

What Can We Learn from Publicly Available Data in Banks' Living Wills?

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OF R researchers analyzed the public portions of resolution plans, or “living wills,” in which large U.S. banks describe how they would manage their own potential failure. This analysis supports the OF R’s mission to conduct research to ensure a transparent, efficient, and stable financial system. The authors found that the public information in the living wills is not sufficient to determine whether these banks could go through bankruptcy without extraordinary government support. Based on the limited data in the public filings, however, these documents appear to confirm some concerns of regulators, who recently rejected most of these banks’ plans. It does not appear banks have made their operations less complex.

At the height of the 2007-09 financial crisis, the U.S. government injected hundreds of billions of dollars into large banks to protect the financial system from further stress. To prevent such costly measures in the future, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) requires every bank holding company with \$50 billion or more in assets to prepare a resolution plan, or living will.² Living wills describe how a failing bank would wind down.³

So far, the living wills have not met regulators’ standards. In April 2016, the Federal Deposit Insurance Corporation (FDIC) and Federal Reserve publicly announced their views and provided feedback on the 2015 plans submitted by eight large U.S. bank holding companies. These companies have been designated as global systemically important banks (G-SIBs) based on criteria set by U.S. and international regulators.⁴ Seven of the banks’ plans were deemed “not credible” by at least one of the two regulators.⁵

Living wills are required to include a public portion and a more detailed, confidential section. This brief analyzes the public portions of the living wills filed by the eight G-SIBs in July 2014 and July 2015.⁶ The analysis evaluates if the public portions of living wills shed light on the regulators’ assessment.

The analysis focuses on four key dimensions of resolvability. These are complexity, interconnectedness, cross-border activities, and the nature of the parent company’s balance sheet.⁷ The analysis uses data from the living wills’ public portions, supplemented by other public data. The analysis concludes that the public portions of living wills show that the largest U.S. bank holding companies have not reduced either their complexity or their interconnectedness. However, the public filings do not provide enough information to evaluate companies’ cross-border activities or parent company balance sheets.

This brief illustrates the limitations of the information G-SIBs provide in the public portions of living wills.

More consistency, more content, and greater standardization could boost public confidence in this process.

Orderly Resolution and Its Obstacles

Under Title I of the Dodd-Frank Act, each living will must feasibly facilitate orderly resolution through bankruptcy with limited impact to the financial system. A plan must describe critical operations, core business lines, and material legal entities. Critical operations are operations whose interruption or failure would pose a threat to U.S. financial stability. For example, securities lending and global payments would be critical operations. Core business lines are businesses whose failure would result in a material loss of revenue, profit, or franchise value, such as asset management, retail banking, and investment banking. A material legal entity is a subsidiary or foreign office that is significant to the activities of a critical operation or core business line. The plan also must identify funding, liquidity needs, and interconnections.⁸

Title II of the law grants the FDIC new resolution authority over certain financial companies. It allows the FDIC to take control of failed firms through the FDIC's receivership process. Previously, the FDIC had such authority only over insured banks.

Six of the eight U.S. G-SIBs described their 2015 living wills as "single point of entry" (SPOE) strategies.⁹ Under SPOE resolution, only the parent holding company files for reorganization under the bankruptcy code. Subsidiaries, such as banks and broker-dealers, continue to operate, are sold, or are wound down outside bankruptcy proceedings. An SPOE approach could minimize disruption to financial markets and financial stability from the failure of a major holding company.¹⁰

SPOE resolution has a number of challenges. For an SPOE approach to work, the losses at a subsidiary level need to flow to the parent holding company. This process allows the parent to take losses and move through bankruptcy proceedings while important subsidiaries continue to operate. However, excessive risk positions held by the parent holding company or financial support to the parent from subsidiaries could undermine an SPOE strategy.¹¹ An SPOE approach also requires key subsidiaries to be operational. Finally, SPOE strategies potentially rely on the sale of viable subsidiary businesses to revitalize the

company. During stressed market conditions, rapidly divesting parts of the firm may not be possible.

Cross-border cooperation also remains a challenge. "Ring-fencing" a foreign firm's assets in its local subsidiaries has occurred in the past in the United States and other host countries. Ring-fencing is when a bank or regulator separates a portion of the company's assets to protect them from liquidation, often to support continuing foreign operations. The international Financial Stability Board and the U.S. agencies are promoting cross-border cooperation among G-SIB host countries.

