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Will TLAC Regulations Fix the G-SIB Too-Big-To-Fail Problem?

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American Enterprise Institute

AEI Economic Policy Working Paper 2015-08

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Will TLAC Regulations Fix the G-SIB Too-Big-To-Fail Problem?

by

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ABSTRACT

The efficacy of the Financial Stability Board’s proposed requirement for minimum “total loss absorbing capacity” (TLAC) at global systemically important banks (G-SIBs) is assessed using a stylized model of a bank holding company and an equilibrium asset pricing model to value financial claims. I identify a number of G-SIB strategies that satisfy minimum TLAC requirements but fail to reduce implicit safety net subsidies that accrue to G-SIB shareholders or increase the resources available to recapitalize a failing G-SIB subsidiary. To meet the FSB’s stated goals, TLAC requirements must impose minimum TLAC at all subsidiaries and restrict how TLAC funds can be invested. An equivalent, but much simpler solution is to significantly increase regulatory capital requirements on systemically important bank subsidiaries.

Key Words: TLAC [total loss absorbing capacity], G-SIBs [global systemically important banks], bail-in capital, SPOE [single point of entry strategy]

JEL Classification: G18, G21, G28

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Will TLAC Regulations Fix the G-SIB Too-Big-To-Fail Problem?

1. Introduction

The Financial Stability Board [FSB] has proposed that global systemically important banks [G-SIBs] should be required to meet and maintain new minimum total loss absorbing capacity [TLAC] standards.² TLAC requirements will impose new capital structure restrictions on bank holding companies and, in some cases, on holding company subsidiaries. These restrictions may require G-SIBs to issue substantial amounts of unsecured debt that can be converted into equity to avoid bankruptcy in a bail-in strategy, or converted into receivership certificates in a regulator-administered resolution process. In special cases, the TLAC rules may require parent companies to issue TLAC debt and re-lend the proceeds to one or more subsidiaries so that this debt can be converted to equity or be forgiven by the parent company should the subsidiary need to be recapitalized.

G-SIB TLAC is composed of equity and debt claims that qualify as Basel III regulatory capital and other external debt. External debt will qualify as TLAC provided it is unsecured, subordinated to most other claims, and has a remaining maturity of at least one-year. The FSB proposal recommends a TLAC requirement in the range of 16-20 percent of risk-weighted assets, with an absolute TLAC floor of 2 times the Basel III leverage ratio.³ The final calibration of minimum TLAC requirements is left to the discretion of national supervisory authorities.⁴

According to the FSB, the objective of the TLAC requirement is,

[T]o ensure that the G-SIBs have the loss absorbing and recapitalization capacity necessary to help ensure that, in and immediately following a resolution, critical

² Financial Stability Board (2014).

³ The Basel III leverage ratio is Tier 1 capital divided by total consolidated exposure which include all on- and off-balance sheet positions calculated using specific regulatory guidelines. The minimum Basel III leverage ratio is 3 percent; the US minimum Basel III leverage ratio is 5 percent for all advanced approach BHCs and 6 percent for all advanced approach banks.

⁴ The specific details of US regulations specifying minimum TLAC for US G-SIBs have not been finalized. The Federal Reserve Notice of Proposed Rule Making (October 28, 2015) proposes that a parent BHC of a designated US G-SIB maintain TLAC that is equal or larger than: the greater of 18 percent of the BHC's consolidated risk-weighted assets or 9.5 percent of its total leverage exposure measured using the Basel III leverage ratio protocols.

*functions can be continued without taxpayers' funds (public funds) or financial stability being put at risk.*⁵

Moreover, the FSB further intends that,

*TLAC, in conjunction with other measures should act to remove the implicit public subsidy from which G-SIBs currently benefit when they issue debt and incentivize creditors to better monitor G-SIBs' risk taking.*⁶

There are many ways a G-SIB might alter its capital structure and investments to satisfy the FSB's TLAC proposal. For example, the parent company of a TLAC resolution group might issue TLAC-compliant debt and invest the proceeds in low-risk assets. Moreover, the optimal G-SIBs strategy for TLAC compliance may depend on whether the bank is organized as a universal bank (as is common in European markets) or managed through a holding company structure (as is typical in the United States). In this paper, I will consider alternative strategies that could be used by a US bank holding company (BHC) to satisfy a given TLAC requirement.

My TLAC analysis is based on a theoretical model of a BHC that owns two subsidiary banks. The model includes a parent BHC that issues external debt and equity claims to fund its ownership of equity and debt claims issued by its subsidiary banks. The parent BHC may also own nonbank assets, but it is primarily a vehicle for owning, financing, and managing subsidiary banks.

Using an equilibrium pricing model to value bank assets and financial claims, I consider alternative strategies that the BHC might use to satisfy a new 16 percent TLAC requirement. The TLAC requirement supplements an existing 8 percent minimum regulatory capital requirement.⁷ I assume that, prior to the imposition of a 16 percent minimum TLAC requirement, the 8 percent minimum regulatory capital requirement is binding at both the parent BHC and bank subsidiary levels. I use this model to analyze the impact of alternative strategies that a G-SIB potentially could use to satisfy the FSB's proposal for minimum TLAC rules.

⁵ Financial Stability Board (2014), p. 13.

⁶ Ibid., p.6.

⁷ The 16 percent minimum TLAC assumption is arbitrary but inconsequential. The analysis could be repeated with any minimum TLAC setting.

The analysis includes many strategies that satisfy minimum TLAC requirements. However, many of these strategies do not achieve the FSB's goal of reducing G-SIB implicit safety net subsidies or replenishing critical subsidiaries' going-concern capital before they reach a point of non-viability. To attain the FSB's stated goals, minimum TLAC regulations must be more proscriptive than the current FSB proposal. They must require full internal TLAC at all bank subsidiaries and put tight restrictions on how these subsidiaries use new TLAC funds. Without these restrictions, it is unlikely that G-SIBs will choose to adopt TLAC-compliant strategies that will remove its safety net subsidy and provide the loss absorbing capacity required to keep critical subsidiaries open and operating.

An outline of the paper follows. Section 2 reviews the policy developments that have created the need for minimum TLAC requirements. Section 3 reviews the FSB's proposed TLAC rules. Section 4 discusses the equilibrium pricing model and the stylized BHC used in the analysis. Section 5 considers alternative strategies that the BHC might use in order to meet a 16 percent minimum TLAC requirement. Additionally, Section 5 analyzes the efficacy of these alternative strategies relative to the FSB's policy goals. Section 6 summarizes the results of the TLAC analysis and discusses an alternative approach that satisfies TLAC goals by imposing heightened regulatory capital requirements on critical bank subsidiaries.

2. Background

The FSB 2011 report, *Key Attributes of Effective Resolution Regimes for Financial Institutions*, discusses the G-20 goal of creating strategies to resolve failing systemically important financial institutions (SIFIs). The FSB (p. 5) highlights the importance of developing techniques to resolve SIFIs “without severe systemic disruption, without exposing public funds to loss, and while ensuring continuity of systemically important (or “critical”) functions.” While strategic details will vary across countries, the FSB believes this goal can be achieved through recapitalization strategies that: (i) impose first losses on SIFI shareholders; (ii) convert unsecured and uninsured SIFI creditor claims into equity or receivership certificates; and (iii) use the resources of the SIFI creditors left in receivership to absorb residual losses and recapitalize subsidiaries so they can remain open, operating and continue to provide critical economic functions.

