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Centre for International  
Governance Innovation

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# Extending Bankruptcy- resolution Techniques to Protect Financial Stability

Steven L. Schwarcz





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## About the Author

**Steven L. Schwarcz** has been a senior fellow with CIGI's International Law Research Program since October 2014.

At CIGI, Steven leads research on systemic risk and financial regulation, corporate governance of systemically important firms, cross-border resolution measures and sovereign debt restructuring.

Steven is the Stanley A. Star Professor of Law & Business at Duke University and is the founding director of Duke's interdisciplinary Global Financial Markets Center. His areas of research and scholarship include insolvency and bankruptcy law, international financial regulation, capital markets and systemic risk, and commercial law.

Prior to joining the Duke faculty, Steven was a partner at two leading international law firms, where he represented top banks and other financial institutions in structuring innovative capital market financing transactions, both domestic and international. He has been the Leverhulme Visiting Professor at the University of Oxford, Distinguished Visiting Professor at the University College London Faculty of Laws, visiting professor at the University of Geneva Faculty of Law and senior fellow at the University of Melbourne Law School, as well as an adviser to the United Nations.

Steven has testified before the US Congress on topics including systemic risk, securitization, credit rating agencies and financial regulation, and he has advised several US and foreign governmental agencies on the financial crisis and shadow banking. He is a fellow of the American College of Bankruptcy, a founding member of the International Insolvency Institute, a fellow of the American College of Commercial Finance Lawyers, a member of the P.R.I.M.E. Finance (Panel of Recognised International Market Experts in Finance) and has been the business law adviser to the American Bar Association Business Law Section.

Steven has given numerous distinguished public lectures, including at the University of Hong Kong, the University of Oxford, Georgetown University Law Center, the National University of Singapore, the University of Copenhagen, Trinity College Dublin School of Law, University College London, Erasmus University Rotterdam, the University of Florence and the National Assembly of the Republic of Korea.

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# About the International Law Research Program

The International Law Research Program (ILRP) at CIGI is an integrated multidisciplinary research program that provides leading academics, government and private sector legal experts, as well as students from Canada and abroad, with the opportunity to contribute to advancements in international law.

The ILRP strives to be the world's leading international law research program, with recognized impact on how international law is brought to bear on significant global issues. The program's mission is to connect knowledge, policy and practice to build the international law framework — the globalized rule of law — to support international governance of the future. Its founding belief is that better international governance, including a strengthened international law framework, can improve the lives of people everywhere, increase prosperity, ensure global sustainability, address inequality, safeguard human rights and promote a more secure world.

The ILRP focuses on the areas of international law that are most important to global innovation, prosperity and sustainability: international economic law, international intellectual property law and international environmental law. In its research, the ILRP is attentive to the emerging interactions among international and transnational law, Indigenous law and constitutional law.



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## Executive Summary

The current uses of resolution-based regulation to try to protect the stability of the financial system fall into three general categories, which can be described as “reactive,” “proactive” and “counteractive.” Reactive resolution-based regulation, the most common approach, applies once a systemically important firm becomes financially troubled. Proactive resolution-based regulation consists of preplanned enhancements that are designed, at a time when a systemically important firm’s default is merely a theoretical possibility, to take effect if the firm starts to become troubled (by then strengthening the firm’s ability to pay its debt or facilitating its resolvability). Counteractive resolution-based regulation is intended to reduce the need for resolution by preventing firms from becoming financially troubled in the first place.

This paper addresses reactive and proactive resolution-based regulation.<sup>1</sup> Although counteractive regulation is sometimes discussed as part of the topic of resolving systemically important firms, it does not strictly involve resolution.

Current uses of reactive resolution-based regulation focus primarily on protecting troubled firms individually, not collectively. That focus may be insufficient because, among other reasons, it fails to address multiple systemically important firms becoming troubled around the same time. Even if that focus were broadened, a reactive approach may be insufficient to respond to multiple systemically important firms that have already become troubled.

Current uses of proactive resolution-based regulation may be insufficient to protect the financial system because they, too, focus primarily on protecting individual firms. Proactive resolution-based regulation could be designed more effectively by viewing the financial system as a “system.” For example, proactive resolution-based regulation could protect the financial system by reducing the interactive complexity and reduce tight coupling among systemically important firms.

However, even if resolution-based regulation could perfectly protect systemically important firms, the failure of other critical elements of the financial system could trigger a systemic collapse. These include the financial markets that facilitate the issuance and trading of securities and the infrastructure that provides the clearing and settlement services needed to consummate the transfer and payment for securities. Insights gained from viewing the financial system as a system could, again, help to design resolution-based regulation to protect these critical markets and infrastructure.

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## Introduction

Since the global financial crisis, regulators and policy makers have been shifting their focus from traditional financial regulation, which protects individual banks and other financial firms (“microprudential” regulation), to regulation that protects the stability of the financial system itself (“macroprudential” regulation). Frustrated that they have made “little progress in figuring out how they might actually” prevent another financial crisis,<sup>2</sup> regulators have been expanding their macroprudential focus to include bankruptcy “resolution” techniques designed either to reorganize, or to liquidate with minimal harm to the public, systemically important firms that become financially troubled.<sup>3</sup>

To date, efforts to use these resolution techniques to protect financial stability have been inadequate, in part because bankruptcy law traditionally has microprudential goals — to reorganize or liquidate individual troubled firms — whereas protecting financial stability is a macroprudential goal. As

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1 This paper is based on the author’s article, “Beyond Bankruptcy: Resolution as a Macroprudential Regulatory Tool”, 94 *Notre Dame L Rev* [forthcoming 2018-2019].