A possible alternative to an SPOE strategy would send some of the parent holding company's subsidiaries into separate bankruptcy proceedings. For instance, the company's depository institution could go into FDIC receivership while its broker-dealer unit entered liquidation through the Securities Investment Procedures Act.¹² International subsidiaries would file for bankruptcy or equivalent proceedings in their host countries.

Challenges also exist for the two U.S. G-SIBs that did not propose SPOE strategies. In Bank of New York Mellon Corp.'s plan, its depository institution and its affiliates would be resolved through FDIC receivership, while the company's broker-dealer, asset manager, and other entities would be sold or would file for bankruptcy. Wells Fargo & Co.'s plan calls for the creation of a bridge bank — a temporary national-chartered bank organized by regulators — to operate its core banking business.¹³ The parent holding company would undergo a bankruptcy reorganization, and other units would be sold.

Contents of U.S. G-SIBs' Living Wills

The public sections of the eight U.S. G-SIBs' living wills vary in style and information presented. Some differences are not surprising because the banks have varied business mixes. At the same time, standardizing the information appearing in the public sections would facilitate comparisons among banks and across time.

Although companies are required to submit extensive business details and to map assets and liabilities for all core business lines in the confidential section of living wills, the law is much less specific about what must appear in the public sections.¹⁴ In 2015, the public sections of reports submitted by G-SIBs ranged from 30 pages to 102 pages. The public portions of the plans would be easier to

compare and analyze if regulators instructed the companies to use a standard data format.

A company has broad discretion in preparing the public section of its living will as long as it includes the following elements:¹⁵

- names of material subsidiaries and a description of core business lines;
- information on assets, liabilities, capital, and major funding sources;
- description of derivatives and hedging activities;
- memberships in payment, clearing, and settlement systems;
- description of foreign operations and supervisory authorities (domestic and foreign);
- names of the company’s principal officers, a description of the corporate governance structure, and discussion of processes related to resolution planning;
- description of management information systems; and
- description of the resolution strategy.

There are four key dimensions to consider in evaluating the public summaries of U.S. G-SIBs’ living wills:

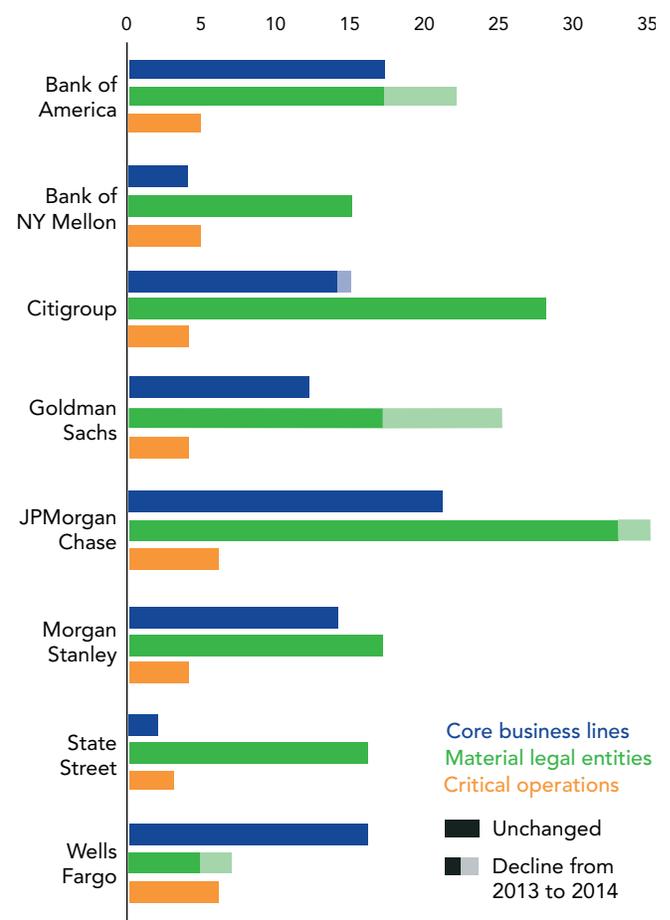
1. **Complexity.** A simpler organization is generally easier to resolve.
2. **Intra-firm interconnectedness.** Orderly resolution requires arrangements to ensure key subsidiaries continue to receive critical services. Subsidiaries’ claims on the parent holding company are obstacles to resolution. Financial commitments between subsidiaries may also obstruct orderly resolutions.
3. **Cross-border activities.** Executing an orderly resolution is harder if it involves more than one country. If the parent holding company’s bankruptcy were to cause a foreign subsidiary to fail, it could undermine an SPOE strategy.
4. **Parent company balance sheets.** A “clean” balance sheet at the parent company level supports resolvability. In a clean balance sheet, the parent’s assets are limited to investments in the subsidiaries and liquid assets. High levels of capital and liquidity at the parent make the company less likely to fail.

