

A resolvable bank

By

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A resolvable bank

Thomas F. Huertas*

Abstract

Making banks resolvable is a key component of the regulatory reform programme enacted in response to the crisis. A resolvable bank is one that is “safe to fail”: it can fail and be resolved without cost to the taxpayer and without significant disruption to the financial markets or the economy at large.

This paper designs such a bank. The design’s key feature is the separation of investor obligations from customer obligations at the operating bank. This is broadly achieved where the bank issues customer obligations, such as deposits and derivatives, and the parent issues investor obligations to third parties with the investment of the parent in the daughter bank serving as the transmission link for losses at the bank level to losses to investors at the parent level. This transmission of losses to the parent serves to recapitalise the bank-in-resolution. This in turn assures the solvency of the bank-in-resolution and provides the basis for the operating bank to obtain liquidity and continue customer operations. In sum, investors, not taxpayers, bear the cost of resolution and the bank continues to perform critical economic functions.

The design works not only for a bank in a single jurisdiction, but also for internationally active banking groups with branches and/or subsidiaries in foreign jurisdictions. Indeed, the design can form the basis for international cooperation among resolution authorities and central banks, so that they can establish “constructive certainty” as to the path they would follow, should a global systemically important bank need to be resolved.

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Much of the discussion on recovery and resolution focuses, quite understandably, on G-SIFIs in their current form. This article takes the opposite approach. It starts with a blank sheet of paper and designs a bank that will be resolvable, first for a bank in a single jurisdiction and then for a banking group with branches and/or subsidiaries in multiple jurisdictions.¹

Separation of investor obligations from customer obligations at the operating bank holds the key to resolvability. This is broadly achieved where the bank issues customer obligations, such as deposits and derivatives, and the parent issues investor obligations to third parties with the investment of the parent in the daughter bank serving as the transmission link for losses at the bank level to losses to investors at the parent level. This transmission of losses to the parent serves to recapitalise the bank-in-resolution. This assures the solvency of the bank-in-resolution and provides the basis for the bank to obtain liquidity. Together the recapitalisation and the liquidity provision should assure that the bank-in-resolution is able to continue its customer operations. Thus, resolution can occur without cost to the taxpayer and without significant disruption to the financial markets or the economy at large.

Standards for resolvability

A resolvable bank should be “safe to fail” (Huertas 2013). This calls for the bank and the resolution process to meet three conditions:

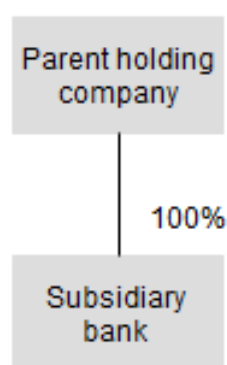
1. The bank can be readily recapitalised without recourse to taxpayer money;
2. The bank-in-resolution² can continue to conduct essential functions, such as executing payments for customers, ideally from the opening of business on the business day following the initiation of the resolution; and
3. The resolution process itself does not significantly disrupt financial markets or the economy at large.

¹ The paper takes a global perspective, as expressed in (FSB 2011c) and abstracts from the situation in specific jurisdictions.

² The term bank-in-resolution covers the period from the entry of the bank into resolution (usually on determination of the supervisor that the bank fails to meet threshold conditions) until the end of the restructuring period.

We start with the case where the parent holding company has a single bank subsidiary and both entities are incorporated/headquartered in the same jurisdiction (see Figure 1). The parent holding company is not a bank, and has no license to conduct banking activities directly. We further assume that the parent holding company owns 100% of the equity in its bank subsidiary.

