INC. (2018), https://sec.report/Document/0000320193-18-000145/

on the same day was $201.68, whereas the par value was just $0.01[97] For that reason, we need to introduce a different base to calculate the liability cap.

While no cap can be devised that will provide for the optimal level of shareholder monitoring over excessive risk-taking, we posit that a reasonable starting point is the average market price of a common stock during the time that goes from thirteen months before shareholder liability is triggered (t_{-13}) to one month before that (t_{-1}).[98] We call the time between t_{-13} and t_{-1} the "value window." The advantage of having a value window is threefold. First, the expected liability will not be drastically reduced by the unavoidable drop in the stock price that precedes a SIFI's collapse. Second, a value window accounts for the fact that the monitoring of SIFIs is an ongoing process, and that a default of an institution of this magnitude is generally the result of a series of decisions taken during a considerable time interval. Recall, for instance, the movie "Big Short."[99] In describing the events that led to the financial crisis, it shows how SIFIs' insiders engaged in reckless behavior for years before the financial system collapsed. In fact, there are over two years between the time when Michael Burry, the hedge fund manager, first discovers the problems with the housing markets, and the explosion of the financial crisis. In this vein, tying the liability to a specific point in time would be unreasonable. Third, with an average of 365 data points, abnormal stock price fluctuations will not dramatically affect the expected value of the liability. For instance, assume that the price of Bank of America's stocks is equal to $100 for the 365 days of the value window. In this case, the base to calculate the expected liability will be $100. Assume now that over a single day, the price of Bank of America's shares doubles. In this case,

[97] U.S. SEC. & EXCH. COMM'N, FORM 10-K: REGISTRATION STATEMENT FOR THE GOLDMAN SACHS GROUP, INC. (2018) https://www.goldmansachs.com/investor-relations/financials/current/10k/2018-10-k.pdf.

[98] For the timing of the shareholder liability trigger *see infra* Section III.A.3.

[99] THE BIG SHORT (Paramount Pictures 2015).

the base to calculate the expected liability will be 100.27.[100] This stability increases predictability and protects shareholders from sudden, extreme changes in stock prices.

2. The Multiplier

Double liability had the goal of preserving the stability of the single bank, and hence it was reasonable to have a one size-fits-all solution for all banks. Our rule's purpose is, rather, to preserve the stability of the financial system, thus we introduce a multiplier that reflects the risk that the individual SIFI imposes on the system. The advantage of using a multiplier is that the extent of liability can be made a function of the level of risk posed by the specific SIFI, thereby exposing the shareholders of SIFIs that can cause more (less) systemic harm to higher (lower) liability. As an outcome, shareholders of more central firms will have greater incentives to prevent excessive risk-taking.

There is ample empirical evidence suggesting that the systemic risk posed by an institution depends on its size *and* its position in the financial network.[101] Therefore, the multiplier must account for the size of the SIFI and for its centrality, that is, for its systemic relevance. Larger and more central institutions pose higher systemic risk, and therefore their shareholders should face higher liability. For these reasons, it is useful to define the multiplier in terms of a network-based (normalized) indicator of the firm's systemic relevance, such as the DebtRank Score (DRS).[102] Imagine that the average stock price of the shares over the relevant value window for a given SIFI is $100, and that its DRS equals 0.6. Then the liability faced by the shareholder will be equal to

[100] If the price of the shares is equal to $100 for the entire year, then the base to calculate the liability will be equal to (100*365)/365 = 100. Instead, if for one day the stock price goes to $200 the base of the liability will be equal to ((100*364)+(200*1))/365=100.27.

[101] *See supra* note 43 and accompanying text.

[102] *See* Battiston et al., *supra* note 46. Marco Bardoscia, et al., DebtRank: *A Microscopic Foundation for Shock Propagation*, 10 PLOS ONE e0130406 (2015).

$100 * (1 + 0.6) = 160$.[103] Because $0 < DRS < 1$, the maximal liability that shareholders can face is twice the average price of the shares during the value window.

To be sure, we do not claim that this multiplier leads to optimal deterrence. In fact, a risk-averse regulator that wants to further increase the incentives of SIFI shareholders to monitor might choose a multiplier greater than 1. And yet, even if optimal deterrence is not achieved, it is key to adopt a network measure of centrality like the DSR as a multiplier, since it allows policymakers to connect the liability faced by SIFI shareholders to the centrality of their firm. This is important for two reasons.

First, the goal of the proposed liability rule is countering the perverse incentives created by the prospect of bailouts. As the expected value of the bailout is higher for firms that are more central, liability must also be higher to neutralize the effects on the shareholders. Second, the variation in the extent of liability for individual SIFIs generated by the DebtRank is especially relevant in a world in which large institutional investors own stakes in many SIFIs but have limited resources to engage in monitoring. Consider the case in which there are three systemically important financial institutions, JP Morgan Chase, Goldman Sachs and Bank of America. Assume that a default of JP Morgan Chase would take down half of the financial system (*i.e.* its DRS is 0.5), whereas Goldman Sachs and Bank of America would only take down one tenth of the financial system (*i.e.* their DRS is 0.1). Last, imagine that mutual funds managed by BlackRock are equally invested in these three financial institutions. In a world in which a double liability is in place BlackRock would face equal liability for the default of these three banks. Consequently, it will evenly divide the resources that it can devote to monitoring among the three institutions.

[103] The calculation to determine the liability is 100*(1+0.6)=160.