2 Binyamin Appelbaum, “Policy Makers Skeptical on Preventing Financial Crisis”, *The New York Times* (5 October 2015) B1 (reporting the consensus view of an international conference of regulators at the Federal Reserve Bank of Boston).

3 See e.g. Governor Daniel K Tarullo, “Departing Thoughts” (Speech delivered at the Board of Governors of the Federal Reserve System, Princeton, NJ, 4 April 2017) at 25 (calling the “the need for credible resolution mechanisms for large banks” an “important topic”). Cf. Financial Stability Board, *Key Attributes of Effective Resolution Regimes for Financial Institutions* (2014) at para 3.1, online: <[www.fsb.org/wp-content/uploads/r\\_141015.pdf](http://www.fsb.org/wp-content/uploads/r_141015.pdf)> [stating that resolution “should be initiated when a firm is no longer viable or likely to be no longer viable, and has no reasonable prospect of becoming so”].

next discussed, much of the current thinking about using bankruptcy-resolution techniques for macroprudential purposes conflates these goals.

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## Existing Uses of Resolution-based Regulation

The current uses of bankruptcy-resolution techniques (“resolution-based regulation”) for purportedly macroprudential purposes fall into three general categories, which can be described as “reactive,” “proactive” and “counteractive.” Consider each in turn.

### Reactive Resolution-based Regulation

Reactive resolution-based regulation is the most common approach. It is “reactive” in the sense that it applies only if a firm becomes financially troubled. For example, corporate bankruptcy law enables those firms to try to restructure unsustainable debt burdens, such as by reducing the principal and interest on their debt and extending its maturities. So long as the firm has an inherently good business model,<sup>4</sup> the debt restructuring would give it a “fresh start.”<sup>5</sup>

For at least two reasons, traditional bankruptcy may be insufficient to protect financial stability. First, bankruptcy law focuses on protecting individual firms, not on protecting the financial system.<sup>6</sup> Its focus is therefore inherently microprudential. Secondly, the bankruptcy of Lehman Brothers raised the concern that existing

corporate bankruptcy law may be ill-suited to reorganizing large financial firms. In the United States, that concern has prompted proposals to amend bankruptcy law to better adapt it to those types of firms.<sup>7</sup> Even the proposed amendments, however, remain microprudential because they focus on resolving individual firms.

Other reactive resolution-based regulation approaches contemplate regulatory-supervised proceedings. This is epitomized by the Orderly Liquidation Authority (OLA),<sup>8</sup> which authorizes the Federal Deposit Insurance Corporation (FDIC) to put certain large, troubled financial institutions into FDIC receivership. The OLA’s justification is path dependent: it extends FDIC receivership, which had been used successfully for decades as a scheme for resolving insolvent banks to resolving troubled non-banks. However, like the proposed amendments to bankruptcy law, the OLA is inherently microprudential because it focuses on individual firms.<sup>9</sup> Also, the success of FDIC receivership historically has depended on larger healthy banks acquiring troubled banks.<sup>10</sup> If a large financial firm becomes troubled, there may not always be a larger healthy financial firm available to acquire the troubled firm.<sup>11</sup> This scarcity of eligible acquiring firms would become especially critical if multiple financial firms become troubled around the same time.

Laws requiring systemically important firms to file so-called living wills represent another form of reactive resolution-based regulation.<sup>12</sup> A

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4 Commentators sometimes refer to such a firm as “good company, bad balance sheet.”

5 Although the term “fresh start” is more commonly used for individuals rather than corporations, it is helpfully illustrative.

6 Cf Ben S Bernanke, Chairman, Board of Governors of the Federal Reserve System, “Financial Regulation and Supervision after the Crisis: The Role of the Federal Reserve” (Speech delivered at the Federal Reserve Bank of Boston 54th Economic Conference, Chatham, MA, 23 October 2009), online: <[www.federalreserve.gov/newsevents/speech/bernanke20091023a.htm](http://www.federalreserve.gov/newsevents/speech/bernanke20091023a.htm)> (observing that “the bankruptcy code does not always protect the public’s strong interest in avoiding the disorderly collapse of a nonbank financial firm that could destabilize the financial system and damage the economy”).

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7 To this end, the Hoover Institution has proposed adding a new Chapter 14 to the Bankruptcy Code, and Congress has been considering a proposed Financial Institutions Bankruptcy Act.

8 The OLA was created under Title II of the Dodd-Frank Act. See 12 USC §§ 5381–5394.

9 The OLA may not be quite as microprudential as traditional bankruptcy, however, because the FDIC, as an administrative agency, has much more discretion and flexibility than individual bankruptcy judges to coordinate the resolution of multiple troubled firms in light of systemic concerns.

10 FDIC, *Managing the Crisis: The FDIC and RTC Experience 1980-1984* (1998) at 55–56, online: <[www.fdic.gov/bank/historical/managing/documents/history-consolidated.pdf](http://www.fdic.gov/bank/historical/managing/documents/history-consolidated.pdf)>.

11 Cf Stephen J Lubben, “Resolution, Orderly and Otherwise: B of A in OLA” (2013) 81:2 U Cin L Rev 485 at 509 (observing that “in times of systemic crisis there might well be no buyers large enough or confident enough to perform a similar function with regard to a large financial institution”).