Figure 1
A resolvable banking structure

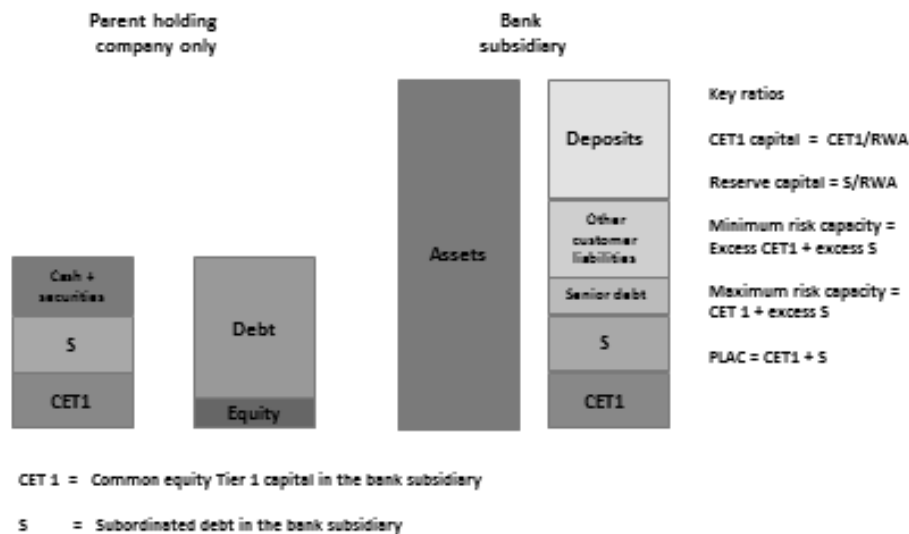


Parent holding company is an ordinary business corporation

The parent holding company's assets are restricted to investments in the common equity Tier 1 (CET1) capital and subordinated debt issued by the bank subsidiary to the parent plus cash and marketable securities (such as government bonds). The liabilities of the parent holding company consist common equity and debt (see Figure 2). Note that the debt of the parent is structurally subordinated to the obligations of the bank subsidiary.

At the bank level assets consist of loans, securities and other claims on customers such as derivatives. These assets are financed by CET1 capital (supplied by the parent holding company), subordinated debt or "reserve capital" (also supplied by the parent holding company), and third party obligations, namely senior debt, deposits and other customer obligations including derivatives (see Figure 2).

Figure 2
Balance sheet overview



At the subsidiary bank, we assume that the bank conducts a full range of permissible banking activities (including securities trading and derivatives) and that the bank has a standard balance sheet, with four significant exceptions:

1. The bank subsidiary may not invest in any obligation issued by the parent.
2. The subsidiary bank may not enter into contracts with cross-default clauses to the parent holding company. If the parent holding company defaults on its obligations to third-party investors, this shall not constitute an event of default for the subsidiary bank.
3. The obligations of the bank subsidiary to its parent holding company are subordinated to the bank's obligations to third parties. This includes any payments due to the parent company under service contracts.
4. The bank subsidiary shall be subject to requirement that it maintain "reserve capital" equivalent to the minimum CET 1 capital that the bank is required to have.³ To satisfy this requirement the bank subsidiary must issue subordinated debt to the parent holding company and the parent holding company must hold such debt. Such subordinated debt issued to the parent holding company is subject to bail-in as a matter of contract between the

³ The term 'reserve capital' used in this paper is a specific example of what the FSB (2013) calls "gone-concern loss-absorbing capital" (GLAC or LAC).

parent holding company and the bank subsidiary.⁴ This contract shall be fully disclosed to supervisors of the bank and the parent holding company as well as to the creditors of the bank and of the parent holding company. Under the terms of this contract,

- a. The subordinated debt shall mandatorily convert into common equity at par (a euro of sub debt shall convert into a euro of common equity) at the point at which the CET 1 ratio falls below the threshold level set in the contract in an amount necessary to restore the CET 1 ratio to the threshold level. Such threshold level shall be greater than or equal to the minimum required CET 1 ratio (including the capital conservation buffer). Should the bank subsidiary enter resolution, the resolution authority shall have the option to convert the entire amount of subordinated debt outstanding into common equity at the bank subsidiary. In market parlance, the debt issued by the subsidiary bank to the parent is a high-trigger coco, with mandatory conversion should the subsidiary bank reach the point of non-viability.
- b. The bank subsidiary shall be prohibited from paying interest and dividends or making distributions to the parent holding company unless the subordinated debt issued to and held by the parent (the 'reserve capital' ratio) exceeds the threshold level set in condition (a).
- c. Should the bank subsidiary not be permitted to pay interest in cash to the parent holding company under the terms of condition (b), it shall pay interest in kind (i.e. it shall issue additional subordinated debt to the holders of such debt on the same terms and conditions as the previous debt in an amount equal to the interest payable).

For such a bank, the following ratios will be relevant to investors and supervisors:

The reserve capital ratio: This equals the amount of "reserve" or "gone concern" capital at the bank level (relative to risk weighted assets) that would be available for immediate bail-in/conversion upon the entry of the bank into resolution. As shown in Table 1, this is the amount of subordinated debt outstanding divided by the bank's RWAs.

The bank's minimum risk capacity: This equals the amount of loss that the bank subsidiary could sustain whilst still retaining the ability to pay cash interest on its subordinated debt (meet condition [b]). This is the sum of (i) excess CET1 capital over the minimum required CET1 capital and (ii) excess of reserve capital over the threshold amount set in condition (a). In the example shown in Table 1, total CET1

⁴ Ideally, such subordinated debt would also be subject to bail-in on a statutory basis as well as a contractual basis. In any event, the subordinated debt will have to be subject to write down or conversion at the point of non-viability if it is to count as Tier 2 capital (as assumed here).

capital is 100, whilst the minimum required (7% of RWAs) is 70 so that the excess is 30. Total sub debt is 100, and the amount of sub debt required to meet condition (b) is 70, so that the excess reserve capital is 30. Adding the excess reserve capital (30) to the excess CET1 capital (30) yields the minimum risk capacity of 60.