One approach for executing a SIFI recapitalization is a so-called “bail-in” strategy whereby debt is converted into equity to prevent legal resolution or bankruptcy. Bail-in strategies convert eligible financial institution liabilities into equity claims and recapitalize a SIFI before it fails. Bail-in forestalls the allegedly disruptive effects of legal bankruptcy or administrative resolution processes, especially on SIFI operating subsidiaries that provide critical services to the economy. Many contract designs could be used to issue bail-in debt. While conversion triggers vary, all such contracts are a form of mandatory contingent convertible debt or so-called “co-cos.” To date, the co-cos market has yet to mature. There is no “benchmark” conversion design for co-cos and secondary market trading is illiquid.⁸

An alternative approach to bail-in is to recapitalize SIFI operations within a judicial bankruptcy or supervisory resolution processes. When legal frameworks permit, a SIFI’s parent financial company can be placed in receivership, and its subsidiaries transferred to a new bridge financial institution that functions as the new parent company. Since the failing SIFI’s parent company’s unsecured and uninsured debt claims are left in the receivership, the new parent institution has assets, but few if any liabilities. The bridge can sell new debt claims and use the proceeds to recapitalize and fund any failing SIFI’s subsidiaries. This keeps the subsidiaries open, operating, and out of secondary bankruptcy or receivership proceedings.

The FDIC’s Single Point of Entry (SPOE) strategy is a leading example of a recapitalization strategy that takes place within a Dodd-Frank Orderly Liquidation (OLA) process. Some legal experts believe that a SPOE-like reorganization can also be accomplished in a judicial bankruptcy proceeding. Indeed H.R. 5421, “The Financial Institution Bankruptcy Act of 2014,” commonly known as “Chapter 14” [and S. 1861 in the US Senate], amends the bankruptcy code so that it explicitly allows a SPOE-like recapitalization in a Chapter 11 judicial bankruptcy.

In order to facilitate bail-in or SPOE recapitalization, a SIFI must have adequate unsecured, uninsured debt available to convert into equity (in bail-in) or receivership certificates (in SPOE). After reorganization of claims priorities, the restructured SIFI must have a capital structure that

⁸ See Avdjiev, Kartasheva and Bogdanova (2013) for a survey on the development of co-cos, or Flannery (2009), Duffie (2009), Culp (2009), Pennacchi, Vermaelen and Wolff (2011), Bolton and Samama (2011), Sundaresan and Wang (2011), or Calomiris and Herring (2012, 2013) for alternative approaches for structuring co-cos bonds.

will allow it to continue funding its subsidiaries' operations. To provide the necessary buffer, the FSB has proposed new TLAC requirements that would apply to G-SIBs.⁹

For G-SIBs, TLAC rules will apply a new set of capital structure constraints in addition to the Basel III risk-based capital requirements that banks and BHCs must satisfy. TLAC is supposed to build-in a “Lazarus effect” into the institution’s capital structure that allows a G-SIB’s critical operating units to be recapitalized and continue to operate after they would have otherwise failed and entered a resolution process,

*[After recapitalization] the institution or successor institution (e.g. bridge institution) has to meet at least the minimum conditions for authorization in order that supervisors may allow it to continue performing authorized activities, in particular critical functions. Moreover, the reorganization or solvent wind-down that will be necessary following resolution may require a level of capitalization above that required by supervisors so that counterparties continue to trade with the resolved firm and provide funding to it.*¹⁰

3. Minimum Requirements for Total Loss Absorbing Capacity

TLAC requirements will impose new capital structure restrictions on parent holding companies and, in some cases, subsidiary institutions. The FSB proposes that G-SIFIs maintain TLAC—comprised of the institution’s Basel III compliant capital and long-term unsecured subordinated debt—in a range between 16 and 25 percent of the institution’s Basel III risk-weighted assets. The actual minimum TLAC requirement is a decision left to national supervisory discretion, and minimum TLAC levels vary depending on the Basel III additional capital buffers that are in force.¹¹

TLAC includes instruments which qualify as Basel III Tier 1 or Tier 2 capital. In addition to Basel III capital instruments, unsecured and subordinated debt¹² with a minimum remaining

⁹ Financial Stability Board (2014).

¹⁰ *Ibid.*, pp. 10-11.

¹¹ The additional capital buffers that may apply under the FSB proposal include the credit cycle macroprudential buffers that vary over time and the G-SIFI capital buffer surcharges that are periodically reassessed by the FSB.

¹² To qualify as TLAC, the debt must essentially be treated like an equity claim in bankruptcy or a resolution. The debt must be subordinated to: insured deposits, callable liabilities, liabilities linked to derivatives or structured notes, tax liabilities, any liability that is preferred to a normal unsecured senior creditor in an insolvency and any liabilities that cannot be treated as equity in a bankruptcy or resolution authority.

maturity of at least 1 year also qualifies as TLAC. The overlap between instruments that qualify as TLAC and Basel III capital varies by national jurisdiction.

Under Basel III guidelines, additional “Tier 1 going-concern capital” (or AT1C) includes debt that is non-callable for at least 5 years, where omission of an interest payment is not an event of default, where dividends are not cumulative or with “step-up” features, and the debt must convert into equity at or before default. Many contingent convertible capital instruments issued by European G-SIBs have been designed with features and conversion triggers that qualify as both TLAC and Basel III AT1C. In contrast, under the US Basel III rules, AT1C is limited to noncumulative preferred stock. Co-cos do not qualify as AT1C in the United States, because they have a maturity date and the paid-in amount is recorded as a liability under generally accepted accounting principles.¹³

The FSB proposal seeks to apply minimum TLAC requirements to “resolution entities” within a G-SIB organization. The FSB defines a resolution entity as,

*[T]he entity or entities to which resolution tools will be applied in accordance with the resolution strategy for the G-SIB. ... [R]esolution entities may be parent or subsidiary operating companies, or ultimate or intermediate holding companies.*¹⁴

Each resolution group must satisfy the minimum TLAC requirements for the consolidated balance sheet of the resolution group and, “A G-SIB’s aggregate Minimum [sic] TLAC requirement should be invariant to whether it has one or more resolution entities.”¹⁵

In addition to external TLAC requirements, the FSB proposal includes the possibility of internal TLAC requirements. The FSB proposal is explicit regarding the need for internal TLAC requirements in resolution entity subsidiaries with material operations outside of the home country jurisdiction, or where a critical subsidiary is outside of a resolution group. But beyond these cases, the FSB proposal does not specify the need for internal TLAC at all subsidiaries within a resolution entity.¹⁶

¹³ *Federal Register*, Vol.78, No. 198, p. 62047 (Oct. 11, 2013).

¹⁴ Financial Stability Board (2014), p.13.

¹⁵ Ibid.

¹⁶ Indeed, the FSB proposal invites public comment on the need for additional internal TLAC requirements.

The FSB proposal envisions that most external TLAC claims would be issued by the parent holding company, and only a restricted amount of external TLAC might be issued by subsidiaries. A critical subsidiary may issue TLAC to investors who are external to the resolution group provided the issued claims qualify as TLAC, can be converted while the subsidiary is still solvent, and the conversion does not trigger a change of control of the subsidiary.

4. Equilibrium Pricing Model and a Stylized BHC

I analyze the implications of alternative BHC strategies that can be used to satisfy a minimum TLAC requirement in the context of a simple 10-state model of asset returns. At the end of a single period, bank asset values are determined by the prevailing state of the economy. There are 10 possible economic states, each characterized by a state-contingent price.

The state-contingent prices are the initial equilibrium prices of Arrow-Debreu state-contingent securities. An Arrow-Debreu state-contingent security for state i pays \$1 in state i , and nothing in any other state. In this model, a portfolio of 10 Arrow-Debreu securities, one for each state i , will deliver a risk-free payoff. Because the sum of the Arrow-Debreu security prices equal 1, the state-contingent prices are also risk neutral probabilities. A portfolio comprised of these 10 Arrow-Debreu securities produces a risk free payoff of \$1, so the implied risk free interest rate is 0 in this stylized model.

Table 1 displays the 10 possible states of the economy at period-end, the corresponding state-contingent prices, and the corresponding end-of-period value of the total assets owned by two banks, bank A and bank B.¹⁷ State 1 corresponds to the state with the highest total asset values, while total asset values progressively deteriorate from states 2 through state 10.