However, this outcome is undesirable because JP Morgan Chase can cause much larger disruption to the economy, and therefore it would be efficient if BlackRock concentrated a significant part of its resources on monitoring JP Morgan. Our rule would lead to this result. In fact, thanks to the tailored multiplier BlackRock would face a liability per dollar invested 5 times higher if JP Morgan Chase goes bankrupt than if either Goldman Sachs or Bank of America goes bankrupt. For this reason, as desired, BlackRock would deploy more resources to monitoring JP Morgan Chase.

Defining the multiplier and the base to calculate the liability this way has another fundamental advantage compared to Peter Conti-Brown's proposal:[104] it minimizes the role that interest groups and the political process play, because the criteria to quantify the compensation that shareholders have to pay are defined ex-ante (i.e. before the distress of the SIFI) and are entirely transparent. For this reason, shareholders are perfectly able to anticipate the liability they face, and to set their level of monitoring accordingly.

3. The Trigger

The most straightforward way to identify the exact moment of the extended liability trigger is to refer to the start of the OLA process.[105] The OLA process has its own complex procedural process.[106] The first step is a determination of systemic risk made by the Federal Reserve Board

[104] *See supra* notes 53-55 and accompanying text.

[105] Needless to say, an additional trigger would be the entry into a different bankruptcy proceeding, such as Chapter 11 or FDIC-led resolution, should the OLA procedure not be triggered and no bailout occur.

[106] 12 U.S.C. § 5383

and the FDIC.[107] This determination has to be ratified by the Treasury Secretary, in consultation with the President.[108] Thus, liability could be triggered when this procedural process is completed.

There is, however, one obvious problem with this approach. As noted above, the OLA process might be inadequate to cope with the problems created by the largest SIFIs or with periods of economic tension that simultaneously endangers multiple large SIFIs.[109] In this case, a regulator might be forced to bypass the OLA and opt for a bailout. Thus, using the OLA as trigger for the liability rule would have the paradoxical result of protecting from liability the shareholders of the largest SIFIs. A way to prevent this outcome is that the liability is triggered when there is either an OLA determination *or* the government subsidizes a SIFI in distress. Since the government has multiple ways to assist a SIFI (for instance, by issuing guarantees to facilitate the merger with a sound bank), it would be impossible to provide an exhaustive list of the kinds of interventions that should trigger shareholders liability. For this reason, we argue that shareholders should be liable whenever the subsidy of the government exceeds a *de minimis* threshold,[110] independently from the form of the subsidy.

4. Which Liable Shareholders?

One obvious complication is that shares are frequently traded, and hence shareholders will change over time. For this reason, it becomes important to define precisely when the liability should kick in to determine which individuals or institutions should be liable.[111] Hansmann and Kraakman note

[107] 12 U.S.C. § 5383. An exception is if the firm is a broker-dealer or an insurance company. In this case, the determination of systemic risk from the FDIC is replaced by a vote from either the SEC or the Director of the Federal Insurance Office.

[108] *Id.*

[109] *See supra* notes 34-36and accompanying text.

[110] A possible way to determine this threshold is with respect to stock prices. For instance, assume that according to the formula discussed in Section III.A.1 the share price is $1 and the SIFI issued 100 shares. Then, liability could be triggered whenever the subsidy has a value higher than $10, i.e. ten percent of the value of the SIFI.

[111] Hansmann & Kraakman, *supra* note 16, at 1896-99.

that two corner solutions are possible. The first, that they call "judgement" rule, attaches liability to the people that own shares at the moment in which a judgment is made. In this context, it would imply that the liability attaches only to the shareholders that own the shares at the time of entry into the OLA proceeding or the bailout. The obvious problem with this approach is that when there are signals that the OLA process or the bailout is approaching, all potentially solvent shareholders will have strong incentives to sell their share at a very low cost to avoid liability. Another possible approach is the so-called "occurrence" rule, under which liability attaches at the moment in which the tort occurs,[112] meaning that whoever held shares at the moment in which the SIFI took the decisions that led to its bankruptcy should be held liable. This is an unworkable solution, however, because in this context it is impossible to pinpoint a single moment leading to the negative outcome.

We suggest that all the individuals and institutions that held shares during the twelve months leading to the OLA or bailout trigger (hereinafter, liability window) will be liable in proportion to the value of the shares they held, the time during which they held those shares, and the multiplier of the SIFI.[113] Note that this window is not the same as the value window. In fact, while the value window goes from thirteen months before the trigger to one month before the trigger, the liability window goes from one year before the trigger to the trigger day. The reason why the liability window also includes the month preceding the OLA trigger is that we intend to give shareholders incentives to monitor and to avoid excessive risk taking also between t_{-1} and the OLA trigger.

[112] Hansmann & Kraakman, *supra* note 16, at 1896.

[113] One possible issue would be hidden ownership. That is, the use of derivatives to hold a long position in the SIFI. This practice will not pose a problem if the derivative has as a counterparty a financial institution other than the SIFI. In fact, in this case, the counterparty, holding the shares for hedging purposes will be liable and the derivatives contract will deal with the consequences. However, the SIFI itself should not be allowed to act as a counterparty to derivatives granting a long position in itself, as the SIFI would have to be held liable for its own default. For a discussion of hidden ownership s*ee* Henry T.C. Hu & Bernard Black, *The New Vote Buying: Empty Voting and Hidden (Morphable) Ownership*, 79 S. CAL. L. REV., 811, 836-841 (2005).