The bank's maximum risk capacity: This equals the amount of loss that the bank could sustain whilst being able (after bail-in/conversion of the entire amount of subordinated debt into CET 1 capital) to meet minimum CET 1 capital requirements. This is the sum of (i) all the bank's CET 1 capital and (ii) excess of reserve capital over the amount of reserve capital necessary upon conversion to meet the bank subsidiary's minimum CET 1 capital requirement. In the example shown in Table 1 total CET1 capital is 100 and the excess reserve capital is 30, so that the maximum risk capacity is 130.

The bank's primary loss absorbing capacity (PLAC): This equals the sum of the bank's CET 1 capital and its reserve capital. It is the total amount of loss at the bank level that investors in the parent company (shareholders and creditors) would absorb before any loss had to be imposed on third-party creditors/counterparties/depositors at the bank. In the example shown in Table 1, total CET1 capital is 100 and total reserve capital is also 100, so that PLAC is 200.

Table 1
Key Ratios

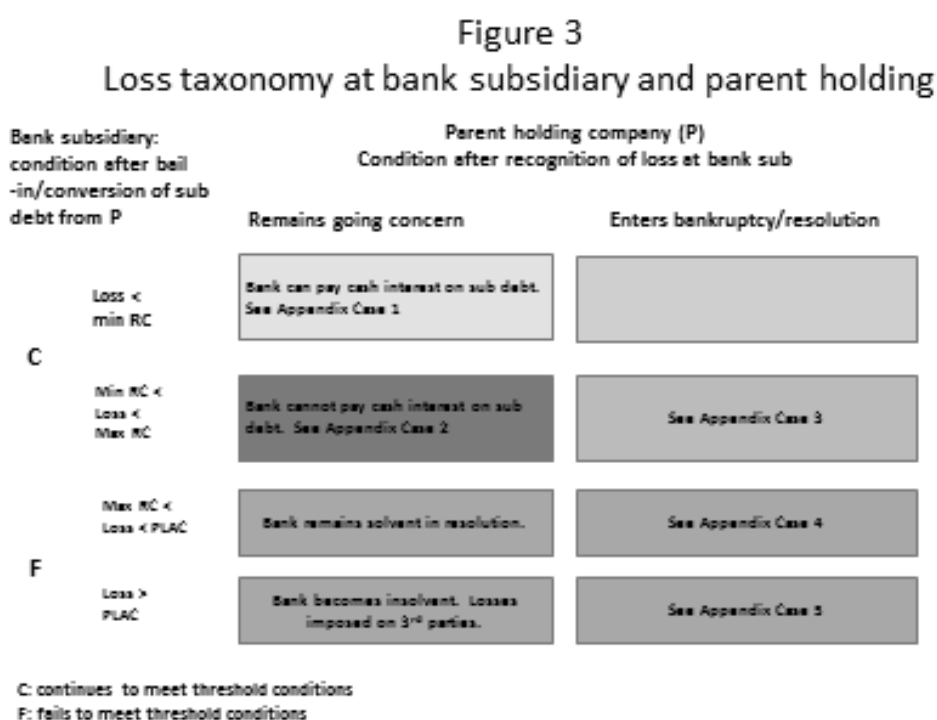
Reserve capital ratio		Minimum risk capacity		Maximum risk capacity		PLAC	
1. Sub debt	100	1. Min CET1 (7% of RWAs)	70	1. Total CET1	100	1. Total CET 1	100
2. RWAs	1000	2. Excess CET1	30				
Ratio (1/2)	10%	3. Min sub debt (7% of RWAs)	70	2. Excess sub debt	30	2. Total sub debt	100
		4. Excess sub debt	30				
		Min RC (2+4)	60	Max RC (1+2)	130	PLAC (1+2)	200

Summary bank balance sheet

Assets		Liabilities	
Loans	1000	Common equity	100
Investments	400	Subordinated debt	100
Derivatives	500	Senior debt (3 rd party)	100
Other assets	100	Customer obligations	1700
Total	2000	Total	2000
Risk weighted assets	1000		

Recovery and resolution at a resolvable bank

We now examine the impact of varying levels of loss at the bank subsidiary and trace through the implications for recovery and resolution at the bank subsidiary, taking into account the bail-in/conversion of the sub debt at the bank level into CET 1 capital that would occur upon the subsidiary bank failing to meet threshold conditions.⁵ Figure 3 provides an overview and the Appendix provides details.



At the bank level, the key dividing line is whether or not the bank the bail-in/conversion of reserve capital into CET1 capital enables the bank to again meet threshold conditions. The bank will do so if the loss is less than the bank's maximum risk capacity (CET1 capital plus excess reserve capital). If the loss is less than the bank's minimum risk capacity, the bank will not only meet threshold conditions, but also be able to pay cash interest on any subordinated debt that remains outstanding.

⁵ Alternatively, the bank itself may initiate the bail-in conversion at the bank level possibly upon demand by parent holding company creditors with longer remaining maturities who are time-subordinated to creditors with short remaining maturities. This would defer and possibly avoid resolution.