In this stylized model, the equilibrium market price of an asset at the beginning of the period (before the state of the economy is realized) is given by,

$$p_i = \sum_{j=1}^{10} s_j \times c_{ij}, \quad (1)$$

¹⁷ All tables appear at the end of the document.

where, p_i is the equilibrium price of asset i ; s_j is the equilibrium value of \$1 received in economic state j ; and, c_{ij} is the dollar value of asset i in state j .

Table 1: State Contingent Prices and Asset Values

end-of- period state	economic state price	bank A assets value	bank B assets value
1	0.01	102.66	50.22
2	0.03	102.66	50.22
3	0.1	102.66	50.22
4	0.6	102.66	50.22
5	0.1	96.00	50.22
6	0.07	94.00	50.22
7	0.05	90.00	50.22
8	0.025	85.00	46.00
9	0.01	83.00	44.00
10	0.005	80.00	40.00
current market value		100	50

Notes: Economic state contingent claim prices sum to 1 and are equivalent to risk neutral probabilities. Valuations are rounded at two decimal places.

Bank A and bank B both own assets with fixed-income cash flow characteristics. In economic states 1 through 4, bank A's asset perform and return principle and promised interest. In economic states 5 through 10, bank A's loans default, and recoveries become progressively worse from state 5 to state 10. Bank B has a slightly less risky loan portfolio. Its loans fully perform in economic states 1 through 7. Bank B loans default in the remaining states; default recoveries are the largest in state 8 and the smallest in state 10.

The market value of assets in bank A are twice as large as the market value of assets in bank B, but bank B's assets are less risky. Bank A's loans default in 3 economic states in which bank B's loan fully perform. As a consequence, the average promised equilibrium yield on bank B's assets (0.4375 percent) is much smaller than the promised yield on bank A's assets (2.6554 percent). Notwithstanding the difference in risk, the asset returns on bank A and bank B are highly correlated (0.8467).

I assume that banks A and B are both wholly owned by a parent BHC. Furthermore, I assume that both banks and the BHC must meet an 8 percent minimum regulatory capital requirement assessed against consolidated assets. To further simplify, I assume a 100 percent risk weight for the assets in both banks.

Unlike Basel III, which include multiple measures of capital with corresponding minimum regulatory capital ratios, in this stylized model, there is a single regulatory capital ratio. This ratio corresponds to common Tier 1 equity capital in the Basel III framework. I assume that a 3 percent Tier 1 equity capital ratio will trigger TLAC debt conversion for TLAC debt issued by a subsidiary bank. A specific trigger mechanism for mandatory TLAC debt conversion has not specified in the FSB TLAC proposal. The triggering level is discretionary, to be set by national supervisors, and so my choice of 3 percent Tier 1 equity as the conversion level is arbitrary.

The 3 percent trigger for TLAC debt conversion that I use in the examples in this paper is motivated by US prompt corrective action requirements. US prompt corrective action legislation specifies capital ratios that must be maintained for an institution to be categorized as well capitalized, adequately capitalized, undercapitalized, or critically undercapitalized. When a bank is classified as critically undercapitalized¹⁸, prompt corrective action legislation requires that the bank be recapitalized within 90 days or else the institution must be placed into an FDIC receivership and resolved in conformance with federal deposit insurance regulations. I will assume that a TLAC conversion will be triggered at a bank subsidiary when the bank's Tier 1 equity capital falls below 3 percent of its risk-weighted assets.

Prior to passage of the Dodd-Frank Act, US BHCs were not subject to non-judicial resolution. BHCs could only enter bankruptcy under court petition by the BHC's management or creditors. Regulators did not have the power to place a BHC into administrative resolution or bankruptcy.

Title II of the Dodd-Frank Act, Orderly Liquidation Authority (OLA), empowers the Secretary of the Treasury to place a BHC into an administrative resolution process. The Secretary can invoke OLA powers and place a BHC into an administrative receivership managed by the FDIC

¹⁸ Under US prompt corrective action, a bank becomes critically undercapitalized when its Tier 1 regulatory capital ratio falls below 2 percent. I use 3 percent as the threshold simply because it works better with the numerical examples in this paper.

if the BHC is in default or in danger of default, and its bankruptcy would destabilize the US financial system.

The Dodd-Frank Act does not specify a minimum regulatory capital threshold for determining when a BHC is in default or in danger of default but instead allows the Secretary discretion in determining this matter.¹⁹ Moreover, it is unclear whether the Secretary would choose OLA resolution for all institutions required to meet minimum TLAC regulations. In order to use OLA, the Secretary must determine that an institution's bankruptcy would cause financial instability that mandates a need to "liquidate" it using Dodd-Frank OLA authority. Abstracting from these issues, I assume that 3 percent Tier 1 equity capital is the capital threshold that the Secretary will use to trigger an OLA resolution at the parent holding company subject to minimum TLAC requirements.

I assume that the banks and the parent holding company satisfy minimum capital requirements, and that the subsidiary banks fund the balance of their assets with insured deposits. Under these assumptions, the individual banks and the parent holding company state contingent claims will have the end-of-period payoff and current equilibrium market values indicated in Table 2. For simplicity, I assume that banks do not pay a deposit insurance premium, but a fixed insurance premium could easily be introduced without changing the qualitative results.²⁰ To keep the analysis simple and focused exclusively on the impact of new TLAC rules, I ignore FDIC cross-guarantee powers, but these powers as well as additional nonbank subsidiaries owned by the parent BHC could be incorporated into an expanded analysis.²¹

Prior to the imposition of TLAC, the parent BHC owns all the equity issued by bank A and B and sells its own equity shares to public investors to finance these assets. The parent BHC has not invested in any debt issued by its subsidiary banks, and the parent BHC has issued no debt of

¹⁹ Kupiec and Wallison (2015) provide additional discussion of this important issue.

²⁰ I could also introduce a fully fairly-priced deposit insurance premium. I exclude this case however because, when deposit insurance is fairly priced, banks do not earn a TBTF safety net subsidy. Since one goal of TLAC is to mitigate if not remove TBTF implicit funding subsidies, underpriced deposit insurance is most policy-relevant approach for modeling the issues analyzed in this paper.

²¹ This power, conveyed in the Financial Institutions Reform, Recovery and Enforcement Act of 1989 allows the FDIC to assess healthy banks that are under common control when a failing institution creates losses for the insurance fund. It does not allow the FDIC to assess bank insurance fund losses on nonbank subsidiaries under common control. For further discussion see Bradley and Jones (2008).

its own to outside investors. The market value of the equity issued by the parent holding company reflects the combined value of the deposit insurance subsidies [0.48] that accrue to bank A [0.43], and B [.05].

Table 2: State Contingent Values of Debt, Equity and Insurer Positions at Banks and the Parent BHC

state	state contingent price	Bank A assets value	Bank A insured debt	Bank A equity value	Bank A dep insurer cash flow	Bank B assets value	Bank B insured debt	Bank B equity value	Banks B dep insurer cash flow	BHC equity investment in subs	parent BHC equity
1	0.01	102.66	92	10.66	0	50.22	46	4.22	0	14.87	14.87
2	0.03	102.66	92	10.66	0	50.22	46	4.22	0	14.87	14.87
3	0.1	102.66	92	10.66	0	50.22	46	4.22	0	14.87	14.87
4	0.6	102.66	92	10.66	0	50.22	46	4.22	0	14.87	14.87
5	0.1	96	92	4.00	0	50.22	46	4.22	0	8.22	8.22
6	0.07	94	92	2.00	0	50.22	46	4.22	0	6.22	6.22
7	0.05	90	92	0.00	-2	50.22	46	4.22	0	4.22	4.22
8	0.025	85	92	0.00	-7	46	46	0	0	0	0
9	0.01	83	92	0.00	-9	44	46	0	-2	0	0
10	0.005	80	92	0.00	-12	40	46	0	-6	0	0
current market value		100	92	8.43	-0.43	50	46	4.05	-0.05	12.48	12.48

Notes: Valuations rounded to two decimal places.