This mechanism would work as follows: Assume that a shareholder owned 10 shares for the entire liability window and that these shares traded on average at $1 each during the value window. Assume also that the DRS of this institution is equal to 0.5. Her liability would then be equal to 15. Assume now that the same shareholder only held these shares for half of the liability window. Her liability would now be equal to $7.5. The advantage of this solution is twofold. On the one hand, it is hard to evade because divesting right before the OLA process is triggered has only a marginal impact on the liability faced by a shareholder. On the other hand, such rule accounts for the fact that monitoring of SIFIs to ensure their stability is an ongoing process. In addition, it is consistent with the circumstance that a default of an institution of this magnitude is generally the result of a series of decisions taken during a considerable time interval.

5. The standard

Another fundamental aspect of the rule is which liability standard should apply. One possibility is to hold shareholders liable only if they have been negligent. The main problem with this approach, however, is that it would be very hard for courts to determine whether shareholders have been negligent in monitoring the manager. Moreover, it is perfectly possible that some shareholders have been negligent, whereas others have monitored carefully. Therefore, courts should make a separate negligence finding with respect to each shareholder. Besides being costly and time consuming, these negligence findings might undermine the deterrent effect if they are – as it is reasonable to expect – often inaccurate. On the contrary, a strict liability rule would be faster and easy to administer. All shareholders would become liable once the OLA procedure is triggered or the bailout executed, independently of the level of monitoring in which they had engaged.

The law and economics literature offers support for the choice of a strict liability over a negligence rule. In fact, as a rule of thumb strict liability can be desirable when the potential

injurers (in our case the shareholders) have better information than the courts on the optimal care level to be adopted.[114] In this context, it is certainly the case that shareholders, and especially sophisticated institutional investors, are more informed than the courts on how to monitor managers.

6. Extended Liability and Capital Structure

One of the most devastating criticisms raised against the idea of increasing shareholders' liability regards firms' ability to adjust their capital structure.[115] Firms are interested in minimizing their overall cost of capital and will choose the combination of debt and equity that allows them to reach this goal. [116] Unlimited liability of shareholders would greatly increase the cost of equity, while leaving unchanged the cost of debt.[117] As a consequence, firms would minimize their outstanding equity and switch to an even more highly leveraged capital structure.[118] To understand this point, imagine a very simple scenario—in line with the famous framework developed by Modigliani and Miller[119]—in which the cost of debt and equity is identical, and hence the firm will be indifferent between financing itself through debt or through equity. However, assume now that an unlimited liability rule for shareholders is introduced. The cost of equity will greatly increase to reflect the increased risk of liability because shareholders now face losses in excess of their investment in the firm. On the contrary, creditors' potential losses are still limited to the amount lent to the firm, and

[114] Robert D. Cooter, *Economic Theories of Legal Liability*, 5 J. ECON. PERSP. 11, 23 (1991) Cooter notes that a negligence rule is preferable to strict liability when the standard of care that injurers should adopt is knowable by the court. Since in this case the court cannot determine the standard of care that shareholders should adopt, a strict liability rule is preferable.

[115] *See e.g.* Joseph A. Grundfest, *The Limited Future of Unlimited Liability: A Capital Markets Perspective*, 102 YALE L J. 387, 405-408 (1992).

[116] Richard A. BREALEY, STEWART C. MYERS & FRANKLIN ALLEN, PRINCIPLES OF CORPORATE FINANCE (12th ed. 2016).

[117] Grundfest, *supra* note 115, at 405-08.

[118] BAINBRIDGE & HENDERSON, *supra* note 12, at 73.

[119] Franco Modigliani & Merton H. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 AM. ECON. REV. 261 (1958).

hence the cost of debt will remain constant. The same firm would now find it more convenient to increase its leverage and finance a larger part of its operation through debt to reduce its expected liability. However, as the value of equity shrinks, the expected liability per dollar invested in the firm by the equity holders increases. This further tips the balance in favor of debt financing, which will shrink the equity cushion even more. Thus, the paradoxical outcome of a rule aimed at extending shareholders' liability could be a vicious circle in which firms adjust their capital structure so that there will be very little equity to which liability can be attached. And, as the expected liability associated with the remaining equity will be extremely large, the share value will be much higher for judgment proof investors.

For SIFIs, however, the situation is drastically different because the regulator has imposed minimum capital requirements. That is, the regulator has set a minimum size of the equity cushion in the form of capital ratios, and therefore SIFIs cannot reduce equity beyond a certain point.[120] Yet, under a rule of unlimited shareholder liability, shareholders would have even greater incentives not to go above the regulatory floor, which, according to leading economists, is inadequate.[121] In other words, by increasing the liability exposure of equity capital, higher shareholder liability would make financing through debt even more convenient for SIFIs.

On the contrary, our proposed extended liability regime would induce SIFIs to reduce their leverage, without having to force onto them the straightjacket of one-size-fits-all capital requirements devised by a regulator that is bound to have imperfect information.