12 Although living wills might appear to be proactive because they are designed at a time when a systemically important firm’s default is merely a theoretical possibility to only take effect if the firm becomes troubled, they are more properly categorized as reactive because they only contemplate liquidation and do not provide preplanned enhancements.

living will is a resolution plan setting forth how the firm could liquidate with minimal systemic impact if it becomes financially troubled.<sup>13</sup> Even if living wills otherwise represent a viable resolution option,<sup>14</sup> they would not prevent the concurrent failure of multiple systemically important firms from collectively having a systemic impact.<sup>15</sup> The financial crisis demonstrated that a concurrence of failures is likely when the causes of the failures are interconnected, such as widespread investor overreliance on subprime mortgage loans as a source of payment and on the reliability of credit ratings.<sup>16</sup>

In short, current uses of reactive resolution-based regulation lack sufficient macroprudential focus.

## Proactive Resolution-based Regulation

Some resolution-based regulation is “proactive” in the sense that it consists of preplanned enhancements that are designed, at a time when a systemically important firm’s default is merely a theoretical possibility, to take effect if the firm starts to become troubled — by then strengthening the firm’s ability to pay its debt (and thereby avoid default) or facilitating its resolvability.<sup>17</sup> Proactive resolution-based

regulation is currently being applied to systemically important firms in at least three ways.

### Converting Debt to Equity

This type of approach seeks to pre-engineer a change to a systemically important firm’s capital structure that becomes effective if the firm experiences financial problems. Common examples of this approach have been referred to as total loss-absorbing capacity (“TLAC”) and contingent convertible securities (“CoCos”).<sup>18</sup> In each case, a systemically important firm would be required to have a requisite portion of its debt in the form of securities that convert to equity upon preset conditions.<sup>19</sup> Conversion would reduce the firm’s indebtedness, thereby (hopefully) making the firm financially viable again.<sup>20</sup> The possibility that their debt claims could be converted into equity should also motivate creditors to take on more of a “monitoring” role by imposing stricter covenants,<sup>21</sup> which could reduce the firm’s risk taking.<sup>22</sup>

CoCos have been issued in Europe, where the initial tests of their conversion have had mixed success. In early June 2017, the junior-bond CoCos of Spain’s Banco Popular were converted as planned to prevent the bank’s failure.<sup>23</sup> Later that month, in contrast, the senior-bond CoCos of Italy’s Veneto Banca and Banca Popolare di Vicenza were not converted, resulting in a taxpayer bailout of those banks.<sup>24</sup> Some argue that the Italian bank bailouts reflect the inevitable failure of CoCos as

13 See e.g. Jennifer Meyerowitz et al., “A Dodd-Frank Living Wills Primer: What you Need to Know Now” (2012) 31 Am Bankr Inst J 34 at 34 (“As part of the goal to remove the risks to the financial system posed by ‘too big to fail’ institutions, § 165(d) of the Dodd-Frank Act requires systemically important financial institutions to create living wills to facilitate rapid and orderly resolution, in the event of material financial distress or failure”).

14 Although living wills are intended to protect financial stability without needing a bailout, they may not completely eliminate that need. In the author’s many years as a workout and bankruptcy lawyer, he rarely saw a firm’s failure that accurately reflected, much less closely resembled, expectations about the firm when it was profitable.

15 Cf Victoria McGrane, “FDIC Chief Martin Gruenberg: Big Bank Failure Won’t Imperil System”, *The Wall Street Journal* (12 May 2015) C1 (observing that some in Congress “doubt regulators could handle the failure of multiple major firms at the same time”).

16 See e.g. Janet L Yellen, Vice-Chair of the Board of Governors of the Federal Reserve System, “Macroprudential Supervision and Monetary Policy in the Post-crisis World” (Speech delivered at the Annual Meeting of the National Association for Business Economics, Denver, CO, 11 October 2010), 2010 WL 3952044 (FRB) (attributing the financial crisis to concurrences of interrelated failures).

17 Proactive resolution-based regulation is implicitly justified by chaos theory, “which recognizes that failures are almost inevitable in complex [engineering] systems.” Steven L Schwarcz, “Regulating Complexity in Financial Markets” (2009) 87 Wash U L Rev 211 at 248 [Schwarcz, “Regulating Complexity”]. Given the inevitability of failure, the most successful (complex) systems are those in which the consequences of failures are limited. *Ibid.*

18 Cf Single Resolution Board, *MREL: Approach taken in 2016 and next steps* (2016), online: <[https://srb.europa.eu/sites/srb-site/files/srb\\_mrel\\_approach\\_2016\\_post\\_final.pdf](https://srb.europa.eu/sites/srb-site/files/srb_mrel_approach_2016_post_final.pdf)> (discussing “the TLAC standard developed under the aegis of the FSB for Global Systemically Important Banks”).

19 See e.g. Erica Jeffrey, “TLAC: What You Should Know”, *Euromoney* (10 August 2016) (reporting that TLAC contemplates that systemically important firms issue minimum levels of debt and similar securities “that can be written down or converted into equity in case of resolution”).

20 Jianping Zhu et al, *From Bail-out to Bail-in: Mandatory Debt Restructuring of Systemic Financial Institutions* (2012) IMF Staff Discussion Note SDN/12/03, online: <[www.imf.org/external/pubs/ft/sdn/2012/sdn1203.pdf](http://www.imf.org/external/pubs/ft/sdn/2012/sdn1203.pdf)>.