However, if the loss exceeds the bank's maximum risk capacity, the bank will fail to meet threshold conditions, even after the conversion of the entire amount of reserve capital into CET1 capital. And, if the loss exceeds the bank's PLAC, the parent holding company's investment in the bank subsidiary will have been entirely exhausted. At this point, the resolution authority of the bank would have to extend bail-in to third-party creditors of the bank in reverse order of priority (i.e. losses would be imposed on the next most junior class of creditor).⁶

At the parent holding company level, the key dividing line is whether the loss causes the parent holding to enter bankruptcy or resolution proceedings. The parent is more likely to do so, if the loss at the bank level is large enough to force the bank subsidiary to cut off cash payments to the parent, i.e. when the loss exceeds the bank's minimum risk capacity. Indeed, the parent holding company will almost certainly go bankrupt – almost regardless of its liability structure⁷ -- as soon as the cash flow from the bank subsidiary is cut off, unless the parent has alternative sources of cash.⁸

Note that the parent can enter bankruptcy or resolution proceedings even if the subsidiary bank continues – as a result of the bail-in/conversion of the bank's reserve capital into CET 1 capital -- to meet threshold conditions. Indeed, that threat is the whole point of the parent company super-structure and the attendant structural subordination of parent company debt to debt at the bank level. Such a super-structure effectively preserves the bank as a going concern for any loss less than the bank's maximum risk capacity and it forces parent company shareholders and creditors to absorb very significant amounts of first loss at the bank level (i.e. the total of the bank subsidiary's PLAC) before third party creditors at the bank level would be called upon to bear loss.

⁶ Ideally, the bank itself would be structured for resolution purposes much like a securitisation vehicle, with a waterfall approach to realisation of cash flows, so that losses would be absorbed in reverse order of preference. Equity would absorb first loss, then subordinated debt (reserve capital), followed by senior unsecured debt (assumed to be senior to reserve capital but junior to customer obligations), and only then customer obligations, such as derivatives and deposits. In resolution, the authority would progressively bail-in creditors of the bank until losses were absorbed. Although bail-in could extend all the way to the deposit layer, the structuring provides very significant loss absorption capacity before the deposit layer is reached. Should the deposit level be reached, losses to insured depositors would be compensated by the deposit guarantee scheme.

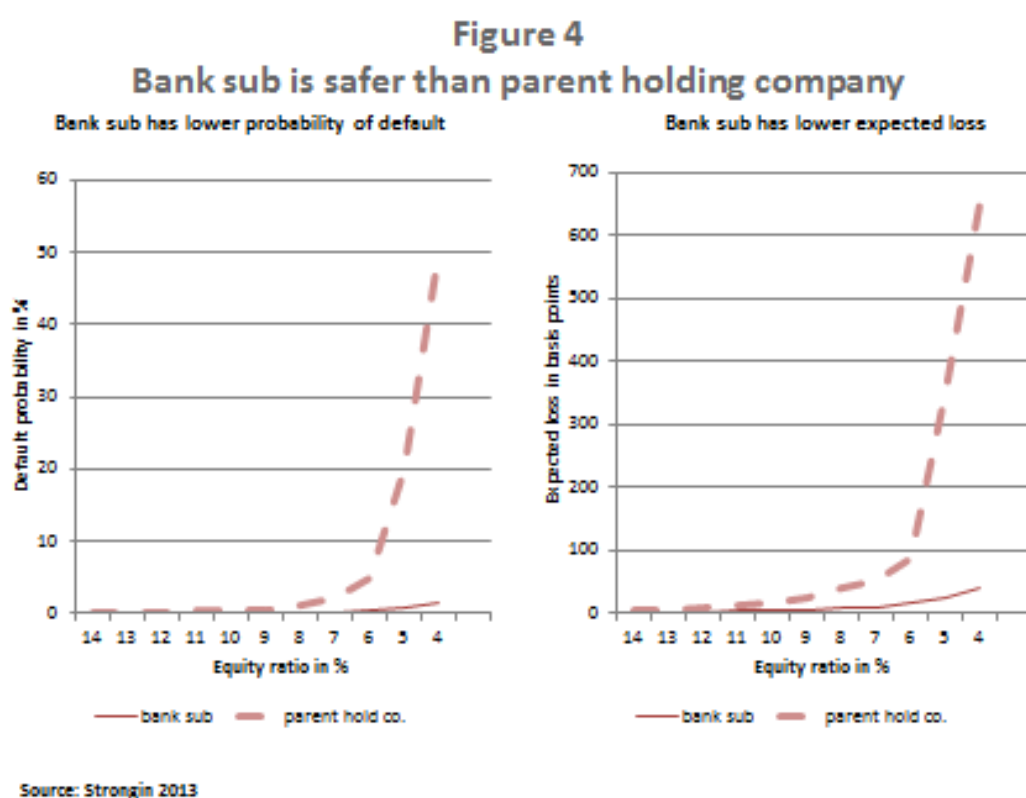
Such a structure would be enhanced, if there were a requirement that the subsidiary bank issue a certain amount of senior unsecured debt and if a limit were placed on the degree to which the subsidiary bank could encumber its assets (e.g. by issuing covered bonds). This would assure that there was effectively a mezzanine layer of investor obligations able to absorb loss before customer obligations would have to be bailed in.