In fact, with a minor tweak, the proposed liability rule can *reduce* the cost of equity vis-à-vis the cost of debt, and hence incentivize SIFIs to reduce their leverage. In particular, the

[120] *See supra* notes 26-29 and accompanying text.
[121] *See* ADMATI & HELLWIG, *supra* note 26, at 179.

shareholders should be allowed to reduce their liability by increasing the SIFI's equity cushion. That is, shareholders should have to bear the full extended liability only if their capital exactly matches the mandated capital ratios. Any increase in tier-one capital held in excess to the capital requirement would generate a proportional reduction of the extended liability. For instance, assume that the capital requirement of a SIFI is 8 percent, and that the SIFI holds exactly 8 percent in tier one capital. The SIFI shareholders would then have to cover the extended liability in full. If the SIFI has an extra 4 percent of equity cushion, then the extended liability will be halved. In this vein, the shareholders will return to a regime of single liability if their SIFI has an equity cushion that is twice as large as the one mandated (in this example, 16 percent).

It is easy to see why this feature of our rule allows shareholders to reduce their liability by reducing leverage. Returning to the example, assume that now the SIFI—with an equity cushion of 12 percent—needs fresh money and must decide whether to issue bonds or raise new equity. In the former case, the basis on which liability is calculated would increase. On the opposite, if new equity is issued, the basis on which liability is calculated would decrease *and* the expected liability would be discounted by the amount of capital held in excess over the capital requirement.

With this tweak, our proposal would share with Conti-Brown's the feature of granting shareholders the right to decide on the extent of their own liability.[122] However, under his proposal shareholders can only decide between a very high capital requirement or unlimited liability. Instead, our rule grants shareholders a much wider choice, because it allows them to choose the combination of liability and capital requirement that they prefer within the parameters set by the regulator.

[122] *See supra* text preceding note 54.

7. Collecting from shareholders

The goal of the proposed rule is deterrence, and hence who gets the money is a second order problem. However, one obvious possibility is that the money collected goes to, and is collected by, the FDIC, as a reserve to be used to fund either payouts to depositors of failed banks or bridge financing within OLA proceedings.[123] Another possibility is that the funds are collected directly by the government to (partially) cover the cost of the bailout.

IV. Market Adaptions to an Extended Liability regime

In the previous section we have laid the foundations of the extended liability rule that we propose. In this section we explain how the market would adjust to the new liability rule, in particular by focusing on: (*i*) how the risks of incurring extended liability for SIFI failures would be shifted to insurance companies and derivative counterparties because insurance and derivative products would emerge to shoulder the risk of such extended liability in exchange for compensation for doing so; (*ii*) how our rule is going to affect the composition of SIFIs' shareholder base; and (*iii*) how our liability rule would ameliorate the problem of firms being too big to manage.

A. Insurance Markets for Extended Liability Exposure

In his provocative article advocating for an unlimited liability regime for SIFIs' shareholders, Peter Conti-Brown argued that the "greatest feature" of this regime is that it would result in the creation

[123] In an OLA resolution, the bridge bank used to temporarily transfer a bank's assets and liabilities to ensure continuity can be financed via a credit line drawn from the Treasury (*see e.g.* Jeffrey N. Gordon & Wolf-Georg Ringe, *Bank Resolution in the European Banking Union: A Transatlantic Perspective on What It Would Take*, 115 COLUM. L. REV. 1297, 1312 (2015). The funds recovered from shareholders could be used in future OLA resolutions as funding for the same purposes.

of a new form of derivative instrument that would effectively shift the risk of unlimited liability from shareholders to derivative counterparties.[124] Specifically, Conti-Brown envisages the introduction of a particular derivative – the shareholder liability swap (SLS) – that would work, much like a Credit Default Swap (CDS), as follows:

> The issuer would guarantee to pay the holder of equity … enough to cover any losses following a taxpayer bailout. In this sense, an SLS is similar to a credit default swap (CDS), which pays a bondholder the value of a bond in the event the issuer of the bond defaults.[125]

The advantage of a SLS would be twofold. First, the value of the SLS would serve as a signal of the solvency of the institution. Currently, the two most accredited indicators of a firm solvency are the ratings issued by Credit Rating Agencies (CRAs) and CDSs. CRAs tend to react to mutated circumstances at a much slower speed than the market.[126] CDSs, in turn, are insensitive to the risk of a bailout, because a bailout usually *prevents* a default; in other words, CDSs, unlike SLSs, underestimate the solvency risk of too-big-to-fail SIFIs. Building on this, Conti-Brown argues that variations in the price of SLS would serve as a useful tool to "determine the likelihood of a government bailout."[127] Second, shareholders could distribute the risk posed by the default of their SIFI by buying SLS from agents that are in a better position to bear that risk.

The extended liability regime that we propose improves on this important ancillary element of Conti-Brown's proposal. The price of a SLS under Conti-Brown's unlimited liability rule would not depend only on the likelihood of a default, but also on the estimated value of the liability given default. The latter, however, is the resultant of the idiosyncratic political reaction to a situation of

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[124] Conti-Brown, *supra* note 9,at 439.

[125] *Id*.

[126] Mark J. Flannery, Joel F. Houston & Frank Partnoy, *Credit Default Swap Spreads as Viable Substitutes For Credit Ratings*, 158 U. PA. L. REV. 2085, 2106 (2009).