5. Alternative Strategies for Satisfying a 16 Percent Minimum TLAC Requirement

5.1 *Recapitalization Possibilities in the Absence of TLAC*

Prior to the imposition of TLAC, bank A, bank B, and their parent BHC each satisfy the 8 percent minimum regulatory capital requirements. Table 3 shows the bank and the BHC regulatory capital ratios in each state of the economy prior to the imposition of a minimum TLAC requirement.

Bank A's asset quality deteriorates and its regulatory capital ratio begins to decline in state 5. In state 6, bank A is critically undercapitalized with a Tier 1 equity capital ratio just above 2 percent. In states 7 through 10, bank A's regulatory capital is completely exhausted. Bank B's assets are more resilient, and its regulatory capital ratio does not decline until state 8, but in state 8 through 10, its capital is totally exhausted. The parent BHC's regulatory capital position is buoyed by the capital position of bank B. The parent does not become critically undercapitalized until state 8, but in states 8, 9 and 10, the BHC's capital is also completely exhausted and the BHC has no remaining resources that could be used to recapitalize either bank subsidiary.

Table 3: Economic States in which Institutions are Critically-Undercapitalized

state	Bank A regulatory capital ratio	Bank B regulatory capital ratio	Parent BHC regulatory capital ratio
1	0.104	0.084	0.097
2	0.104	0.084	0.097
3	0.104	0.084	0.097
4	0.104	0.084	0.097
5	0.042	0.084	0.056
6	0.021	0.084	0.043
7	0	0.084	0.030
8	0	0	0
9	0	0	0
10	0	0	0

Notes: Grey shaded areas indicate economic states in which the institution's Tier 1 equity capital ratio falls below 3 percent . Regulatory capital ratios are rounded to three decimal places. In state 7, the parent BHC capital exceeds 3 before rounding.

In the analysis that follows, I impose a 16 percent TLAC requirement and consider alternative strategies that the BHC could use to meet the requirement.²² The parent BHC—the designated G-SIB resolution entity under the FDIC’s “single point of entry” OLA strategy—will be required to issue TLAC-compliant securities to raise total TLAC to at least 16 percent. In my stylized example, this new regulation will require the BHC to issue additional TLAC instruments that have a value of at least 8 percent of the BHC’s consolidated risk-weighted assets, or \$12 in new TLAC securities.

If the parent BHC raises \$12 in new funds, it must do something with these funds. The FSB’s proposed TLAC rule does not place any explicit restrictions on the use of TLAC funds.²³ The BHC has many options when it comes to investing \$12 of new parent company funds, but not all of these investment options will satisfy the FSB’s TLAC policy goals.

²² 16 percent is the minimum TLAC requirement mentioned in the FSB proposal. The analysis can be repeated using any assumed level for minimum TLAC.

²³ The TLAC and risk-based capital rules do place some constraints on the parent BHC’s investment strategies because any new risky asset purchases using TLAC funds will generate additional capital and TLAC requirements that must be satisfied.

One potential strategy is for the BHC to purchase \$12 of new assets and keep them on the parent company's balance sheet. If these assets have nonzero regulatory capital risk weights, the purchase will require the parent to raise additional capital in order to satisfy consolidated regulatory capital and TLAC regulations. However, if the parent buys assets with a 0 risk weight, these new assets will generate no additional capital or TLAC requirement.

Alternatively, the BHC could downstream the new TLAC funds into its bank subsidiaries who could then either purchase additional assets, choosing between positive and zero risk weight assets, retire outstanding debt, or employ some combination of these actions. Each of these strategies will satisfy the FSB's proposed minimum TLAC requirements, but the strategies will differ as to their impact on the banks' implicit deposit insurance subsidies and the resolution group's capacity to recapitalize the operating subsidiary banks should either of the banks fall below 3 percent Tier 1 equity recapitalization threshold.

5.2 Minimum TLAC Only at the "Parent Resolution Entity"

The FSB proposal requires TLAC at the parent company of resolution entities as well as TLAC at any important subsidiaries that are not part of a resolution entity. The proposal states, "A resolution entity should generally act as a source of loss absorbing capacity for its subsidiaries where those subsidiaries are not themselves resolution entities."²⁴ Other than requiring the parent of the resolution entity to have sufficient TLAC, the FSB proposal has no explicit internal TLAC requirements that apply within a resolution group. One exception is when the resolution entity has a subsidiary with material operations outside the home country jurisdiction, in which case internal TLAC for that subsidiary is appropriate.

The analysis in this section will show that minimum TLAC requirements that apply only to the parent of the resolution entity can be ineffective unless the government has the power to seize and redistribute the parent's resources regardless of the financial condition of the parent. Specifically, absent government power to intervene and seize and redistribute parent BHC assets: (i) there is no clear legal path to require TLAC at the parent resolution entity to be used to recapitalize failing operating subsidiaries; and (ii) minimum TLAC requirements will not reduce implicit safety net subsidies. Moreover, parent resolution entity TLAC requirements, absent

²⁴ Financial Stability Board (2014), p.7.

additional internal group TLAC requirements, may make it more difficult for the Secretary of the Treasury to invoke OLA.

5.2.1 TLAC Satisfied with Nonconvertible Debt Invested at Parent in Risk Free Assets.

Assume the parent BHC issues \$12 in TLAC debt securities that have no mandatory conversion feature. That is, the TLAC debt holders will become equity holders when they take position of the parent company in bankruptcy. Furthermore, assume that the parent invests the proceeds of the TLAC debt issue into risk free Treasury bonds booked on the parent's balance sheet. Treasury bonds have a 0 risk weight in regulatory capital calculations. The position of the parent and bank subsidiaries under this strategy are shown in Table 4.

Table 4: Minimum TLAC Requirement Satisfied with Parent BHC Debt Issue, 0 Risk-Weight BHC Assets, and without Mandatory TLAC Debt Conversion

state	BHC equity in subs	parent BHC Treasuries	BHC consolidated risk-weighted assets	BHC consolidated unweighted total assets	parent BHC equity	parent BHC TLAC securities	parent BHC total TLAC resources	parent BHC regulatory capital ratio without conv
1	14.87	12	152.87	164.87	14.87	12	26.87	0.097
2	14.87	12	152.87	164.87	14.87	12	26.87	0.097
3	14.87	12	152.87	164.87	14.87	12	26.87	0.097
4	14.87	12	152.87	164.87	14.87	12	26.87	0.097
5	8.22	12	146.22	158.22	8.22	12	20.22	0.056
6	6.22	12	144.22	156.22	6.22	12	18.22	0.043
7	4.22	12	140.22	152.22	4.22	12	16.22	0.030
8	0	12	131.00	143.00	0	12	12	0.000
9	0	12	127.00	139.00	0	12	12	0.000
10	0	12	120.00	132.00	0	12	12	0.000
current market value	12.48	12	150	162	12.48	12	24.48	

Notes: TLAC debt does not have mandatory conversion feature. Valuations are rounded to two decimal places.

This strategy, which fully satisfies FSB minimum TLAC requirements, has the same effect as pledging the Treasury securities to collateralize the parent's TLAC debt issue. The parent holding company cash flows in Table 4 show that the parent holding company will never default on its TLAC debt because the Treasury bond always provides the BHC with the resources its needs to pay off the parent's TLAC debt, even though the holding company will have 0 equity capital in economic states 8, 9, and 10. Under normal bankruptcy law, TLAC creditors could not, and would not, file a bankruptcy petition with the courts.

If the holding company can maintain its limited liability protection on equity investments in bank A and bank B—meaning that the parent company can successfully resist supervisory efforts to force it to inject additional resources into its failing bank subsidiaries—the holding company TLAC debt will be risk free. The parent BHC will never be in default or in danger of default on its TLAC debt.