21 Emiliós Avgouleas & Charles Goodhart, “Critical Reflections on Bank Bail-ins” (2015) 1:1 J Fin Regulation 3 at 4–5.

22 This monitoring aspect is actually counteractive because it is designed to reduce the need for resolution.

23 “Senior Moment: Europe’s Framework for Dealing with Troubled Banks is Working, but Has One Big Drawback”, *The Economist* (1 July 2017) at 12.

24 *Ibid.*

a viable resolution option.<sup>25</sup> Additional questions remain regarding the actual implementation of a CoCo conversion policy, such as what should trigger the debt to convert<sup>26</sup> and how to ensure that creditors holding convertible debt are compensated without making the debt too costly.<sup>27</sup>

Even if CoCos did not raise these concerns, their use is limited to protecting individual systemically important firms. That limitation alone may make them insufficient as a macroprudential regulatory technique.<sup>28</sup>

### Resolving the Corporate Structure

Effectively, this approach preplans wiping out the equity owners of a systemically important firm that starts to become troubled, making either the government or the firm's creditors the new equity owners. This is exemplified by the "single point of entry" (SPOE) strategy,<sup>29</sup> which applies to systemically important firms that have a parent-subsidiary organizational structure in which a non-systemically-important parent holds the stock of the systemically important subsidiary.<sup>30</sup> At the outset, therefore, the strategy faces implementation challenges for systemically important firms that lack that organizational structure.

Although proponents of the SPOE strategy are optimistic it can work once the challenges are

resolved,<sup>31</sup> others believe the strategy is unlikely to be practical. Some scholars characterize it as "a resolution tool designed for a very stylized, even hypothetical sort of failure."<sup>32</sup> The president of the Federal Reserve Bank of Minneapolis observes that there is no way to test the strategy's effectiveness until it is actually in use and doubts it will be useful in a stressed economic climate.<sup>33</sup>

Even if the SPOE strategy otherwise worked, it operates primarily to protect individual systemically important firms and only secondarily to protect financial stability. That operation might limit its effectiveness as a macroprudential regulatory technique.

### Last-resort Lending

Illiquidity is the primary factor that can cause firms to fail.<sup>34</sup> Most countries authorize their governmental central bank to act as a lender of last resort, with power to advance funds to solvent systemically important firms that are, nonetheless, unable to pay their debts as they come due (i.e., illiquid).<sup>35</sup> Such lending is proactive because it is preplanned to strengthen the firm's ability to pay its debts if it starts to become troubled. In the United States, however, the Dodd-Frank Act has sharply limited the Federal Reserve's authority to make emergency loans

25 See e.g. Neel Kashkari, "New Bailouts Prove 'Too Big to Fail' Is Alive and Well", *The Wall Street Journal* (10 July 2017) A17 (arguing that the Italian bank bailouts prove that "bail-in debt" doesn't prevent bailouts"); Anat R Admati, "The Missed Opportunity and Challenge of Capital Regulation" (2016) 235:1 Nat'l Inst Econ Rev R4 at R10 (arguing that it "is unrealistic to expect that regulators will trigger recovery and resolution processes that are complex, costly and untested so that losses can be imposed on debt-like TLAC securities, and that they would be politically able to follow up with imposing losses on creditors of mandatory conversion to equity. This is particularly true if a potential crisis is looming, since pulling triggers and inflicting haircuts might have unpredictable consequences throughout the opaque financial system").

26 See Emilius Avgouleas et al., "Living Wills as a Catalyst for Action" (2010) Duisenberg School of Finance Policy Paper No 4 at 4.

27 Paul Melaschenko & Noel Reynolds, "A Template for Recapitalising Too-big-to-fail Banks", *Banks for International Settlements' Quarterly Review* (May 2013) 25 at 34.

28 This paper later explains why individually protecting all systemically important firms is insufficient to protect against systemic risk. See notes 40-49 and accompanying text.

29 See e.g. Daniel K Tarullo, "Toward Building a More Effective Resolution Regime: Progress and Challenges" (Remarks delivered at the Federal Reserve Board and Federal Reserve Bank of Richmond Conference, Washington, DC, 18 October 2013).

30 John Crawford, "'Single Point of Entry': The Promise and Limits of the Latest Cure for Bailouts" (2014) 109 Nw UL Rev 103 at 107.

31 Jeremy C Stein, "Regulating Large Financial Institutions" in George A Akerlof, Olivier Blanchard, David Romer & Joseph E Stiglitz, eds, *What Have We Learned?: Macroeconomic Policy after the Crisis* (Cambridge, MA: MIT Press, 2014) 136.

32 Stephen J Lubben & Arthur E Wilmarth, Jr., "Too Big and Unable to Fail" (2016) 69 Fla L Rev 1205.

33 Neel Kashkari, "Lessons from the Crisis: Ending Too Big to Fail" (Address delivered at the Brookings Institution, Washington, DC, 16 February 2016), online: <[www.minneapolisfed.org/news-and-events/presidents-speeches/lessons-from-the-crisis-ending-too-big-to-fail](http://www.minneapolisfed.org/news-and-events/presidents-speeches/lessons-from-the-crisis-ending-too-big-to-fail)>.

34 See e.g. Scott Besley & Eugene F Brigham, *Principles of Finance*, 6th ed (Boston, MA: Cengage Learning, 2015) at 600 (observing that "the primary reason that firms fail is because they are unable to meet their working capital needs").