Complexity

Living wills must describe critical operations, core business lines, and material legal entities.¹⁶ **Figure 1** summarizes U.S. G-SIBs’ organizational data at year-end 2013 and 2014, as reported in living wills submitted to the FDIC and Federal Reserve.¹⁷

The number of critical operations in the living wills is small relative to the activities in which these banks engage. The data are essentially organized as *categories* of critical operations. For example, a bank may say it has a critical operation in clearing, but it may have multiple clearing businesses. Given the G-SIBs’ broad scope of operations, the public summaries may understate the number of critical operations.

Figure 1. U.S. G-SIBs’ Core Business Lines, Critical Operations, and Material Legal Entities



Sources: Public portion of living wills filed in July 2014 and July 2015 with the Federal Reserve and Federal Deposit Insurance Corporation, authors’ analysis.

The G-SIBs define their core business lines differently in the living wills, making it difficult to use this metric to compare the organizational complexity of different companies. However, this information can be used to observe changes in an individual company's complexity over time. **Figure 1** shows no changes in the number of critical operations and little change in the number of core business lines. Four of the G-SIBs made no changes in the number of material legal entities.

The numbers of a G-SIB's critical operations, core business lines, and material legal entities can serve as measures of complexity and resolvability, and a reduction in these may suggest a reduction in complexity. Overall, these data do not suggest U.S. G-SIBs have simplified their organizations to make themselves easier to resolve. To split a large financial company along business lines, material legal entities need to align with core businesses. The living wills' public portions provide uneven information about whether this alignment exists.

Other regulatory disclosures also contain information on U.S. G-SIBs' organizational complexity. Bank holding companies report corporate hierarchies to supervisors.¹⁸

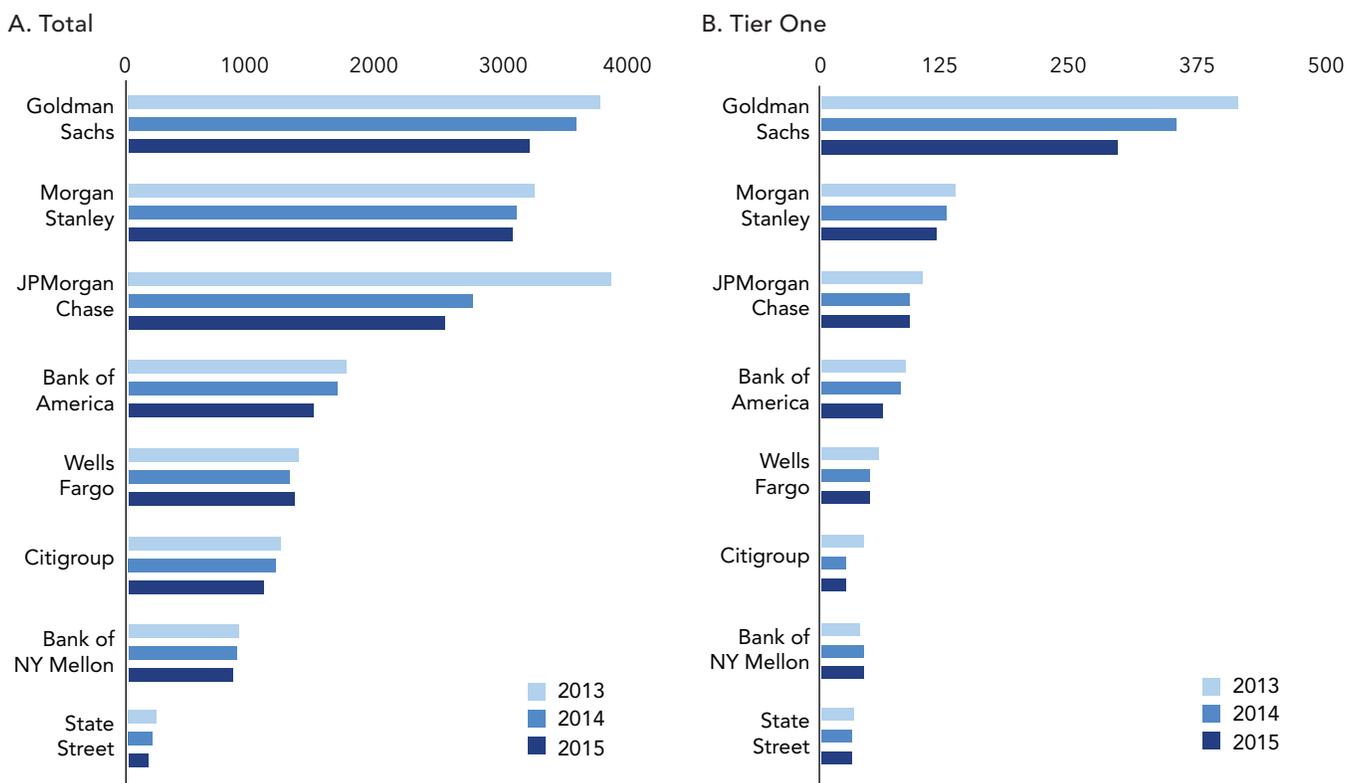
The Federal Reserve publishes the hierarchies on its National Information Center (NIC) website.¹⁹ NIC is a valuable source of data on organizational complexity that can be compared with the data available in the living wills.