⁷ Note that the parent can survive the elimination of cash flow from the subsidiary bank if it is 100% equity financed (at the parent only level). It is into exactly this 100% equity-financed state that the proposed bankruptcy proceeding would put the parent (see below).

⁸ Such alternative sources of cash might be marketable securities held directly at the parent level or the prior issuance of debt instruments to third party investors that would allow the parent to defer amortisation and interest payments and/or to pay interest in kind.

This taxonomy illustrates four key points. The first is that recapitalisation of the bank subsidiary is necessary – but insufficient on its own -- to assure continuity. At a minimum, the recapitalisation must be supplemented by provision of liquidity to the bank in resolution and by assurance that the bank-in-resolution can retain access to financial market infrastructures.

The bail-in/conversion of subordinated debt at the bank subsidiary creates the basis for such a provision of liquidity, for it assures that the “bank-in-resolution” remains solvent for any loss that is less than the PLAC of the bank. However, in addition to being solvent, the bank-in-resolution also has to have unencumbered assets that it can pledge as collateral to the liquidity provider. To prepare for such an eventuality, the bank subsidiary should prepare and maintain what might be called a “collateral budget” (Huertas 2013) that tracks the bank’s unencumbered assets so that they can be readily pledged, if required during resolution, to the central bank or private lenders.⁹



⁹ Proposed liquidity regulation (BCBS 2014) would in fact require banks to track unencumbered assets. The “collateral budget” would take this a step further and look at sources (including borrowing of collateral) and prospective uses (including possible demands for the bank to post additional collateral, if the bank were to be downgraded). Such an analysis would help the bank and the supervisor/resolution authority estimate the amount and type of collateral might be available to the bank-in resolution.

Secondly, the taxonomy illustrates that the obligations of the operating bank subsidiary such as deposits and senior debt are considerably safer than the debt of the parent holding company. They have a much lower probability of default. The income of the bank goes first to service the claims of third party creditors of the bank. Moreover, the rapid bail-in conversion of the bank's reserve capital into CET1 capital (if CET1 capital falls below the minimum) assures that deposits at the bank level enjoy what amounts to double protection (the bank's CET1 capital plus the bank's reserve capital or in total the amount of PLAC).

In contrast, the debt of the parent is structurally subordinated to the debt of the operating bank subsidiary. The parent receives cash flow from the subsidiary only if the subsidiary meets minimum requirements for CET1 and reserve capital. Consequently, the parent holding company has a much higher probability of default than the bank subsidiary and a much higher expected loss (see Figure 4). For high levels of PLAC, the credit rating of customer obligations (e.g. deposits, derivatives) at the bank level will approach the AAAA standard that customers ideally want from their banks (Merton and Perold).

Thirdly, the loss taxonomy demonstrates an obvious point: resolution is easier the lower the loss that the bank incurs. Initiating resolution promptly as soon as the bank reaches the point of non-viability/breaches threshold conditions rather than exercising forbearance limits the ability of the bank to build up losses and restricts the ability of the bank to gamble for resurrection.

Investors in parent company debt will be interested in assuring that the bank subsidiary not only avoids resolution, but continues to have the ability to pay interest and dividends to the parent holding company (for such payments account for a very significant portion and perhaps all of the parent company's cash flow). To be able to make such payments, the bank subsidiary must, according to condition (b) in the indenture pertaining to its subordinated debt, maintain reserve capital at a level sufficient upon bail-in or conversion to replenish fully the bank's CET 1 capital. Consequently, investors will demand, and parent holding companies will have an incentive to disclose, information about the bank subsidiary's ability to continue to meet this condition (Huertas 2012).¹⁰

Such disclosures will promote market discipline. Issuers with good stories to tell will wish to do so, for this may enable them to fund at lower rates. Issuers that have a poor story to tell will either pay more for funds and/or find it difficult to raise additional debt at the parent level. Finally, issuers that tell no story will likely be treated as if they had a poor story or even a bad story to tell.

The fourth point emerging from the taxonomy is less obvious, but no less important: what counts in a resolution scenario is the asset side of the parent holding

¹⁰ Banks may also be required to make more detailed disclosures (EDTF 2013) with respect to liquidity (BCBS 2013a), capital (BCBS 2011) and leverage (BCBS 2013b).

company's balance sheet, not in the first instance the capital structure of the parent holding company. If the parent holding company has endowed the bank subsidiary with reserve or back-up capital (sub debt), the bail-in or conversion of this debt into CET1 capital is the source of strength that the parent has supplied in advance to the bank and upon which the bank can immediately and unequivocally draw. Accordingly, the bank's total primary loss absorbing capacity (PLAC) is possibly the more relevant (than CET1 capital) to use as the nominator in calculating the leverage (capital/asset) ratio.