35 See e.g. Filippo Occhino, "Central Bank Lending in a Liquidity Crisis" (2016) Federal Reserve Bank of Cleveland, Economic Commentary No 2016-02 at 1, online: <[www.clevelandfed.org/newsroom-and-events/publications/economic-commentary/2016-economic-commentaries/ec-201602-central-bank-lending-in-a-liquidity-crisis.aspx](http://www.clevelandfed.org/newsroom-and-events/publications/economic-commentary/2016-economic-commentaries/ec-201602-central-bank-lending-in-a-liquidity-crisis.aspx)>. The US Federal Reserve Bank, for example, has had this role of lender of last resort to banks. Federal Reserve Act of 1913 § 13(3), 12 USC § 343 (2010).

to individual financial firms.<sup>36</sup> This limitation appears somewhat excessive, if not dangerous.<sup>37</sup>

In sum, existing and contemplated proactive resolution-based regulation may also (like reactive resolution-based regulation) be insufficient to protect financial stability.

## Counteractive Resolution-based Regulation

This regulatory approach is “counteractive” in the sense that it is designed to reduce the need for resolution by preventing firms from becoming financially troubled. Although counteractive regulation is sometimes discussed as part of the topic of resolving systemically important firms, it does not strictly involve resolution. For example, regulation imposing capital and liquidity-coverage requirements is designed to keep systemically important firms solvent and able to pay their debts, thereby reducing the need for resolution. This paper, therefore, limits its focus to reactive and proactive resolution-based regulation.

The discussion has shown that the current and contemplated uses of reactive and proactive resolution-based regulation may be insufficient to protect financial stability. Next, consider how and why resolution-based regulation should be used for this purpose, starting by identifying resolution’s macroprudential goals.

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## Identifying Resolution’s Macroprudential Goals

Resolution-based regulation should certainly have the goal of protecting systemically important firms. Intuitively, regulation that protects individual systemically important firms might appear macroprudential; after all, if no systemically important firm fails, no such firm’s failure would trigger a systemic collapse. However, that logic is false for several reasons.

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36 Dodd-Frank Act § 1101 (limiting the Federal Reserve Bank’s power under section 13(3) of the Federal Reserve Act).

37 See e.g. Jeffrey N Gordon & Christopher Muller, “Confronting Financial Crisis: Dodd-Frank’s Dangers and the Case for a Systemic Emergency Insurance Fund” 28:1 Yale J Reg 151 at 156 (2011).

Individual systemically important firms are not always resolved in a way that reduces systemic risk.<sup>38</sup> Furthermore, regulation that protects individual systemically important firms does not address correlated triggers that cause the concurrent failure of multiple systemically important firms.<sup>39</sup> Regulation intended to protect individual firms may then be overwhelmed. Regulation designed to protect individual firms can even exacerbate systemic risk by creating correlated triggers<sup>40</sup> and encouraging greater leverage and interparty concentrations.<sup>41</sup> To overcome these limitations, macroprudential resolution-based regulation should have the goal of protecting systemically important firms not merely individually but also collectively.

Even with that protection, however, the failure of other critical elements of the financial system could trigger a systemic collapse.<sup>42</sup> One such critical element is the financial markets that facilitate the issuance and trading of securities.<sup>43</sup> Arguably, the financial crisis was fundamentally caused by a collapse in the market for mortgage-backed securities than by the failure of systemically

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38 Under US corporate reorganization law, for example, the parties in interest are limited primarily to the firm and its investors (i.e., its creditors and shareholders). As shown in a separate context, the interests of those parties are fundamentally misaligned with the public’s interest to reduce systemic risk. Steven L Schwarcz, “Misalignment: Corporate Risk-Taking and Public Duty” (2016) 92 Notre Dame L Rev 1.

39 Cf Douglas J Elliott et al, “The History of Cyclical Macroprudential Policy in the United States” (2013) Federal Reserve Board, Finance and Economics Discussion Series No 2013-29 at 6, online: <[www.federalreserve.gov/pubs/feds/2013/201329/201329pap.pdf](http://www.federalreserve.gov/pubs/feds/2013/201329/201329pap.pdf)> (observing that the goal of macroprudential regulation “is to manage factors that could endanger the financial system as a whole, even if they would not be obvious as serious threats when viewed in the context of any single institution”).

40 For example, regulators generally require insurance companies to divest corporate bonds that are downgraded below an investment-grade rating, in order to protect individual insurers against a loss in the value of assets available to pay claims. That requirement, however, has the potential to correlate an industry-wide dumping of bonds that lose that rating, in turn causing a systemically risky bond-market collapse. Daniel Schwarcz & Steven L Schwarcz, “Regulating Systemic Risk in Insurance” (2014) 81 U Chicago L Rev 1569 at 1596, 1602.

41 Rizwaan Jameel Mokal, “Liquidity, Systemic Risk, and the Bankruptcy Treatment of Financial Contracts” (2015) 10:1 Brooklyn J Corporate, Financial & Commercial L 15 at 19.

42 Cf Iman Anabtawi & Steven L Schwarcz, “Regulating Ex Post: How Law Can Address the Inevitability of Financial Failure” (2013) 92 Tex L Rev 75 at 102 (discussing the “elements and interconnections” of the financial system that permit it to function as a “system”).

43 Cf Steven L Schwarcz, “Systemic Risk” (2008) 97:1 Geo LJ 193 at 202 (discussing the systemic importance of financial markets and observing that the extraordinary growth of disintermediation is making markets increasingly important to the financial system).

important firms that resulted from that collapse — such as the bankruptcy of Lehman Brothers.<sup>44</sup> Another such critical element is the financial system’s infrastructure,<sup>45</sup> which provides the clearing<sup>46</sup> and settlement<sup>47</sup> services needed to consummate the transfer of securities and the payment therefore. The macroprudential goals of resolution-based regulation should also include protecting these critical markets and infrastructure.