[127] Conti-Brown, *supra* note 9, at 439.

crisis and hence is hard to estimate for market participants. To put it differently, the probability of default of an institution is a *risk* (*i.e.* a form of "randomness whose probabilistic nature is extremely familiar and can be characterized with objective probabilities"[128]), whereas the cost of a SIFI bailout, and hence the extent of the expected liability, is *uncertain* (*i.e.* characterized by "randomness whose probabilistic behavior is extremely unfamiliar, unknown, or even unknowable"[129]). Thus, the price of a derivative that accounts for the estimated value of the liability given default is bound to be an extremely noisy signal of the probability of SIFI default. In a similar vein, because it would be based on an event characterized by uncertainty, the SLS would be a poor mechanism to distribute risk in the market.[130]

On the contrary, under our proposed extended liability regime the value of a SLS would depend *only* on the probability of default because the amount of liability is clearly defined ex-ante. Therefore, under our rule the SLS would be more effective at distributing risk and would constitute a more reliable and transparent signal of a SIFI's solvency.

Moreover, under a liability regime like the one we propose an insurance market and/or a derivatives market for shifting extended liability risk would be highly likely to emerge. In the

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[128] Eric L. Talley, *On Uncertainty, Ambiguity, and Contractual Conditions*, 34 DEL. J. CORP. L. 755, 759 (2009).

[129] *Id.*

[130] Neil A. Doherty & Alexander Muermann, *On the Role of Insurance Brokers in Resolving the Known, the Unknown, and the Unknowable*, *in* THE KNOWN, THE UNKNOWN, AND THE UNKNOWABLE IN FINANCIAL RISK MANAGEMENT: MEASUREMENT AND THEORY ADVANCING PRACTICE 194, 194 (Francis X. Diebold, Neil A. Doherty & Richard J. Herring eds., 2010):

> Insurance [in this case, the SLS] transfers risk, and the knowledge of the level of risk is important to the parties in deciding whether to engage in this activity. Without knowledge of the underlying loss distribution, the insurer [i.e. the buyer of the SLS] will find it difficult to set a price and the policyholder [i.e. the shareholder] is unable to tell whether he is getting a good price from the insurer").

See also Michael Simkovic, *Limited Liability and the Known Unknown*, 68 DUKE L.J. 275, 309 (2018) ("Insurers generally prefer to underwrite insurance for well-understood, specific, and readily quantifiable risks for which historical data is available−that is, risks that resemble those that have materialized in the past". In this case, markets would be much more familiar with estimating the probability of default of an institution than with predicting policymakers' reactions to a financial crisis).

presence of such markets would have structural characteristics similar to those of the robust municipal bond insurance market or the credit default swap market that currently exist.[131] Were such markets to develop, then either the SIFI would contract and pay for insurance that would pay out the additional money owed by investors in case of default or individual investors could buy their own policies or derivative contracts.

Moreover, as with municipal bond insurance, once an investor's extended liability is insured, the performance of the SIFI will be closely monitored by its insurer through a process known as "surveillance" in the municipal bond context:[132] the insurance company would be specialized in monitoring SIFIs' behavior and therefore in a good position to identify excessively risky conducts. SIFIs would therefore be penalized for engaging in excessively risky activities because their insurance premiums would go up. Further, the regulator itself would have an additional market signal to act upon before it is too late.

B. Extended Liability and SIFI's Ownership

In general, by increasing the liability faced by the shareholders, our proposed rule increases the incentives of market participants to engage in monitoring.[133] However, it is important to understand more in detail how our proposal would affect asset managers, since they play a key

[131] Under our proposal, insurance companies would have a contractual obligation to pay claims to shareholders/policyholders in the event that a default or bailout of a SIFI triggered an extended liability payment. Where the insurance for SIFI default would pay the extended liability obligations of SIFI shareholders, similar to municipal bond insurance companies when municipalities default on their obligations to pay principal and interest on their outstanding bonds: . In particular, when a municipality defaults on its debt, the municipal bond insurance company becomes obligated to make the requisite principal and interest payments to investors in a timely fashion. Insurance companies usually insure only municipal bonds with credit ratings of BBB or higher. Insurance policies also are available for municipal bond funds. *Morningstar, Bonds 200: What Does Municipal Bond Insurance Cover?*, http://news.morningstar.com/classroom2/course.asp?docId=5399&page=3 (accessed July 22, 2019).

[132] Morningstar, *Bonds 200: How Municipal Bonds Are Insured*, http://news.morningstar.com/classroom2/course.asp?docId=5399&page=4&CN=sample (accessed July 22, 2019).

[133] If an SLS market emerges, such monitoring will be conducted by the swap counterparties. If no SLS or insurance market emerges, then the investors who face extended liability will have the incentive to monitor.

role in today's equity market. A first question to address is: who should be liable? The funds that hold the shares (*e.g.* Fidelity Magellan Fund), the advisor that manages the funds (*e.g.* Fidelity) or both? We suggest that the advisor and the funds should be held jointly liable. The reason is that the former has the skills and the competences to engage in monitoring, whereas the latter has the resources to cover the liability. If the liability were placed only on asset managers, then they would be incentivized to hold less assets, thus potentially creating a judgment proof problem. At the same time, funds themselves do not have the resources and the expertise that are necessary to monitor their portfolio firms. In this vein, making them liable might produce limited benefits in terms of increased monitoring.

But how would this liability rule change the incentives of asset managers?

To answer this question, leaving aside the problem of how to transition to the new regime,[134] one must consider that under our extended liability regime the price of SIFI shares will be affected by exactly the same factors that are influencing prices in its absence, but with one significant exception: changes in the stability of the SIFI will have a larger impact on share prices. In this vein, investors that have the ability to monitor their portfolio companies and more specifically to influence their management so as to prevent excessive risk-taking will find SIFI shares attractive. In fact, by increasing the safety and soundness of the SIFIs they invest in, such investors could reduce insurance premiums, and ultimately increase share prices.