NIC data illustrate that a typical U.S. G-SIB has many legal entities. A proliferation of legal entities creates organizational complexity and may be an obstacle to orderly resolution. NIC data provide little insight into subsidiaries' purposes and risks. **Figure 2-A** shows the total number of legal entities within each G-SIB at the end of 2013, 2014, and on Oct. 30, 2015. The numbers available from NIC are much larger than the number of material legal entities identified in the living wills.

Figure 2-B also shows U.S. G-SIBs' first-tier legal entities, which are subsidiaries directly controlled by the parent holding company. Again, the numbers of first-tier entities are much larger than the numbers of material legal entities in the living wills.

Figure 3 shows the layers of legal entities in each U.S. G-SIB's corporate hierarchy. The average subsidiary is four to six layers below the parent, for example. In some cases, a subsidiary is up to 20 layers below the parent.

Figure 2. Total and Tier One Legal Entities Within U.S. G-SIBs



Sources: Federal Reserve's National Information Center, authors' analysis

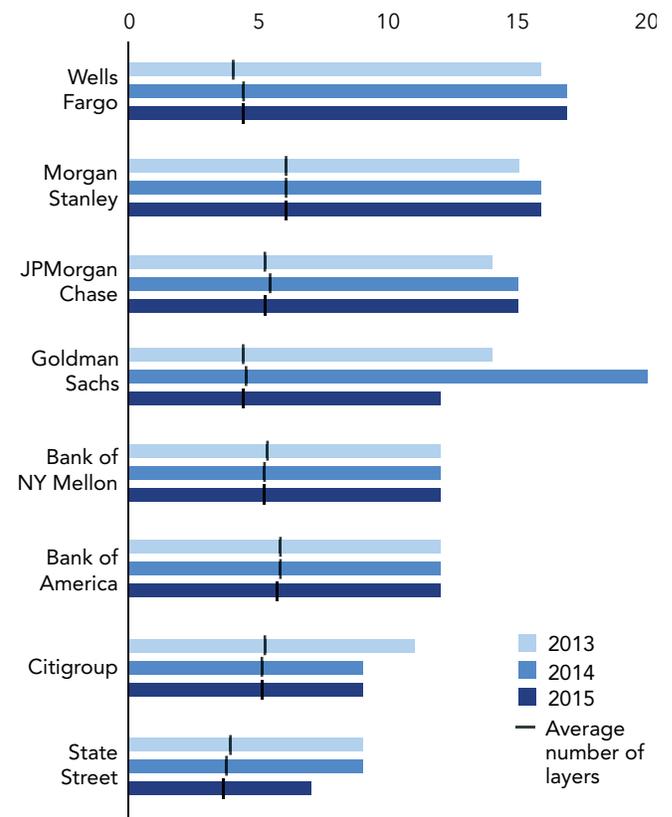
Multiple layers of ownership can make orderly resolution more difficult.²⁰ Entity classifications from NIC do not provide enough information to understand the thousands of legal entities, their functions, and potential challenges in unraveling corporate hierarchies.

Figure 4 shows the number of entities by type using the NIC’s classification as of Oct. 30, 2015. The largest category of subsidiaries is the catch-all category, “Domestic Entity Other.” The NIC database has no information about the function of “Domestic Entity Other” entities or if they might complicate a resolution. The large number of legal entities in that category suggests a lack of clarity about the purposes of many legal entities.