Next consider how resolution-based regulation could be designed to achieve those goals.

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## Designing Resolution-based Regulation

### Designing Resolution-based Regulation of Systemically Important Firms

As discussed, resolution-based regulation of systemically important firms should have the macroprudential goal of protecting such firms not only individually but also collectively. Consider how that could be done.

### Reactive Resolution-based Regulation

Reactive resolution-based regulation is inherently limited in its ability to protect systemically important firms collectively; by the time multiple firms become troubled, it may be too late to effectively reorganize their capital structure to make them viable. Even the recent proposals to amend bankruptcy law to better adapt it to systemically important firms are limited in this way.<sup>48</sup>

There are at least two constraints. First, even if some of these systemically important firms could be reorganized, the “economy will need a coordinated response, particularly if the entire financial system suffers a panic or lack of liquidity.”<sup>49</sup> Bankruptcy judges cannot provide that coordinated response.<sup>50</sup> Regulatory-supervised resolution, however, could provide a more coordinated response — especially internationally.<sup>51</sup>

This paper has discussed regulatory-supervised resolution-based regulation by the FDIC, pursuant to its receivership powers under the OLA.<sup>52</sup> However, the OLA’s own limitations, such as its overdependence on healthy large firms to acquire troubled firms, may well impair the FDIC’s ability to provide a fully coordinated response. A regulatory-supervised resolution procedure that more closely parallels judge-supervised bankruptcy might help to supersede those limitations while providing a coordinated response. Although such a procedure might raise its own limitation — that supervising regulatory officials will likely have much less resolution expertise than bankruptcy judges — that limitation

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44 In 2007, when home prices began declining, subprime borrowers could not refinance and, in many cases, defaulted. These mortgage defaults, in turn, caused substantial amounts of low investment-grade mortgage-backed securities (MBS) to default and some AAA-rated MBS to be downgraded. These defaults and downgradings of rated securities, in turn, unnerved investors who believed that “AAA” meant ironclad safety and that investment grade meant relative freedom from default. Investors started losing confidence in ratings and avoiding debt securities. Companies also stopped doing business with firms, such as Lehman Brothers, which held large amounts of MBS. Without debt-market financing, which constitutes approximately 58 percent of all corporate credit availability, companies lacked money to expand and sometimes even to pay operating expenses. The economy collapsed. See Steven L. Schwarcz, “Keynote Address: Understanding the ‘Subprime’ Financial Crisis” (2009) 60:3 SCL Rev 549.

45 Bank for International Settlements & International Organization of Securities Commissions, *Principles for Financial Market Infrastructures* (2012) at 14 (observing that “the disorderly failure of [a financial market infrastructure] would likely lead to systemic disruptions”).

46 Clearing is “the process of transmitting, reconciling and, in some cases, confirming transfer orders prior to settlement.” European Central Bank, *Glossary of Terms Related to Payment, Clearing and Settlement Systems* (2009), online: <[www.ecb.europa.eu/pub/pdf/other/glossaryrelatedtopaymentclearingandsettlementsystems.pdf](http://www.ecb.europa.eu/pub/pdf/other/glossaryrelatedtopaymentclearingandsettlementsystems.pdf)>.

47 Settlement is “the completion of a transaction or of processing with the aim of discharging participants’ obligations through the transfer of funds and/or securities.” *Ibid.*

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48 See *supra* note 7 and accompanying text.

49 Letter from Jeffrey N. Gordon, Mark J. Roe et al. to Congress (23 May 2017), “Financial Scholars Oppose Eliminating ‘Orderly Liquidation Authority’ As Crisis-Avoidance Restructuring Backstop” at 4, online: <[www.law.columbia.edu/sites/default/files/microsites/law-economics-studies/scholars\\_letter\\_on\\_ola\\_final\\_for\\_congress.pdf](http://www.law.columbia.edu/sites/default/files/microsites/law-economics-studies/scholars_letter_on_ola_final_for_congress.pdf)>.

50 *Ibid.* (arguing that bankruptcy judges “cannot caucus and decide how to handle multiple bankruptcies in a way that best stabilizes the economy” because they “have neither a mandate, nor the proper experience, nor the staff needed to design a plan to protect the financial system as a whole”).

51 *Ibid.* Regulatory reassurance might also help to reduce the risk of a financial panic. Cf. Financial Crisis Inquiry Commission, *The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States* (2011) at 436–37 (arguing that investor fear leading to the financial crisis was compounded by the failure of regulatory agencies to quickly address the problem or reassure investors that the problem was isolated).

52 See *supra* notes 8–11 and accompanying text (discussing those receivership powers).

could be addressed in various ways, including by assigning bankruptcy judges, as needed, to be supervisors of the regulatory procedures.

The other constraint is the difficulty of raising sufficient financing — typically referred to as “debtor in possession” (DIP) financing — to enable multiple troubled systemically important firms to continue operating for the length of time needed to reorganize their capital structure. Absent DIP financing, a firm may have little choice but to liquidate.<sup>53</sup> The “private sources” that ordinarily provide DIP financing in traditional bankruptcy cases “would be either unavailable or at least inadequate” to resolve large systemically important firms.<sup>54</sup> That lack of private DIP financing would be exacerbated, of course, if a multitude of such firms need financing at the same time.