Of course, we recognize that not all shareholders are equally well equipped to engage in the monitoring of SIFIs. Indeed, we believe that there will be vast heterogeneity among the potential shareholding population with respect to their monitoring capabilities. In particular, under

[134] See *infra* Section V.D.

our proposal passivity will be riskier for investors (including but not limited to those who invest in index funds as well as professionally managed mutual funds that have made a determination to remain passive). We believe that this increased risk is actually an attractive feature of our extended liability proposal for two reasons. First, as noted in the previous section, the existence of derivatives and the emergence of private insurance coverage for extended liability will shift most, and possibly all, of the risk of our proposal onto derivative and insurance company counterparties. This risk-shifting will ameliorate the risk to passive investors who hold stock in SIFIs directly or through mutual funds or otherwise choose to remain rationally ignorant and passive about the levels of risk-taking actually going on within particular financial institutions. However, we recognize that under our proposal investors would still experience extended liability for SIFI losses if the SIFIs in which they had invested failed and their insurers and/or derivative counterparties also failed. Because of this risk, we acknowledge that our proposal would make investing in SIFIs less attractive for passive investors. But at the same time, it would make investing in SIFIs more attractive for active, sophisticated investors, because it would increase the expected returns associated with locating arbitrage opportunities in SIFIs that are less risky than they are perceived to be in the market. The added risk of incremental liability from our proposal would have the effect of magnifying the available arbitrage opportunities beyond what they would be under the current system of limited liability and anticipated government bailouts.

C. *Too Big to Manage*

According to many commentators, large banks are not only too big to fail but also too big to manage.[135] The basic argument is that very large banks with hundreds of thousands of employees

[135] *See generally* Jeremy C. Kress, *Solving Banking's 'Too Big to Manage' Problem*, MINN. L. REV. (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3348593.

are very hard to oversee for its executives, its board and its shareholders.[136] The main issue is that the activities of banks, and especially of the largest institutions, are incredibly complex and opaque.[137] Therefore, even assuming that they have the best intentions, managers and shareholders might not be able to manage a SIFI's risk exposure'.[138] The problem significantly worsens when one considers that managers' incentives are further skewed toward risk-taking by the typical compensation contracts in the banking sector.[139]

Against this background, one could argue that shareholders would have incentives to push toward shrinking the size of their SIFI in order to minimize the risk of losses. However, as noted in Section II.A, SIFIs' shareholders enjoy an implicit subsidy which protects them from possible losses because their firm is too-big-to-fail. Thus, they have no incentives to break up their SIFI, despite the fact that this would facilitate their monitoring. Our liability rule would address also this problem. By increasing shareholder exposure to downside risk, our proposal gives shareholders stronger incentives to ensure that the SIFI becomes of the "optimal" size. That is, sufficiently big to enjoy the relevant economies of scale that are associated with high volumes of activity, but also not so large that it becomes impossible to monitor.

V. Why Standard Objections to Unlimited Liability Do Not Apply

Since Hansmann and Kraakman's seminal article,[140] any proposal to extend shareholder liability has to wrestle with five standard objections: (*i*) firms would just finance themselves through debt

[136] *See* Julian Birkinshaw & Suzanne Heywood, *Too Big to Manage?*, WALL ST. J. (Oct. 26, 2009).

[137] *See e.g.* Jonathan R. Macey & Maureen O' Hara, *The Corporate Governance of Banks*, 22 FED. RES. BANK N. Y. ECON. POL.'Y REV. 85, 90 (2016) (noting that "[t]he opacity of bank activities, combined with the complexity of risk management activities involving the valuation and control of complex asset positions, creates significant monitoring difficulties").

[138] Kress¸*supra* note135, at 17.

[139] *See* Lucian A. Bebchuk & Holger Spamann, *Regulating Bankers' Pay*, 98 GEO. L.J. 247, 255-73 (2010) (discussing bankers' incentives to take excessive risks).

[140] Hansmann & Kraakman *supra* note 13.

instead of equity; (*ii*) shareholders do not have the ability to monitor; (*iii*) an extended liability rule would result in shares being held by judgment proof shareholders; (*iv*) it is hard to collect from offshore investors; and (*v*) it is hard to define when the liability attaches. We have already dealt with points (*i*) and (*v*) in Section III.A. The fourth objection loses most of its bite in the face of the explosion of international arbitration. Here, we show that also the second and third objections are, respectively, no longer valid following the reconcentration of ownership in the hands of institutional investors which has taken place in the last thirty years, and easy to address. Moreover, it is important to remark that extending liability will impose a loss on the existing shareholders. And, while it is appropriate that the cost of equity incorporates the risk posed by the firm,[141] it is still desirable to compensate shareholders that hold shares during the transition period. We discuss how this compensation can be carried out in Section V.C.

A. Shareholders' Monitoring

One of the most convincing arguments against unlimited liability is that shareholders would not be able to effectively monitor the behavior of their firm independently from the amount of liability to which they are exposed simply because they lack the required competences.[142] However, such argument lost most of its bite due to the transition from the Berle-Means corporation characterized by diffuse ownership to present-day institutional ownership.[143] In fact, unlike small retail

[141] *Id*. at 1903.