If the parent has additional assets, such as cash or marketable securities, these too can serve as an immediate source of strength, for they can be liquidated or contributed in kind in exchange for additional CET1 capital or subordinated debt in the bank subsidiary. Arguably, the bank subsidiary's reserve capital ratio could be extended to include such assets, provided the bank subsidiary had the option to put (sell) additional subordinated debt to the parent holding as and when the bank entered resolution or the amount of subordinated debt fell below the threshold level specified in condition (a).

Table 2
Bail-in at bank creates new equity at bank, not bail-in at parent

Parent holding company only					I Initial condition L loss (\$0) in bank sub		SS bail-in at bank SP bail-in at parent		
Assets	I	L	SS	SP	Liabilities	I	L	SS	SP
CET1 in Bank sub	100	50	100	100	Common equity	100	50	50	100
Sub debt in bank sub	100	100	50	50	Preferred stock	0	0	0	0
Cash	25	25	25	25	Sub debt	50	50	50	0
Marketable securities	25	25	25	25	Senior debt	100	100	100	100
Total	250	200	200	200	Total	250	200	200	200

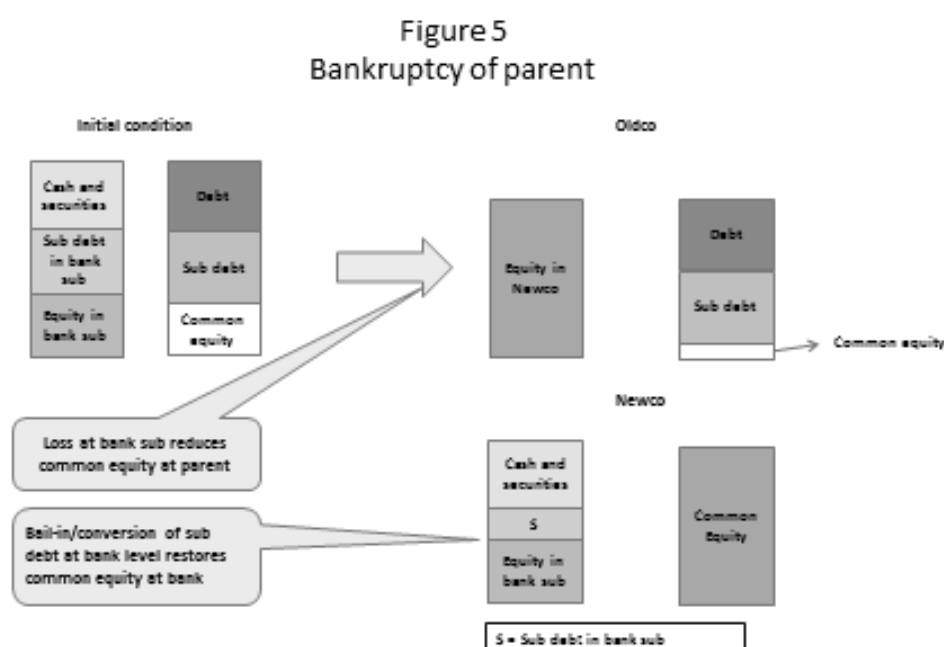
Bank subsidiary									
Assets	I	L	SS	SP	Liabilities	I	L	SS	SP
Loans	1000	950	950	950	CET 1	100	50	100	100
Investments	1000	1000	1000	1000	Sub debt	100	100	50	50
					Senior debt	100	100	100	100
					Other	800	800	800	800
					Deposits	900	900	900	900
Total	2000	1950	1950	1950	Total	2000	1950	1950	1950

In contrast, the liability side of the parent only balance sheet cannot act as an immediate source of strength to the subsidiary bank. In particular, writing off or converting debt of the parent holding company into equity in the parent holding company does nothing to strengthen the bank subsidiary (see Table 2). Such liability management creates no new assets and no new cash that can be injected into the bank subsidiary. To inject cash into the bank subsidiary and receive equity

in exchange, the parent must raise new capital from third-party investors. However, such capital-raising will generally take time (unless the parent holding company has pre-arranged a contingent underwriting commitment from third-party investors in advance) and will in any event depend on the condition of and the prospects for the bank subsidiary. Indeed, in the case outlined here, the profits of the bank subsidiary are the primary and perhaps the only source of cash flow to the parent company.