If private sources are inadequate, the government itself might consider providing the DIP financing. The US and Canadian governments provided DIP financing, for example, in the General Motors bankruptcy.<sup>55</sup>

### Proactive Resolution-based Regulation

To try to design more effective proactive resolution-based regulation, consider insights into protecting financial stability from viewing the financial system as a “system.” Systems in general — and the financial system in particular — that are both interactively complex<sup>56</sup> and tightly coupled<sup>57</sup> are “prone to catastrophic failures” because that combination “obfuscate[s] risk and present[s] little opportunity for intervention following a

local shock.”<sup>58</sup> By contrast, systems that are not both interactively complex and tightly coupled are less systemically risky.<sup>59</sup> This suggests that proactive resolution-based regulation should be designed to reduce tight coupling and/or interactive complexity among systemically important firms.

Consider how proactive resolution-based regulation could be designed to reduce interactive complexity. Systemically important firms cause at least two sources of interactive complexity in the financial system, both resulting from information failures. The first source of interactive complexity is that market participants do not know what securities other firms hold.<sup>60</sup> As a form of risk aversion, they therefore assume that distressed securities owned by a given firm are also held by similarly situated firms.<sup>61</sup> If any of those firms fails, market participants may become reluctant to extend credit to similar firms — even those that, in fact, are financially healthy.<sup>62</sup> The loss of credit can then trigger unpredictable failures of healthy firms, hastening a financial crisis.<sup>63</sup> Proactive resolution-based regulation could help to reduce this source of interactive complexity by requiring systemically important firms to disclose — at least periodically, if not also on demand — the amount and identity of their securities holdings.<sup>64</sup>

The other source of interactive complexity is that market participants do not know the contractual obligations of other firms.<sup>65</sup> Yet, if a firm defaults on its obligations, its counterparties may be forced to default on their own obligations.<sup>66</sup> Again,

53 Stuart Gilson, “Coming Through in a Crisis: How Chapter 11 and the Debt Restructuring Industry Are Helping to Revive the U.S. Economy” (2012) 24:4 *J Applied Corporate Finance* 23 at 23–28.

54 Howell E Jackson & Stephanie Massman, “The Resolution of Distressed Financial Conglomerates” (2017) Harvard Public Law Working Paper No 17-14 at 60–61, online: <[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2912980](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2912980)>.

55 Christine Caulfield, “GM Gets OK To TAP \$33B In DIP Financing”, *Law 360* (25 June 2009), online: <[www.law360.com/articles/108332/gm-gets-ok-to-tap-33-3b-in-dip-financing](http://www.law360.com/articles/108332/gm-gets-ok-to-tap-33-3b-in-dip-financing)>.

56 An “interactively complex system is one whose components can interact in unexpected or varied ways.” As a result, a shock to one component can lead to “failures that seem to come out of nowhere or that appear unfathomably improbable.” Richard Bookstaber, *A Demon of Our Own Design: Markets, Hedge Funds, and the Perils of Financial Innovation* (Hoboken, NJ: John Wiley & Sons, 2007) at 154–55.

57 A “tightly coupled system is one that is highly interdependent, so that a disturbance to one part of the system can spread almost instantaneously to other parts of the system.” Anabtawi & Schwarcz, *supra* note 42 at 94.

58 *Ibid* at 112.

59 *Ibid*. For example, a “system that is interactively complex but only loosely coupled...is likely to produce unpredictable interactions among its elements because of the system’s interactive complexity. However, the ultimate damage to such a system from a failure at the level of its elements is likely to be manageable because loose coupling presents opportunities for early intervention.” *Ibid*.

60 *Ibid* at 94.

61 *Ibid* at 95.

62 *Ibid* at 95–96.

63 *Ibid* at 94 (discussing that interactive complexity causes that unpredictability).

64 This form of resolution-based regulation is proactive because it provides for a preplanned enhancement (enhanced disclosure) that takes effect if the firm starts to become troubled by potentially losing access to credit. That disclosure then strengthens the firm’s ability to pay its debt (and thereby avoid default) by providing continued access to credit. Requiring disclosure might also be seen as counteractive, however.

65 Anabtawi & Schwarcz, *supra* note 42 at 114.

66 *Ibid* at 88.

therefore, risk-averse market participants may refuse to extend credit to firms that appear similar to a defaulting firm but, in fact, are financially healthy, thereby triggering unpredictable failures of those healthy firms and hastening a financial crisis.<sup>67</sup> The risk aversion might be especially high if market participants fear a firm is contingently obligated on derivatives contracts that expose it to indeterminate liability.<sup>68</sup> Proactive resolution-based regulation<sup>69</sup> could help to reduce this source of interactive complexity by requiring systemically important firms, as before, to disclose the amount — or in the case of feared indeterminate liability, the estimated limit<sup>70</sup> — and nature of their contractual obligations.<sup>71</sup>

Proactive resolution-based regulation could also help to reduce tight coupling. Notably, central bank last-resort lending could help prevent a disturbance to one part of the financial system — a default by a solvent but illiquid systemically important firm — from spreading rapidly to other parts of the system, including the defaulting firm's counterparties. Such lending would provide liquidity to the firm to prevent its default; and because the firm is solvent, it should ultimately be able to repay the loan.<sup>72</sup>

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## Designing Resolution-based Regulation of Systemically Important Markets and Infrastructure

The article on which this paper is based examines, in detail, how to design resolution-based regulation to protect systemically important markets and infrastructure. The following is a brief summary, considering, first, markets then infrastructure.