A strict interpretation of Dodd-Frank OLA language suggests that, in the US, the parent BHC’s TLAC resources would not be available to recapitalize either of its critically undercapitalized subsidiary banks.²⁵ If OLA requires the parent to be “in danger of default,” this simple strategy defeats the FSB’s purpose for imposing minimum TLAC requirements. To satisfy the FSB’s recapitalization policy goal, the parent TLAC debt must have some mandatory conversion mechanism other than a creditor petition for bankruptcy.

5.2.2 TLAC Satisfied with Mandatory Convertible Debt Invested at Parent in Risk Free Assets.

Assume the parent BHC issues \$12 in mandatory convertible TLAC debt that automatically converts to equity when the BHC’s Tier 1 equity capital ratio falls below 3 percent. While the TLAC debt will convert to equity, I maintain the assumption that the parent holding company has limited liability protection on the equity invested in its bank subsidiaries. That is, I assume that the parent cannot be compelled to inject capital into a bank subsidiary to cover losses.²⁶

Table 5 illustrates the capital ratios under this strategy. TLAC debt conversion potentially changes the ownership shares of the parent cash flows among existing BHC shareholders and TLAC debt owners, but the total TLAC resources at the parent holding company are unaffected by the mandatory conversion feature of the debt. Debt is converted into equity when the parent Tier 1 capital ratio falls below 3 percent. This conversion raises the parent BHC’s regulatory capital ratio well above regulatory minimums, making it much more difficult to argue that the parent BHC is in danger of default. No new resources are injected into its bank subsidiaries.

²⁵ See Kupiec and Wallison (2015) for additional discussion.

²⁶ The legal responsibility of parent holding companies to inject new capital into a failing bank subsidiary is a contentious issue. The Federal Reserve Board Source of Strength doctrine has established that parent holding companies are legally required to inject additional capital into failing bank subsidiaries but the courts have imposed limits on this power. The Dodd-Frank Act codified the Federal Reserve Source of Strength Doctrine but did not clarify the limits of this power. Kupiec (2015) provides a detailed discussion of this issue.

If the pre-conversion BHC shareholders are not entitled to any claims on holding company cash flows after conversion, the cash flow for all three entities under this strategy is identical to the example in Table 4. The parent TLAC debt cash flows will be risk free. The state-contingent regulatory capital ratio including states with TLAC conversion for banks A and B will be unchanged, but the parent's regulatory capital ratio (the last column of Table 5) will improve after conversion.

Table 5: Regulatory Capital Ratio with Mandatory Conversion, TLAC at Parent BHC
Invested in 0 Risk-Weight Assets

state	Bank A regulatory capital ratio	Bank B regulatory capital ratio	Parent BHC regulatory capital ratio	parent BHC risk-weighted TLAC ratio	parent BHC TLAC leverage ratio	Parent BHC Regulatory capital ratio w/ conversion
1	0.104	0.084	0.097	0.176	0.163	0.097
2	0.104	0.084	0.097	0.176	0.163	0.097
3	0.104	0.084	0.097	0.176	0.163	0.097
4	0.104	0.084	0.097	0.176	0.163	0.097
5	0.042	0.084	0.056	0.138	0.128	0.056
6	0.021	0.084	0.043	0.126	0.117	0.043
7	0	0.084	0.030	0.116	0.107	0.030
8	0	0	0	0.092	0.084	0.092
9	0	0	0	0.094	0.086	0.094
10	0	0	0	0.100	0.091	0.100

Notes: Parent BHC TLAC converts to equity when parent BHC Tier 1 equity capital ratio falls below 3 percent. Regulatory capital ratios are rounded to three decimal places. Grey cells indicate states in which institution is critically undercapitalized.

Alternatively, if pre-conversion shareholders are entitled to some portion of parent BHC cash flow after the TLAC conversion, the parent BHC's regulatory capital ratio will be slightly diluted in good economic states. TLAC debt holders will require higher payments in full performance states if they are required to share cash flows with "old shareholders" in states when TLAC debt is converted. As long as the conversion terms are stated in the TLAC debt contract when the debt is issued, TLAC debt investors can incorporate this information into the price they initially pay for the issue.²⁷

²⁷ This cash flows can be constructed by imposing new cash contingent payouts after conversion for parent BHC and TLAC debt in Table 5 and solving for the TLAC debt interest that must be paid in full performance states to offset cash flow dilution after conversion.

In this example, no matter what the sharing arrangements between existing BHC shareholders and newly converted TLAC shares, TLAC conversion will improve the parent BHC's regulatory capital ratios. After conversion, the parent will appear to be much better capitalized. In the US, this will make it more difficult for a Secretary of the Treasury to argue that the parent holding company is in danger of default. While conversion improves the measured solvency of the BHC, the TLAC conversion itself does not automatically inject any new resources into the bank subsidiaries. TLAC conversion will not diminish the value of the groups' implicit safety net subsidy gained from mispriced deposit insurance unless there is also a legal duty for the parent BHC to inject new resources into its failing bank subsidiaries.

5.2.3 TLAC Satisfied by Noncumulative Preferred Invested at Parent BHC in Risk Free Assets

The minimum TLAC requirement can be satisfied using noncumulative preferred shares issued by the BHC. From the BHC's perspective, this solution has the drawback that preferred dividends are not deductible for corporate tax purposes, so this TLAC solution is probably the most expensive solution for BHC shareholders. Still, this solution may have some appeal.

Under US Basel III rules, noncumulative preferred shares also count as Tier 1 capital, so a TLAC issue of preferred shares would raise the BHC holding company regulatory capital ratio in all economic states even without conversion.²⁸ Without debt, the parent can never default or be in danger of default, and so OLA authority can never be used to confiscate parent BHC resources and redistribute them to recapitalize failing subsidiaries.

5.2.4 Discussion

The analysis in this section has shown that, in the absence of internal minimum TLAC requirements for subsidiaries within a resolution group, a BHC may fully comply with minimum TLAC requirements without creating any obligation for the parent BHC to use TLAC resources to recapitalize a failing subsidiary. Unless the pending failure of an important subsidiary empowers the financial regulator to force the parent to inject new resources into a distressed subsidiary, there is no guarantee that a minimum TLAC requirement at the parent level will keep failing subsidiaries open and operating.

²⁸ Under Basel III rules in the rest of the world, long-term (non-callable term greater than 5 years) convertible TLAC debt counts as Tier 1 capital and so this issue would arise with a TLAC debt issue in countries outside the US.

The Federal Reserve Board (FRB) may argue that its “source of strength doctrine” requires a parent holding company to provide unlimited financial support to its subsidiary banks, but a parent BHC would be on firm legal grounds disputing this claim. While the doctrine was given statutory recognition in §616 of the Dodd-Frank Act, courts have imposed limits on this power and the Dodd-Frank language does not overturn these limits.

Multiple court rulings have established that the FRB has only limited ability to require a parent BHCs to inject new funds to recapitalize a failing bank subsidiary. At present, the FRB has no legal power to require a BHC to recapitalize nonbank subsidiary.²⁹ Granting the FRB the discretionary powers to fully remove a parent BHC’s limited liability and corporate separateness protections by requiring parent companies to recapitalize any subsidiary regardless of loss would be a major change in US corporate law. The courts have not yet accepted such an interpretation and there is no language in the DFA that overturns the source of strength limits that have been set by judicial proceeding.

5.3 Internal Minimum TLAC Within Resolution Entities

In this section I assume that TLAC rules require minimum TLAC at each subsidiary in a resolution group as well as minimum TLAC at the parent BHC of the resolution entity. While each subsidiary could satisfy minimum TLAC rules by raising its own external TLAC debt, this solution would likely create change of control issues at subsidiaries when external TLAC debt converts.