Intra-firm interconnectedness

Figure 5 presents quantitative information about material legal entities’ interconnections, as reported in U.S. G-SIBs’ 2015 living wills. The public portions of the plans generally contain mostly qualitative information. Where sufficient detail is available, the “Total” column counts the number of interconnections among material legal entities. The columns labeled “Across” count interconnections between entities intended to continue to operate and those that would be sold or wound down. Interconnections between units that would continue to

Figure 3. Layers of Corporate Structure Within U.S. G-SIBs



Sources: Federal Reserve’s National Information Center, authors’ analysis

Figure 4. Legal Entities By Type (as of Oct. 31, 2015)

Entity Type	Bank of America	Bank of New York Mellon	Citigroup	Goldman Sachs	JP Morgan Chase	Morgan Stanley	State Street	Wells Fargo
Bank or Financial Holding Company	4	2	6	1	2	4	1	2
Domestic Entity Other	1,177	429	458	1,658	1,776	1,976	60	1,090
Foreign Bank	0	0	0	0	0	0	0	0
Foreign Entity Other	0	0	1	5	3	0	0	0
Finance Company	60	3	160	0	8	2	1	109
International Nonbank Subs of Domestic Entities	248	358	464	1,419	725	1,057	116	82
National Bank	2	2	2	0	2	2	0	4
Securities Broker/Dealer	5	10	6	3	6	1	1	7
Other	11	21	30	33	21	5	34	7
Total	1,507	825	1,127	3,119	2,543	3,047	213	1,301

Sources: Federal Reserve’s National Information Center, authors’ analysis

Figure 5. Interconnectedness Data in Living Wills

Company Name	Interconnections Between Material Legal Entities				Memberships in Material Payment, Clearing, and Settlement Systems
	Operational		Financial		
	Total	Across	Total	Across	
Bank of America	71	32	29	10	25
Bank of New York Mellon	56	13	11	0	27
Citigroup	*	*	20	9	20
Goldman Sachs	82	34	30	0	20
JPMorgan Chase	140	*	52	*	20
Morgan Stanley	*	*	*	*	20
State Street	*	*	*	*	11
Wells Fargo	7	4	8	4	13

* Not enough information available for a precise count.

Sources: Public portion of living wills filed in July 2015 with the Federal Reserve Board and Federal Deposit Insurance Corporation, authors' analysis

operate and units that would be sold or unwound are likely to present greater challenges to orderly resolution.

Figure 5 also reports each U.S. G-SIB's memberships in financial market utilities (FMUs). FMUs provide payment, clearing, and settlement services to banks and nonbank financial firms. Memberships in FMUs are an indicator of a G-SIB's interconnectedness with the rest of the financial system, distinct from its intra-firm connections. Members post collateral to FMUs, which have varying rules that would be triggered if a member defaulted. Early termination rights may allow an FMU to seize collateral in the event of a parent company's bankruptcy. An FMU may be allowed to seize collateral even if the relevant entity continues to meet its obligations. Such seizures could potentially interfere with an SPOE resolution.²¹ The living wills' public sections generally do not identify which material legal entity within the bank holding company is the FMU member, or if other entities would continue to have access to FMUs in a resolution.²²

In 2014, the International Swaps and Derivatives Association introduced a protocol for over-the-counter derivatives that limits early termination rights during a resolution or bankruptcy. The protocol includes a legal stay on the seizure of collateral, which prevents the triggering of cross-defaults of affiliates that could otherwise continue to operate. Participants can decide whether to adhere to the protocol. All eight U.S. G-SIBs now adhere to the protocol.

Cross-border activities

Conflicting legal frameworks across countries may present the greatest challenge to orderly resolution of global banks.²³ If a bank has global operations, international coordination is required, increasing the complexity of a resolution. The failure of a global bank could expose competing interests between its home country and the host countries of its foreign subsidiaries. Host countries may try to protect local depositors and creditors by ring-fencing local assets and resources. The home country would generally prefer to have access to all of a bank's resources to support orderly resolution, especially under an SPOE strategy.²⁴ The public sections of the U.S. G-SIBs' living wills do not address these considerations. They are required only to describe foreign operations and the names of material domestic and foreign supervisors.

Despite the need for international coordination during resolution, U.S. G-SIBs' reporting of foreign supervisors is uneven. **Figure 6** shows the number of jurisdictions in which each G-SIB operates, according to the Federal Reserve's Form FR Y-15.²⁵ All banks include a discussion of material supervisory authorities in the public sections of their living wills. An asterisk in the figure indicates not enough information is available for a precise count. For example, Citigroup, which operates in 100 jurisdictions, mentioned only two foreign supervisors in its living will. Wells Fargo stated that the Federal Reserve and "supervisory authorities in their host countries" regulate its overseas branches.