Bankruptcy of the parent

Losses at the bank subsidiary directly reduce the equity of the parent holding company. If the losses are great enough, the parent holding company may not be able to service its debt to third parties in a timely fashion or it may become balance sheet insolvent, so that the parent holding company has to enter some type of resolution, administration, insolvency or bankruptcy proceedings (hereinafter “resolution proceedings”). This may happen even if the bank subsidiary fulfils minimum capital and liquidity requirements (see for example Appendix: Case 3). The question is how such a resolution process at the parent should proceed and whether the proceeding at the parent level will adversely impact the ability of the bank subsidiary to continue operations.



The simple form of the parent – a pure holding company whose activities and assets are restricted to investments in the bank subsidiary plus holdings of cash and marketable securities – allows a very simple “pre-pack” restructuring process to be used (see Figure 5).¹¹ This should be incorporated into the parent holding company’s debt contracts and has two steps:

- The creation of a solvent entity Newco that becomes the immediate parent of the subsidiary bank. Initially at least Newco is 100% equity financed. This equity represents the collective claims of the creditors of Oldco on the assets of the failed holding company. Newco’s strong capital structure facilitates the ability of the bank subsidiary to meet regulatory requirements as well as satisfy concerns of creditors and supervisors of the bank subsidiary that the owner of the bank be in good financial condition. This lessens the danger of contagion, namely that the bankruptcy of the parent would infect the bank subsidiary.

To create Newco, the estate of the parent in restructuring (Oldco) contributes its assets (investments in and advances to the bank subsidiary plus any remaining cash and marketable securities) to Newco in exchange for equity in Newco.

- The introduction of a stay on payments to creditors and investors in Oldco. Oldco’s income is restricted to any dividends and distributions that Newco may make to Oldco over time, and Oldco is obligated to pass these payments onto creditors and investors according to strict priority.

There remain the questions of (i) who should exercise the decision rights over Newco (act as administrator) and therefore have decision rights over its bank subsidiary and (ii) what rights the creditors of Oldco should have during the restructuring process.

In general, resolution regimes envision that the resolution authority should exercise control over the bank whilst it is in resolution. This allows the resolution authority to take the decisions necessary to stabilise the bank and assure continuity of essential functions. Such decisions include without limitation the bail-in of reserve capital and the arrangement of any necessary liquidity facilities. Creditors of the parent holding company (Oldco), who are the shareholders in Newco, have very limited rights whilst the bank is in resolution. Instead, they are protected ex post by the “no creditor worse off” than under liquidation (NCWO) clause. Should the creditors in fact fare worse under resolution, they have a claim for compensation for the difference.¹²

¹¹ This is essentially the approach advanced by the Bipartisan Policy Committee (Bovenzi, Guynn, & Jackson, 2013) and the FDIC (2013) under its single point of entry approach.

¹² The resolution regime should spell out how such a claim would be calculated/established and who would be responsible for paying such a claim.

This allocation of rights is quite appropriate for situations where the bail-in of reserve capital fails to return the bank to compliance with threshold conditions. However, where the bail-in of reserve capital has restored the ability of the operating bank to meet threshold conditions, consideration might be given to granting the creditors of Oldco/shareholders of Newco¹³ certain rights with respect to major decisions, such as the sale of the business to a third party. These might include the right of first refusal (right to match the third-party's bid) and the right to bid in terms of debt forgiveness rather than required to raise fresh cash to support their bid. Oldco creditors could also receive the right to present a reorganisation plan for the parent holding company. Decisions taken by creditors would be by class, with the ability of a supermajority (e.g. 90%) to "cram down" its decision (force acceptance by the rest of the creditors in that class). Additionally, the creditors of a junior class could receive the right to buy out the claims of the next most immediately senior class at par plus accrued interest (see Table 3).

Table 3
Decision rights during resolution process

	Sub bank meets TC after bail-in		Sub bank fails TC after bail-in	
	Parent solvent	Parent bankrupt	Parent solvent	Parent bankrupt
a. Right to run subsidiary bank	Oldco equity	Resolution authority pending approval of (d)	Resolution authority	Resolution authority
b. Right of first refusal on sales	n.a.	Oldco creditors	Resolution authority	Resolution authority
c. Bid via debt forgiveness	n.a.	Oldco creditors	Resolution authority	Resolution authority
d. Right to present reorganisation plan	n.a.	Oldco creditors	Resolution authority	Resolution authority
e. Safeguard	n.a.	NCWO	NCWO	NCWO

Linking creditors' rights in a parent company bankruptcy to condition of the bank subsidiary after bail-in aligns the rights of the parent holding company creditors with the degree of strength that the parent has given the bank subsidiary up front. If the bail-in of reserve capital is sufficient to restore the bank subsidiary's ability to meet threshold conditions, the creditors of the parent holding should effectively have some

¹³ Note that the shareholders in Oldco (the original parent) have no rights in resolution (even though resolution may have been initiated at a point where the bank had positive net worth. Although shareholders may receive warrants in recognition of their economic interest, they have no voting or control rights in the resolution/restructuring process.

say over the disposition of the bank subsidiary. If, however, the bank subsidiary fails to meet threshold conditions even after the bail-in/conversion of the subordinated debt into CET 1 capital, the parent company has either elected or been forced to walk away from the bank subsidiary and the decision rights over Newco should fall entirely to the resolution authority for the bank.