TLAC conversion could potentially dilute existing shareholders to the point that the owners of the converted TLAC debt claims would own the majority interest and the parent BHC and the parent would no longer control or be able to consolidate the bank as a subsidiary on its accounts. The FSB TLAC proposal explicitly discourages the use of a large volume of subsidiary external TLAC convertible debt issuance to prevent subsidiary TLAC debt conversion from causing changes in shareholder control. The TLAC proposal requires that subsidiaries remain under the control of the parent BHC of the resolution group after conversion.

²⁹ The history of source of strength litigation is discussed in Kupiec (2015).

I will focus the analysis on strategies where external TLAC debt is issued by the parent BHC of the resolution entity and the funds are forwarded using internal TLAC-complaint claims to operating subsidiaries. These “back-to-back” TLAC issues are consistent with internal TLAC requirements in the FSB’s proposal.

I assume that each subsidiary must satisfy a minimum TLAC requirement identical to the requirement that applies to the parent BHC of the resolution group and that the parent BHC issues all external TLAC.³⁰ I analyze the implications of different methods of advancing TLAC complaint funds to subsidiaries as well as alternative approaches for employing these new TLAC funds in subsidiaries.

5.3.2 Internal TLAC Debt Invested in Risk Free Assets at Subsidiaries

In this section, I assume that the parent BHC issues TLAC complaint debt to the public and uses the entire proceeds to purchase, from each bank subsidiary, TLAC compliant debt. I assume that the bank subsidiaries use the proceeds from their TLAC debt to invest in Treasury [0 risk weight] securities. Table 6 illustrates the impact of a 16 percent external TLAC requirement with additional 16 percent internal TLAC requirements at all subsidiaries in a resolution entity.

The Treasury security investments made by the subsidiary banks provide each bank with additional cash flows in bad economic states. These additional cash flows reduce bank A and bank B’s need for insurance assistance to pay depositors. Consequently, the internal TLAC requirement reduces each bank’s implicit deposit insurance subsidy. The deposit insurance subsidy to bank A falls from 0.43 to 0.03. At bank B, it falls from 0.05, to 0.01.

The conversion of TLAC debt at the bank subsidiaries keeps each bank above the critically undercapitalized level in two additional economic states. With TLAC conversion, bank A remains above the 3 percent capital threshold in states 6 and 7 whereas without internal TLAC and its treasury investments, it was critically undercapitalized in these states. TLAC conversion boosts bank B’s regulatory capital ratio above the 3 percent capital threshold in states 8 and 9.

³⁰ The FSB’s TLAC proposal would allow the internal TLAC minimum requirement to be a fraction, possibly 70 percent, of the parent consolidated TLAC requirement.

Table 6: Internal TLAC Requirement of 16 Percent where Bank Subsidiaries Invest TLAC in 0 Risk-Weight Assets

state	Bank A	Bank A	Bank A	Bank A	Bank A	Bank A		Bank B	Bank B	Bank B	Bank B	Bank B	Bank B	Bank B	Bank B
	risky asset	total asset	insured	TLAC		reg cap	reg cap		risky asset	total asset	insured	TLAC	equity	reg cap	reg cap
	value	value	debt	debt	equity	ratio	w/ conv		value	value	debt	debt	equity	ratio	w/ conv
1	102.66	110.66	92	8.43	10.22	0.100	0.100	50.22	54.22	46	4.04	4.18	0.083	0.083	
2	102.66	110.66	92	8.43	10.22	0.100	0.100	50.22	54.22	46	4.04	4.18	0.083	0.083	
3	102.66	110.66	92	8.43	10.22	0.100	0.100	50.22	54.22	46	4.04	4.18	0.083	0.083	
4	102.66	110.66	92	8.43	10.22	0.100	0.100	50.22	54.22	46	4.04	4.18	0.083	0.083	
5	96	104	92	8.43	3.57	0.037	0.037	50.22	54.22	46	4.04	4.18	0.083	0.083	
6	94	102	92	8.43	1.57	0.017	0.106	50.22	54.22	46	4.04	4.18	0.083	0.083	
7	90	98	92	6	0	0	0.067	50.22	54.22	46	4.04	4.18	0.083	0.083	
8	85	93	92	1	0	0	0.012	46	50	46	4	0	0	0.087	
9	83	91	92	0	0	0	0	44	48	46	2	0	0	0.045	
10	80	88	92	0	0	0	0	40	44	46	0	0	0	0.000	
mkt value	100	108	92	8	8.03			50	54	46	0	4.01			

Notes: Valuations are rounded to two decimal places; regulatory capital ratios are rounded to three decimal places. Grey cells indicate states in which institution is critically undercapitalized.

Table 7: Parent BHC Cash Flow with Internal TLAC Requirement and Bank Subsidiaries Invest TLAC in 0 Risk-Weight Assets

state	parent BHC	parent	parent	parent	parent
	equity	BHC TLAC	BHC	BHC	BHC
	in subs	debt in subs	total assets	external TLAC	external equity
1	14.40	12.48	26.87	12.35	14.53
2	14.40	12.48	26.87	12.35	14.53
3	14.40	12.48	26.87	12.35	14.53
4	14.40	12.48	26.87	12.35	14.53
5	7.74	12.48	20.22	12.35	7.87
6	5.74	12.48	18.22	12.35	5.87
7	4.18	10.04	14.22	12.35	1.87
8	0	5	5	5	0
9	0	2	2	2	0
10	0	0	0	0	0
market value	12.04	12	24.04	12	12.04

Notes: Valuations are rounded to two decimal places.

Table 7 shows the parent BHC's cash flows under this TLAC strategy. Parent TLAC debt invested in the bank subsidiaries absorbs losses in states 7, 8 and 9 and is completely exhausted in state 10. The BHC's external TLAC debt absorbs losses in states 8 and 9 and is fully consumed by losses in state 10. Under this TLAC compliant strategy, the overall deposit insurance subsidy that accrues to parent BHC shareholders falls from 0.48, to 0.04.

5.3.3 Internal TLAC Down Streamed as Debt and Used to Retire Insured Subsidiary Debt

Table 8 illustrates the outcome of a 16 percent internal and external TLAC requirement when the BHC purchases the TLAC compliant debt of its subsidiaries and the bank subsidiaries use the proceeds from TLAC to replace insured deposits. The economic results of this strategy are identical to the strategy analyzed in Section 5.3.2 where the subsidiary banks use TLAC funds to purchase Treasury securities. Replacing insured deposit funding with TLAC debt issued to the parent BHC reduces the subsidiary banks' need for insurance assistance to pay depositors in bad economic states.

Table 8: Internal TLAC Requirement of 16 Percent and Bank Subsidiaries use TLAC to Retire Insured Deposits

state	Bank A risky asset value	Bank A insured debt	Bank A TLAC debt	Bank A equity	Bank A reg cap ratio	Bank B risky asset value	Bank B insured debt	Bank B TLAC debt	Bank B equity	Bank B reg cap ratio
1	102.66	84	8.43	10.22	0.100	50.22	42	4.04	4.18	0.083
2	102.66	84	8.43	10.22	0.100	50.22	42	4.04	4.18	0.083
3	102.66	84	8.43	10.22	0.100	50.22	42	4.04	4.18	0.083
4	102.66	84	8.43	10.22	0.100	50.22	42	4.04	4.18	0.083
5	96	84	8.43	3.57	0.037	50.22	42	4.04	4.18	0.083
6	94	84	8.43	1.57	0.017	50.22	42	4.04	4.18	0.083
7	90	84	6	0	0	50.22	42	4.04	4.18	0.083
8	85	84	1	0	0	46	42	4	0	0
9	83	84	0	0	0	44	42	2	0	0
10	80	84	0	0	0	40	42	0	0	0
mkt value	100	84	8	8.03		50	42	4	4.01	

Notes: Bank valuations are rounded two two decimal places; regulatory capital ratios rounded to three decimal places. Grey cells indicate states in which institution is critically undercapitalized.