[142] This argument was frequently embraced by ludges that were concerned with the unfairness of assigning a large liability to shareholders who are not in the "capacity to control" or influence the decisions of the management. *See* Schwarcz, *The Governance Structure*, *supra* note 56, at 9. For an early formulation of this view *see* Spear v. Grant, 16 Mass. (1 Tyng) 9, 14 (1819) ("[I]f [a stockholder] were equally liable to each holder of the notes (which he must be if liable at all; for if the facts agreed create a promise to one, they create a promise to all), then the most palpable injustice would take place. For a stockholder, wholly innocent and ignorant of the mismanagement, which has brought the bank into discredit, might be ruined by reason of owning a single share in the stock of the corporation.").

[143] At the time of the debate sparked by Hansmann and Kraakman's article, Grundfest noted that "[r]elatively few institutions hold as much as one percent of any issuer's shares" (Grundfest, *supra* note 115, at 396). Instead, larg institutional investors hold a much higher stake in many corporations. *See e.g.*Jan Fichtner, Eelke M. Heemskerk &

shareholders, large and sophisticated institutional investors such as Fidelity, Capital Research and T. Rowe Price, have the resources and the know-how to monitor management provided that they are given sufficient incentives to do so.[144]

A related critique of unlimited liability is that an investor would have to monitor the wealth of other shareholders because if the latter are insolvent she would be exposed to a higher liability.[145] However, this problem only arises if shareholders are jointly liable,[146] whereas under our rule each shareholder can only be asked to pay in accordance to the formula described in Section III.A. Therefore, the expected liability of one shareholder is not affected by the wealth of the other.

B. Judgment Proof

The key argument behind the idea of unlimited liability is that it will induce shareholders to monitor the firm more carefully and will lower stock prices to reflect the expected value of liability.[147] Yet, increasing shareholders' liability cannot have these effects if the shareholders are judgment proof. At the extreme, a shareholder that has invested all her assets in a corporation will

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Javier Garcia-Bernardo, *Hidden Power of the Big Three? Passive Index Funds, Re-Concentration of Corporate Ownership, and New Financial Risk*, 19 BUS. & POL. 298, 312 (2017) (showing that Fidelity, Capital Research and T. Rowe Price, three of the largest U.S. active managers, as of June 2016, held stakes higher than 5 percent in 1815, 651 and 523 companies across the world, respectively).

[144] *See* Sean J. Griffith, *Opt-In Stewardship: Toward an Optimal Delegation of Mutual Fund Voting Authority*, 98 TEXAS L. REV. (forthcoming), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3404298 (noting that institutional investors "know what information to ask for. They know what it means. And they hold sufficiently large stakes to care").

[145] Frank H. Easterbrook & Daniel R. Fischel, *Limited Liability and the Corporation*, 52 U. CHI. L. REV. 89, 95 (1985) ("limited liability reduces the costs of monitoring other shareholders. Under a rule exposing equity investors to additional liability, the greater the wealth of other shareholders, the lower the probability that any one shareholder's assets will be needed to pay a judgment. Thus, existing shareholders would have incentives to engage in costly monitoring of other shareholders to ensure that they do not transfer assets to others or sell to others with less wealth. Limited liability makes the identity of other shareholders irrelevant and thus avoids these costs.").

[146] David W. Leebron, *Limited Liability, Tort Victims, and Creditors*, 91 COLUM. L. REV. 1565, 1578-84 (1991).

[147] Grundfest, *supra* note 115, at 389 (noting that unlimited liability can only be effective if it "will cause stock prices to decline in a manner rationally related to the business risks and capital adequacy, including insurance, of the underlying enterprise").

be indifferent between an unlimited liability rule and the current regime of limited liability. While it is extremely unlikely that the judgment proof problem affecting shareholders is this severe, the key idea that high levels of liability cannot influence the behavior of shallow-pocket shareholders remains. However, this problem would be significantly less severe under our rule than under unlimited liability, especially given the current ownership structure of SIFIs.

In particular, under this rule the maximum liability that a shareholder would face is twice her investment (when $DRS = 1$). It is implausible that investors are undiversified to the point of placing more than half of their assets in a single SIFI. In fact, nowadays, the vast majority of the shares are held by large institutional investors that would certainly not be bankrupted by the extended liability rule we propose, if only because they could hedge this risk via a SLS.[148]

In any event, because the liability cap is clearly spelt out ex-ante, it is easy to prevent that deep-pocketed investors pass their shares to shallow-pocket ones before liability is triggered. Assume that there are two individuals, A and B, and that A is a deep-pocketed shareholder, whereas B owns no assets. A might have incentives to park her shares with B in order to escape liability. The following rule may prevent this outcome is: if B reports the scheme, A will have to pay treble damages, two thirds of which will go to B. Let us return to the example presented in the introduction in which the expected liability equals $160. If B reports the scheme, A will be required to pay $480, of which B will pocket $320. The optimal strategy for B would then be accepting to hold A's shares and then report her. Thus, A will have no incentives to transfer shares to B in the first place.

[148] *See e.g.* Fichtner, Heemskerk & Garcia-Bernardo, *supra* note 143, at 304.