A reactive approach to resolution-based regulation does not clearly apply to troubled systemically important markets. In contrast, proactive resolution-based regulation is ideally suited for resolving systemically important markets that start to become troubled. One approach is to preplan enhancements that can make such a market become more internally robust by reducing its tight coupling.

Financial markets today are tightly coupled in at least two ways. Computerized trading makes them especially susceptible to so-called “flash crashes,” in which high-speed automated trading inadvertently can cause extremely rapid (and in retrospect, irrational) price declines. Also, “mark-to-market” accounting, which requires that a securities account be adjusted in response to a change in the market value of the securities (ordinarily reducing risk), can inadvertently cause fire sales that distort value during times of extreme market volatility. Regulatory preplanning can reduce the tight coupling of a flash crash by requiring systemically important markets to have so-called circuit breakers, which automatically suspend market trading if prices decline too rapidly. Regulatory preplanning can also reduce the tight coupling of mark-to-market accounting by suspending that accounting requirement in times of extreme market volatility.

Another approach is to commit parties in advance to provide liquidity in order to stabilize market prices. For example, the internal regulations of some member-sponsored equity markets, such as the New York Stock Exchange, impose liquidity requirements on their members. Scholars

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67 *Cf ibid* at 95–96.

68 Schwarcz, “Regulating Complexity”, *supra* note 17 at 243–45.

69 This form of resolution-based regulation is proactive for the reasons discussed, *supra* note 64.

70 Parties to derivatives contracts usually can estimate the limits of their potential liability. Steven L. Schwarcz, “Central Clearing of Financial Contracts: Theory and Regulatory Implications” 167 *U Penn L Rev* [forthcoming in 2018-19], online: <<https://ssrn.com/abstract=3104079>>.

71 *Cf* Schwarcz, “Regulating Complexity”, *supra* note 17 at 203–07, 246 (discussing disclosure as an option to help avoid a “crisis of confidence”).

72 The author separately has argued that the Dodd-Frank Act’s restrictions on the Federal Reserve’s authority to make these types of loans should be rescinded. See Steven L. Schwarcz, “Controlling Financial Chaos: The Power and Limits of Law” (2012) *Wis L Rev* 815 at 829–33.

are also examining the creation of partially privatized government liquidity facilities that could purchase market securities at prices that are below their intrinsic value but above then-current prices, thereby stabilizing the pricing.<sup>73</sup>

Next, designing resolution-based regulation of systemically important infrastructure should be considered. Because such infrastructure is critical to the ongoing operation of the financial system, any reactive resolution-based regulation would need to occur immediately to prevent troubled infrastructure from failing. Negotiated resolution, as occurs in a bankruptcy case, would therefore likely be much too slow. Although more quick-acting regulatory interventions might be appropriate, none has yet been designed.

Proactive resolution-based regulation, in contrast, should be especially appropriate for infrastructure to ensure the uninterrupted and ongoing operation of the financial system. For example, preplanned liquidity could be used to stabilize troubled infrastructure — such as by enabling a financially unstable clearinghouse to pay its expenses. To this end, the Federal Reserve already has the power to provide discount-window lending, a form of liquidity, to clearinghouses and certain other critical infrastructure-operating entities “in unusual or exigent circumstances.”<sup>74</sup>

Some of these entities also have been required to prepare both a recovery plan and a wind-down plan.<sup>75</sup> These wind-down plans, and possibly also the recovery plans, might be subject, however, to the same types of limitations that impact the effectiveness of living wills: it is difficult to accurately predict how a firm will fail, and planning to control the systemic contagion of a single firm’s winding down does not prevent the systemic contagion caused by multiple firms winding down concurrently.<sup>76</sup>

These approaches also largely neglect the problem that some critical infrastructure-operating entities are part of a holding-company structure that exposes them to affiliate financial and operating risks. Proactive resolution-based regulation should be designed to protect those entities. That could be done through ring-fencing, which protects a firm from becoming subject to liabilities and other risks associated with the bankruptcy of affiliates, helps ensure that a firm is able to operate on a standalone basis even if its affiliated firms fail and protects a firm from being taken advantage of by affiliated firms, thereby preserving the firm’s business and assets.<sup>77</sup>

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## Conclusion

Regulators have been trying to apply bankruptcy “resolution” techniques to help stabilize the financial system. To date, however, their efforts have been insufficient, in part because bankruptcy law traditionally has microprudential goals, whereas protecting financial stability is a macroprudential goal. This paper seeks to derive a logical and consistent theory of how and why resolution-based regulation can help to stabilize the financial system.

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73 Anabtawi & Schwarcz, *supra* note 42 at 107. Cf. Gordon & Muller, *supra* note 37 (making similar arguments).

74 See Dodd-Frank Act § 806(b), codified at 12 USC § 5465 (“The Board of Governors may authorize a Federal Reserve Bank...to provide a designated financial market utility discount and borrowing privileges only in unusual or exigent circumstances”).

75 Dan Ryan, “Financial Market Utilities: Is the System Safer?”, *Harvard Law School Forum on Corporate Governance and Financial Regulation* (21 February 2015) at 3, online: <<https://corpgov.law.harvard.edu/2015/02/21/financial-market-utilities-is-the-system-safer/>>.

76 See *supra* notes 13–16 and accompanying text.

77 See Steven L. Schwarcz, “Ring-Fencing” (2013) 87 S. Cal. L. Rev. 69, 81–82.

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