The conversion of the TLAC debt keeps each institution above the critically undercapitalized threshold in two additional economic states. The reduction in insured deposit funding reduces the insurance subsidy in both banks, and the overall implicit deposit insurance subsidy that accrues to BHC shareholders falls from 0.48 to 0.04. From the perspective of the implicit deposit

insurance subsidy and parent BHC shareholder value, this strategy is equivalent to the strategy analyzed in Section 5.3.2.

5.3.4 Internal TLAC Down Streamed as Equity and Used to Retire Insured Subsidiary Debt

Next I consider the impact of a 16 percent internal and external TLAC requirement that is satisfied by the BHC purchasing additional equity in each bank subsidiary where the bank subsidiaries use the new funds to retire insured deposits. The deposit insurer and parent holding company cash flow outcomes will be identical if, alternatively, the subsidiary banks use the TLAC proceeds to purchase Treasury securities [0 risk-weight assets] rather than retire insured deposits. For brevity, I do not present a table for the second strategy.

The subsidiary bank and parent BHC shareholders state-contingent cash flows under this strategy are shown in table 9. The parent BHC shareholder and deposit insurer cash flows³¹ under this strategy are identical to those in in tables 7. Consequently, these alternative strategies for complying with the minimum TLAC rule are equivalent from the parent BHC shareholder perspective.

From the BHC shareholder and deposit insurer perspective, four TLAC compliant strategies are equivalent: (1) an internal TLAC requirement satisfied with debt where subsidiaries purchase risk free assets with the proceeds; (2) an internal TLAC requirement satisfied with debt where subsidiaries use the proceeds to replace insured deposits; (3) an internal TLAC requirement satisfied with equity where the proceeds are used to purchase risk free assets; and, (4) an internal TLAC requirement satisfied with equity where subsidiaries use the proceeds to replace insured deposits. Each of these strategies produces an identical pattern of cash flows and a corresponding reduction in the required deposit insurance assistance. Furthermore, each of these strategies will keep the subsidiary banks above the critically undercapitalized threshold in two additional economic states and reduce the implicit deposit insurance subsidies earned by parent BHC shareholders from 0.48 to 0.04.

³¹ To keep the table manageable in size, the deposit insurer cash flows are excluded from table 9.

Table 9: Internal TLAC Requirement Satisfied with Equity where Bank Subsidiaries Retire Insured Deposits

state	Bank A risky asset value	Bank A insured debt	Bank A TLAC debt	Bank A equity	Bank A reg cap ratio	Bank B risky asset value	Bank B insured debt	Bank B TLAC debt	Bank B equity	Bank B reg cap ratio	parent BHC equity in subs	parent BHC TLAC debt	parent BHC external equity
1	102.66	84	0	18.66	0.182	50.22	42	0	8.22	0.164	26.87	12.35	14.53
2	102.66	84	0	18.66	0.182	50.22	42	0	8.22	0.164	26.87	12.35	14.53
3	102.66	84	0	18.66	0.182	50.22	42	0	8.22	0.164	26.87	12.35	14.53
4	102.66	84	0	18.66	0.182	50.22	42	0	8.22	0.164	26.87	12.35	14.53
5	96	84	0	12.00	0.125	50.22	42	0	8.22	0.164	20.22	12.35	7.87
6	94	84	0	10.00	0.106	50.22	42	0	8.22	0.164	18.22	12.35	5.87
7	90	84	0	6	0.067	50.22	42	0	8.22	0.164	14.22	12.35	1.87
8	85	84	0	1	0.012	46	42	0	4	0.087	5	5	0
9	83	84	0	0	0	44	42	0	2	0.045	2	2	0
10	80	84	0	0	0	40	42	0	0	0	0	0	0
mkt value	100	84	8	16.03		50	42	4	4.01		24.04	12	12.04

Notes: Bank valuations are rounded two two decimal places; regulatory capital ratios rounded to three decimal places. Grey cells indicate states in which institution is critically undercapitalized.

5.3.5 *Internal TLAC Down Streamed as Debt to Retire Uninsured Subsidiary Debt*

In reality, many bank subsidiaries fund themselves with uninsured, unsecured external debt in addition to insured deposits. This external debt is issued directly to investors outside of the holding company group. In this section, I modify my stylized holding company model to include external debt issued by the subsidiary banks prior to the imposition of a TLAC requirement. I use this structure to analyze the economic implications of another possible outcome that might arise under a 16 percent internal and external TLAC requirement—internal TLAC might merely replace external subsidiary bank debt.

The pre-TLAC BHC structure and institution-specific cash flows are given table 10. Each institution satisfies an 8 percent regulatory capital requirement prior to the imposition TLAC. The individual bank assets are identical to those used in the prior examples. The only difference is that the banks are funded with fewer insured deposits which have been replaced with uninsured external bank debt.³² Because there are fewer insured deposits, the implicit deposit insurance subsidy prior to the imposition of TLAC is smaller (0.04) than in the earlier examples.

If a 16 percent minimum TLAC requirement is imposed on the parent BHC with a corresponding 16 percent internal TLAC requirement, the parent holding company will issue external TLAC complaint debt and downstream the funds to bank subsidiaries in the form of TLAC complaint security. In this example, I assume the purchase subsidiary TLAC debt.³³ The bank subsidiaries in turn must use the TLAC cash injection. In this section, I assume they use them to replace the subsidiary bank's external uninsured debt.

³² Bank A has 84 dollars of insured deposits instead of 92, as 8 dollars of insured deposits have been replaced with uninsured external debt. Bank B has 42 dollars of insured deposits instead of 46, as 4 dollars of insured deposits have been replaced with uninsured external debt.

³³ The form of the contract (debt, equity, or preferred shares) used to downstream the funds has no effect on the total economic value of the cash flows available to the parent BHC. However, the characteristics of the TLAC security used to satisfy the internal TLAC requirements will impact the regulatory capital ratios reported by the subsidiary banks. For example, if the required subsidiary TLAC was met by injecting additional capital into the subsidiary banks, subsidiary bank regulatory capital ratios would increase whereas if the TLAC was met with debt, the regulatory capital ratio would not be improved by internal TLAC. In reality, the form of the security used to satisfy internal TLAC regulations may also have implications for supervisors' ability to restrict cash flow to parent BHCs. For example, stress tests or other regulatory assessment tools might be used by supervisors to restrict bank dividend payments to parent BHCs whereas debt service payments on internal TLAC debt *could* be given higher priority. This issue is unsettled; there are no regulations or precedents that can be used to project how regulators might prioritize payments linked to internal TLAC securities.

Table 10: State Specific Values of Debt, Equity and Insurer Positions at Subsidiary Banks and the Parent BHC when Bank Subsidiaries Issue External Uninsured Debt

State	State contingent price	Bank A assets value	Bank A insured debt	Bank A external uninsured debt	Bank A equity value	Bank A dep insurer cash flow	Bank B assets value	Bank B external uninsured debt	Bank B uninsured debt	Bank B equity value	Banks B dep insurer cash flow	BHC equity in subs	Parent BHC equity
1	0.01	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	14.40
2	0.03	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	14.40
3	0.1	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	14.40
4	0.6	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	14.40
5	0.1	96	84	8.43	3.57	0	50.22	42	4.04	4.18	0	7.74	7.74
6	0.07	94	84	8.43	1.57	0	50.22	42	4.04	4.18	0	5.74	5.74
7	0.05	90	84	6	0.00	0	50.22	42	4.04	4.18	0	4.18	4.18
8	0.025	85	84	1	0.00	0	46	42	4	0	0	0	0.00
9	0.01	83	84	0	0.00	-1	44	42	2	0	0	0	0.00
10	0.005	80	84	0	0.00	-4	40	42	0	0	-2	0	0.00
current market value		100	84	8	8.03	-0.03	50	42	4	4.01	-0.01	12.04	12.04

Notes: Valuations are rounded to two decimal places.