One obvious problem is that it would be possible to create limited liability companies with limited assets to hold SIFI shares.[149] To prevent this, it is important that the corporate veil of these companies can be pierced, but only up to a value sufficient to cover the liability obligation of the shareholders that derive from the default of a SIFI. In other words, assume that Apple owns shares in JP Morgan Chase. To avoid liability, Apple might create a company with limited assets−call it Rotten Apple−to which it could contribute its JP Morgan Chase's shares. While for any other liability we argue that the standard veil-piercing doctrines should apply to Rotten Apple, for the liability associated with JP Morgan Chase's default the veil should automatically be pierced so that Apple is made liable.

C. Transitioning to the New Regime: Compensating Existing SIFI Shareholders

Implementing the proposed reform might create a transition problem. Specifically, if a law were passed imposing extended liability, anyone holding shares in a SIFI at the time it entered into force would experience a sudden decline in share value as share prices adjusted to reflect the new, greater risk associated with owning shares in SIFIs. And, while the very purpose of increasing the liability faced by shareholders is to ensure that the equity price adequately accounts for the risk posed by the corporation,[150] it might be problematic to impose losses on shareholders that purchased the shares when the rule of the game was limited liability. A possible solution would be compensating shareholders for the loss caused by the increased liability. In the U.S. context, shareholders could be compensated from payments from the FDIC deposit insurance fund.

[149] Conti-Brown, *supra* note 9, at 434-35.
[150] Hansmann & Kraakman, *supra* note 13, at 1903.

While compensating shareholders for the transition from limited liability to extended liability seems desirable, it is important to carefully consider how to define the *quantum* of the compensation. For instance, if the compensation is determined ex ante by the regulator based on an estimation of the price drop, then it is bound to be inaccurate and arbitrary. At the same time, calculating compensation based on the observed price drop between pre-liability (say, t_{pre}) and post-liability (say, t_{post}) would also be problematic. First, it is hard to identify t_{pre}. Because investors will foresee that the liability rule will change, the stock prices will begin to drop even before the law is enacted. Second, basing compensation on the observed price drop would incentivize shareholders to take on excessive risk during the transition period. In fact, if the shareholders bet strong on risky projects and these projects prove to be successful, the stock price of their company will increase and they will benefit. Instead, if these risky projects fail the shareholders would be able to externalize the losses to the FDIC. Simply put, the shareholders would be able to play a "heads I win; tails the FDIC loses" game.[151] Third, the riskiest SIFIs will face a larger price drop, and paradoxically under this rule their shareholders would be also the ones that receive the largest compensation.

A way out of this impasse would be structuring a mechanism akin to a Dutch auction among SIFIs. Contrary to normal auctions, Dutch auctions are characterized by a mechanism of descending prices.[152] In our context, the auction would work as follows: first, the regulator imposes a ceiling for the compensation, say 10 percent of the market value of a SIFI before the rule was first discussed. This ceiling is likely to be very inaccurate for the reasons highlighted above. Yet,

[151] Jonathan R. Macey, *The Limited Liability Company: Lessons for Corporate Law*, 73 WASH. U. L. Q. 433, 448 (1995) (formulating a similar claim with respect to limited liability in general).

[152] Elmar Wolfstetter, *Auctions: An Introduction*, 10 J. ECON. SURVEYS 367, 370 (1996) (briefly describing the functioning of Dutch auctions).

because it is only needed to start the auction, its accuracy is less important. At this point, the shareholders of each SIFI will be asked to state the lowest percentage of the ceiling that they would be willing to accept. The compensation will then be set at the percentage offered by the SIFI that wins that Dutch auction (*i.e.* that offered the lowest percentage). To incentivize SIFIs to offer low percentages the winner of the auction could be awarded an additional compensation, say 50 percent more than the percentage offered. To exemplify, assume that there are three SIFIs: Bank of America, JP Morgan Chase and Goldman Sachs. Assume also that Bank of America offers to accept 50 percent of the ceiling, JP Morgan Chase 30 percent and Goldman Sachs 10 percent. The compensation received by the three SIFI will be 10 percent of the ceiling because it was the lowest bid. However, Goldman Sachs would receive 15 percent of the ceiling.

In addition to solving the problem of determining the price drop, this mechanism would have an important advantage. As noted above, the new liability rule will have a lower impact on the share price of safer SIFIs. For this reason, the safest SIFI would be more likely to place the winning bid and receive the added compensation.

VI. Conclusion

The dramatic consequences of the last financial crisis are a painful reminder of why we should prevent SIFIs from taking on excessive risk. However, the complexity and the size of these financial giants make it impossible for policymakers to craft regulations that can effectively constrain SIFIs' risk-taking. For this reason, this article suggests that policymakers should also directly tackle the incentives of their shareholders and reduce their risk propensity.

We have argued that policymakers can achieve this goal by abandoning the current rule limiting the liability of SIFI shareholders to the amount of their investment, thus increasing SIFIs'

shareholder exposure to downside risk. In itself, this proposal is only partly new, since for three quarters of a century, roughly between the Civil War and the Great Depression, the shareholders of U.S. banks were subject to double liability. The characteristics of present-day financial markets – the presence of capital ratios for financial institutions, the dominance of institutional share ownership, and the availability of well-developed insurance and derivatives markets – create the perfect conditions for implementing a modified version of the traditional double liability rule. More precisely, we propose that SIFI shareholders face extended liability, up to twice the average share price in a 12-month period prior to the SIFI's default or bailout, depending on the SIFI's systemic relevance. This would strengthen shareholders' incentives to monitor SIFIs and prevent them from engaging in excessively risky, socially harmful conducts.

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