Figure 6. Living Wills' Data on Foreign Regulators

Company Name	Material Foreign Supervisory Authorities		Jurisdictions	
	Q4 2013	Q4 2014	Q4 2013	Q4 2014
Bank of America	6	5	49	47
Bank of New York Mellon	*	*	35	35
Citigroup	*	*	100	100
Goldman Sachs	15	14	51	50
JPMorgan Chase	*	*	60	58
Morgan Stanley	*	*	51	51
State Street	7	9	30	29
Wells Fargo	*	*	30	30

* Not enough information available for a precise count.

Sources: Public portion of living wills filed in July 2015 with the Federal Reserve Board and Federal Deposit Insurance Corporation, authors' analysis

Parent company balance sheets

A clean balance sheet for the parent company facilitates an orderly resolution by minimizing financial connections between the bank holding company and its subsidiaries.

The Federal Reserve proposed rules on Nov. 30, 2015, with clean balance-sheet requirements.²⁶ The rules would enhance the orderly resolution process by allowing a G-SIB to fail and its investors to absorb losses while critical operations of the company continue.

The proposal, which has not been finalized, includes three requirements:

- The parent bank holding company would maintain a clean balance sheet to allow for bankruptcy of the parent while subsidiaries continue to operate. A clean balance sheet means the parent issues no short-term debt to third parties and has no derivative transactions with third parties. It also means subsidiaries cannot pass credit guarantees up to the parent.²⁷
- The parent would maintain a high level of total loss-absorbing capacity debt and a new long-term debt requirement to enable an SPOE resolution in the event of failure.²⁸
- In a resolution, some long-term debt would convert to equity and help recapitalize the parent.

Conclusions

The public portions of living wills should help the public assess the process for managing the failure of the largest U.S. banks. The analysis in this brief suggests that they do not yet serve that purpose because the data they contain are limited. However, those limited data appear to confirm recent rejection and criticism by regulators of living will submissions.

The public filings show that the largest banks, known as G-SIBs, remain complex organizations. They have hundreds of legal entities around the world. The living wills' public sections offer only a rough indication of how these banks would manage this complexity in a failure. Reducing interconnectedness could help in resolving a bank holding company in a fast and orderly way. However, the living wills' public sections do not address the challenges of cross-border resolution or provide information about parent company balance sheets.

This brief illustrates that the limitations of the publicly available data in living wills make drawing definitive conclusions difficult. Other observers have called for more transparency in the public portions of living wills.²⁹ In an April 2016 report, the Government Accountability Office found a lack of transparency in the public portions of the living wills, based on interviews with stakeholders.³⁰ The report also found a lack of transparency in how the FDIC and Federal Reserve review banks' resolution plans.

In April, the FDIC and Federal Reserve said they had notified banks that their public plans should include more detail about each material legal entity to better inform the public about living wills.³¹ Additional data and standardization of those sections would strengthen the public's understanding of progress toward resolving U.S. G-SIBs without extraordinary government support. The G-SIBs are required to submit their next full resolution plans, including public sections, on July 1, 2017.

The Federal Reserve's proposed rules requiring parent companies to have clean balance sheets and total loss-absorbing capacity debt could improve resilience and resolvability. If these rules are adopted, the public sections of the living wills could be more valuable.