Table 11: Internal TLAC Requirement used to Repace External Debt Issued by Subsidiary Banks

	Bank A					Bank B						Internal	Total	Parent	
	Bank A	Bank A	internal	Bank A	Bank A	Bank B	Bank B	internal	Bank B	Banks B	BHC	TLAC	Parent	External	Parent
	assets	insured	TLAC	equity	dep insurer	assets	insured	TLAC	equity	dep insurer	equity	Debt	BHC	TLAC	Parent
State	value	debt	debt	value	cash flow	value	debt	debt	value	cash flow	in subs	Payments	cash flow	Debt	BHC equity
1	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	12.48	26.87	12.35	14.53
2	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	12.48	26.87	12.35	14.53
3	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	12.48	26.87	12.35	14.53
4	102.66	84	8.43	10.22	0	50.22	42	4.04	4.18	0	14.40	12.48	26.87	12.35	14.53
5	96	84	8.43	3.57	0	50.22	42	4.04	4.18	0	7.74	12.48	20.22	12.35	7.87
6	94	84	8.43	1.57	0	50.22	42	4.04	4.18	0	5.74	12.48	18.22	12.35	5.87
7	90	84	6	0.00	0	50.22	42	4.04	4.18	0	4.18	10.04	14.22	12.35	1.87
8	85	84	1	0.00	0	46	42	4	0	0	0	5	5	5	0.00
9	83	84	0	0.00	-1	44	42	2	0	0	0	2	2	2	0.00
10	80	84	0	0.00	-4	40	42	0	0	-2	0	0	0	0	0.00
current mkt value	100	84	8	8.03	-0.03	50	42	4	4.01	-0.01	12.04	12	24.04	12	12.04

Notes: Valuations are rounded to two decimal places.

Table 11 shows the individual institution's state contingent cash flow values after the parent BHC issues external TLAC debt and lends the proceeds to its bank subsidiaries with TLAC complaint debt and the subsidiaries use the funds to replace external uninsured bank debt. Regardless of the form of internal securities (debt, preferred equity, or equity) used to downstream the TLAC resources, if the TLAC funds are used to replace the subsidiary banks' external debt, the imposition of TLAC will not change the subsidiary banks' state-contingent deposit insurance assistance payments. Consequently the TLAC rule will not change the implicit insurance subsidy that accrues to parent BHC shareholders.

Table 12 show the regulatory capital ratios without TLAC and with TLAC conversion. By converting external uninsured debt claim into TLAC claims, regulatory capital ratios post conversion are improved by the TLAC equity injection. This improvement, however, only creates the illusion that TLAC has mitigated the TBTF problem. This TLAC strategy does not improve the state-contingent loss position of the deposit insurer.

Table 12: Capital Ratios Before and after TLAC Conversion when Internal TLAC is Used to Replace the External Uninsured Debt of Bank Subsidiaries

Capital ratios prior to TLAC				Capital ratios with TLAC and conversion at 3 percent Tier 1 common equity		
State	Bank A reg capital ratio	Bank B reg capital ratio	Parent BHC reg cap ratio	Bank A reg capital ratio	Bank B reg capital ratio	Parent BHC reg cap ratio
1	0.100	0.083	0.094	0.100	0.083	0.094
2	0.100	0.083	0.094	0.100	0.083	0.094
3	0.100	0.083	0.094	0.100	0.083	0.094
4	0.100	0.083	0.094	0.100	0.083	0.094
5	0.037	0.083	0.053	0.037	0.083	0.094
6	0.017	0.083	0.040	0.106	0.083	0.094
7	0.000	0.083	0.030	0.067	0.083	0.108
8	0.000	0.000	0.000	0.012	0.087	0.039
9	0.000	0.000	0.000	0	0.045	0.016
10	0.000	0.000	0.000	0	0	0

Notes: Grey indicates the institution is critically undercapitalized .

5.3.5 Discussion

The analysis in this section has demonstrated that minimum TLAC requirements must include mandatory minimum internal TLAC for bank subsidiaries *as well as* restrictions on bank subsidiaries' use the new internal TLAC funds for TLAC regulations to satisfy the FSB's stated goals. In particular, new internal TLAC funds must be channeled into reducing a bank's insured liabilities or invested in risk free claims or they will not reduce the implicit safety subsidy enjoyed by parent G-SIBs shareholders or increase the resources available to recapitalize a failing bank subsidiary.

6. Conclusions

If minimum TLAC regulations are to achieve the FSB's stated goals, they must include minimum internal TLAC requirements on G-SIB operating subsidiaries. Without internal TLAC requirements, if parent holding companies retain limited liability protection, there is no assurance that operating subsidiaries will have access to supplemental resource injections that would enable them to remain open and operating should the subsidiary face financial distress or insolvency. In the US, Orderly Liquidation Authority may override limited liability protection for the holding company, but OLA is only a legal option under a restrictive set of conditions. Kupiec and Wallison (2015) highlight issue that may disqualify OLA as a resolution option should a G-SIB bank subsidiary require recapitalization. In order to ensure that parent BHC resources will be available to recapitalize G-SIB bank subsidiaries to keep them open and operating without invoking OLA, minimum TLAC regulations must require internal TLAC for bank subsidiaries.

Still, there are many strategies which a G-SIB can employ to meet a minimum TLAC requirement even if it includes internal TLAC for bank subsidiaries. My analysis shows that a number of strategies fulfill minimum TLAC requirements but (i) fail to reduce the G-SIB's implicit subsidy from mispriced government safety nets; and, (ii) fail to make additional resources available to recapitalize a failing subsidiary. Given the latitude provided in the FSB's TLAC proposal, it is reasonable to conjecture that G-SIBs will adopt strategies that satisfy regulations but impose the least cost on G-SIB shareholders [i.e., retain, as far as possible, their existing G-SIB implicit government subsidy].

If TLAC regulations are to satisfy the FSB's stated goals, they must also include restrictions on how subsidiaries use the new funds provided by internal TLAC security issues. Regulations must specify that the TLAC funds forwarded to bank subsidiaries can only be used to retire existing insured deposit funding or to purchase risk free assets. Subsidiary banks must be prohibited from using internal TLAC funds to retire external uninsured bank subsidiary debt.

The analysis also suggests a much more transparent way to meet TLAC objectives without imposing a TLAC rule: simply set a new higher minimum regulatory capital requirement for all bank subsidiaries whose operations are identified as critical for maintaining financial stability. By putting TLAC in the form of a higher regulatory capital requirement, it avoids the need to impose investment restrictions on new TLAC funds invested in the bank subsidiary.

A higher minimum regulatory capital requirement for the bank subsidiary is equivalent to a complex regulatory structure that imposes: (i) a lower bank regulatory capital requirement plus, (ii) a minimum parent BHC external TLAC requirement plus, (iii) a minimum internal TLAC requirement on bank subsidiaries and, (iv) investment restrictions on the use of internal TLAC funds by bank subsidiaries.

Increasing the regulatory capital requirement on critical bank subsidiaries is a more straightforward approach for reaching the FSB's TLAC objectives. The higher regulatory capital solution will of course be unappealing to bankers because it will reduce any implicit safety net subsidies they enjoy. The simplicity of the capital approach is also likely to be unappealing to regulators given their revealed preference for regulatory complexity.

To meet FSB goals, the regulatory capital requirement on critical bank subsidiaries should be set equal to the TLAC minimum, and G-SIB parent holding companies should be allowed to fund the new capital injection with TLAC-qualifying debt. In this way, the capital (and loss bearing) capacity of the critical bank subsidiary is transparent in all states of the economy without any complications associated with debt conversion. Moreover, allowing BHCs to borrow the necessary funds to meet internal TLAC requirements preserves the G-SIBs debt finance tax benefit as envisioned in the original FSB TLAC proposal. All the FSB's goals for TLAC can be achieved if the proposed TLAC regulation is replaced with a higher regulatory capital requirement for critical bank subsidiaries. There is no need for a new complex TLAC regulation.

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