Endnotes

- ¹ Steve Bright, Financial Analyst (steve.bright@ofr.treasury.gov), Paul Glasserman (paul.glasserman@ofr.treasury.gov), Christopher Gregg, Financial Analyst (christopher.gregg@ofr.treasury.gov), and Hashim Hamandi, Supervisory Financial Analyst (hashim.hamandi@ofr.treasury.gov). Glasserman is under contract with the OFR. Patrick Bittner and Jill Cetina provided helpful comments. Yang Bai provided valuable research assistance.
- ² See Federal Reserve System and Federal Deposit Insurance Corporation, “Resolution Plans Required,” final rule, Federal Register 76, No. 211, Nov. 1, 2011, 67323-40 (available at www.gpo.gov/fdsys/pkg/FR-2011-11-01/html/2011-27377.htm, accessed March 7, 2016).
- ³ See U.S. Congress, *Dodd-Frank Wall Street Reform and Consumer Protection Act*, Public Law 111-203, Washington: U.S. Government Printing Office, July 21, 2010, 52. See also Financial Stability Board, “Key Attributes of Effective Resolution Regimes for Financial Institutions,” Oct. 15, 2014 (available at www.fsb.org/2014/10/r_141015/, accessed Feb. 23, 2016).
- ⁴ A total of 30 G-SIBs exist. See Financial Stability Board, “2015 Update of List of Global Systemically Important Banks (G-SIBs),” Nov. 3, 2015 (available at www.fsb.org/wp-content/uploads/2015-update-of-list-of-global-systemically-important-banks-G-SIBs.pdf, accessed March 4, 2016).
- ⁵ The FDIC and Federal Reserve jointly deemed five of the eight largest banks’ plans as “not credible.” Another two of the plans were deemed “not credible” by either the FDIC or the Federal Reserve. All eight must submit new plans by July 1, 2017. Citigroup Inc.’s resolution plan, the only one not rejected by at least one agency, had shortcomings identified by both agencies but the regulators stated the issues did not rise to the level of the deficiencies in the other G-SIB plans. See Board of Governors of the Federal Reserve System and Federal Deposit Insurance Corporation, “Agencies Announce Determinations and Provide Feedback on Resolution Plans of Eight Systemically Important, Domestic Banking Institutions,” joint press release, April 13, 2016 (available at www.federalreserve.gov/newsevents/press/bcreg/20160413a.htm, accessed April 13, 2016). In 2014, the two regulators had rejected most of the G-SIBs’ living wills submitted in 2013. See Board of Governors of the Federal Reserve System and Federal Deposit Insurance Corporation, “Agencies Provide Feedback on Second Round Resolution Plans of ‘First-Wave’ Filers,” joint press release, Aug. 5, 2014 (available at www.federalreserve.gov/newsevents/press/bcreg/20140805a.htm, accessed March 4, 2016).
- ⁶ Public versions of the resolution plans are available at www.federalreserve.gov/bankinfo/reg/resolution-plans.htm (accessed March 4, 2016). The eight companies are Bank of America Corp., Bank of New York Mellon Corp., Citigroup Inc., Goldman Sachs Group, Inc., JPMorgan Chase & Co., Morgan Stanley, State Street Corp., and Wells Fargo & Co. Four U.S. subsidiaries of foreign banking organizations (Barclays Plc, Credit Suisse Group, Deutsche Bank AG, and UBS Group AG) also submitted resolutions plans in 2015. They are not included in this analysis.
- ⁷ The Basel Committee on Banking Supervision uses similar metrics in its methodology for identifying G-SIBs. See Basel Committee on Banking Supervision, “Globally Systemically Important Banks: Updated Assessment Methodology and the Higher Loss Absorbency Requirement,” July 2013, Table 1 (available at www.bis.org/publ/bcbst255.pdf, accessed March 4, 2016).
- ⁸ See Sections 115(d)(1) and 165(d)(1) of the Dodd-Frank Act.
- ⁹ The six are: Bank of America Corp., Citigroup Inc., Goldman Sachs Group, Inc., Morgan Stanley, State Street Corp., and JPMorgan Chase & Co.
- ¹⁰ The FDIC is developing a single point of entry as an approach to resolution under Title II of the Dodd-Frank Act if certain U.S. government agencies determine bankruptcy would have serious adverse effects on financial stability and deem FDIC receivership preferable. The living wills describe plans for resolution under Title I only but they would help inform a resolution under Title II.
- ¹¹ See David A. Skeel Jr., “Single Point of Entry and the Bankruptcy Alternative,” *Faculty Scholarship*, Paper 949, Feb. 26, 2014 (available at scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1949&context=faculty_scholarship, accessed May 6, 2016).
- ¹² See Securities Investor Protection Corporation, “SIPC Mission” (available at www.sipc.org/about-sipc/sipc-mission, accessed March 31, 2016).
- ¹³ A bridge bank is a temporary bank organized by federal bank regulators to operate an insolvent or failed bank. See Federal Deposit Insurance Corporation, “FDIC Final Rule Frequently Asked Questions,” March 27, 2012 (available at www.fdic.gov/regulations/reform/rulefaq.html, accessed March 31, 2016).
- ¹⁴ See Federal Reserve and FDIC, “Resolution Plans Required.”
- ¹⁵ See Federal Reserve and FDIC, “Resolution Plans Required.”
- ¹⁶ See Federal Reserve and FDIC, “Resolution Plans Required.”
- ¹⁷ Data are drawn from the public portions of resolution plans filed in July 2014 and July 2015.
- ¹⁸ Corporate hierarchies are available from the Federal Reserve’s Form FR Y-6.
- ¹⁹ See the National Information Center website (available at www.ffiec.gov/nicpubweb/nicweb/nichome.aspx, accessed March 4, 2016).
- ²⁰ See Jacopo Carmassi and Richard J. Herring, “Corporate Structures, Transparency and Resolvability of Global Systemically Important Banks,” online paper, August 2014 (available at fic.wharton.upenn.edu/fic/papers/15/15-10.pdf, accessed March 7, 2016). See also “Special Issue: Large and Complex Banks,” *Economic Policy Review*, Federal Reserve Bank of New York, Vol. 20, No. 2, December 2014 (available at www.newyorkfed.org/medialibrary/media/research/epr/2014/EPRvol20no2.pdf, accessed Feb. 23, 2016).
- ²¹ See Darrell Duffie, “Resolution of Failing Central Counterparties,” Stanford Graduate School of Business Working Paper no. 3256, Dec. 17, 2014 (available at www.gsb.stanford.edu/faculty-research/working-papers/resolution-failing-central-counterparties, accessed March 7, 2016).
- ²² See Paul Glasserman, Ciaram C. Moallemi, and Kai Yuan, “Hidden Illiquidity with Multiple Central Counterparties,” OFR Working Paper no. 15-07, May 7, 2015 (available at financialresearch.gov/working-papers/files/OFRwp-2015-07_Hidden-Illiquidity-with-Multiple-Central-Counterparties.pdf, accessed March 7, 2016). Also see Fuchun Li and Hector Perez Saiz, “Measuring Systemic Risk Across Financial Market Infrastructures,” August 2015 (available at www.suomenpankki.fi/en/rahoitus-jarjestelman_vakaus/BoF-PSS2/Documents/Seminars/Seminar2015/D2_01_Hector_Perez_Saiz.pdf, accessed Feb. 23, 2016).
- ²³ The European Union’s Bank Recovery and Resolution Directive does not share the Dodd-Frank Act’s preference for bankruptcy over resolution by a supervisory authority. This difference presents a challenge to coordinating a response to the failure of a global bank across jurisdictions. See Directive 2014/59/EU, May 15, 2014 (available at eur-lex.europa.eu/legal-content/EN/NOT/?uri=CELEX:32014L0059, accessed April 20, 2016).
- ²⁴ See Richard Herring, “The Challenge of Resolving Cross-Border Financial Institutions,” *Yale Journal on Regulation*, suppl. Special Issue 31.3, 2014, 853-881.

Endnotes *continued*

²⁵ See the Banking Organization Systemic Risk Report on Form FR Y-15. The number of jurisdictions is included as an ancillary indicator in the form's Schedule F.

²⁶ See Board of Governors of the Federal Reserve System, "Total Loss-Absorbing Capacity, Long-Term Debt, and Clean Holding Company Requirements for Systemically Important U.S. Bank Holding Companies and Intermediate Holding Companies of Systemically Important Foreign Banking Organizations; Regulatory Capital Deduction for Investments in Certain Unsecured Debt of Systemically Important U.S. Bank Holding Companies," proposed rule, Federal Register 80, no. 229, Nov. 30, 2015, 74926-64 (available at www.federalregister.com/Browse/Document/usa/na/fr/2015/11/30/2015-29740,

²⁷ Upstreaming is the process of pushing up an item, issue, or in this case, guarantees, from a lower subordinate to the parent company.

²⁸ See Board of Governors of the Federal Reserve System, press release, Oct. 30, 2015 (available at www.federalreserve.gov/newsevents/press/bcreg/20151030a.htm, accessed March 4, 2016). TLAC is a proposed requirement for G-SIBs that would protect taxpayers in the event of severe financial stress or failure.

²⁹ For example, former FDIC chair Sheila Bair, speaking as chair of the Systemic Risk Council, a nonpartisan group of former government officials and financial experts, recently praised the agencies for improving disclosures, but also called for better comparability across the public portions of the living wills. See Systemic Risk Council, "Re: 2015 Resolution Plan Public Disclosures,"

Letter to the Hon. Janet Yellen and Hon. Martin Gruenberg, Sept. 8, 2015 (available at www.systemicriskcouncil.org/wp-content/uploads/2015/09/SRC-Letter-to-Fed-and-FDIC-re-Living-Wills-09-08-15.pdf, accessed April 28, 2016).

³⁰ See Government Accountability Office, "Resolution Plans: Regulators Have Refined Their Review Processes but Could Improve Transparency and Timeliness," April 2016 (available at www.gao.gov/assets/680/676497.pdf, accessed April 19, 2016).

³¹ See Board of Governors of the Federal Reserve System, "Resolution Plan Assessment Framework and Firm Determinations (2016)," April 13, 2016 (available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20160413a2.pdf, accessed April 29, 2016).