Creditors would be better placed to guard their interests and exercise their rights, if they (or the banking group) were to set up a standing creditors' committee in advance of any declaration of bankruptcy by the parent holding company. Such a standing creditors committee would monitor the banking group's condition as well as the group's observance of any covenants contained in the debt that the parent holding company issues to investors. Such a standing creditors' committee would also be empowered to exercise on behalf of creditors any remedies foreseen under the parent holding company's debt contracts, including the right, in the event that the parent defaults, to put the parent (but only the parent) into bankruptcy proceedings.¹⁴

¹⁴ Consideration might also be given to implementing the bankruptcy solution outlined above in advance. In such a case, the immediate parent of the bank would be 100% equity financed. Thus, the parent would remain solvent (and remain outside of bankruptcy proceedings) as long as the loss at the bank subsidiary was less than the bank's PLAC. This minimises the risk of contagion from the parent to the bank subsidiary.

As the owner of the bank, the 100%-equity financed parent would be regulated and supervised as a bank (or financial) holding company. However, the owner of the owner need not be so regulated (and indeed is not in cases where the bank is owned by a natural person or a non-financial company). In particular, the 100%-equity financed parent could be owned by another company, the "grandparent". The grandparent could potentially be an ordinary business corporation subject to ordinary bankruptcy proceedings. It would not be subject to capital requirements. In effect, there would be a "trade":

- The addition of a reserve capital requirement at the bank subsidiary level plus a requirement that the bank's immediate parent be 100% equity financed; in exchange for:
- The removal of capital requirements at the grandparent level.

Under the structure we have outlined, the critical economic functions are exercised at the bank level. Consequently, it is the bank that needs to continue in operation, and the bank that needs to be able to meet its liabilities on an on-going basis. The parent assures that the bank can do this by acting as a source of strength up front via investments in the bank's common equity and subordinated debt (Tier II or reserve capital). By instituting a reserve or "gone concern" capital ratio, the regulator mandates the degree of back-up strength that the parent must provide. In effect, the parent has committed to what amounts to double liability.

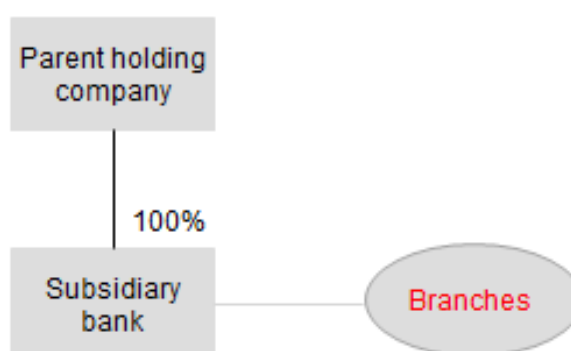
The 100%-equity finance requirement at the parent level assures that the parent remains solvent until the entire amount of the bank's PLAC is exhausted. This simplifies resolution of the bank subsidiary. As emphasised above, the ability of the parent holding company to act as a source of strength to the bank in resolution does not depend on the parent's liability structure. It depends on the asset side of the parent company's balance sheet.

Removing capital regulation at the "grandparent" (this would require legislation in jurisdictions such as the United States) also underlines that public concern is primarily at the bank level – with the safety of deposits, the operation of the payments system, etc. and secondarily at the parent level (the owner of the bank). Owners of the owner of a bank should be subject to market discipline and arguably the

Do branches make a bank unresolvable?

We now extend the analysis to the case where the bank subsidiary has branches. This analysis certainly yields the same result, where the branches are domestic, within the same jurisdiction as the parent, for the branch is an integral part of the bank as a whole.

Figure 6
Subsidiary bank with branches



Parent holding company is an ordinary business corporation

It also yields the same result where the bank has foreign branches, provided the foreign jurisdiction takes a unitary approach to resolution. In this case the foreign jurisdiction also regards the foreign branch as being an integral part of the bank as a whole and the foreign jurisdiction accepts that the home country will run the resolution process. In this case the foreign jurisdiction pools the assets of the foreign branch with the assets of the rest of the bank and the liabilities of the foreign branch are paid in accordance with the rules of the home country. Effectively the foreign jurisdiction recognises the lead of the home country supervisor and home country resolution authority and accepts the decisions of the home country authorities including without limitation the transfer of the subsidiary bank's license to

removal of capital requirements on "grandparents" would underline that such market discipline would indeed be applied to the investors in holding companies that were the owners of parents of banks.

the bridge holding company in the event that the parent holding company enters bankruptcy proceedings.¹⁵

Things become more complex, if the foreign jurisdiction takes a territorial approach to resolution, and/or the home country institutes domestic depositor preference. Although the motivation in each case is to preserve value for “their” creditors, the aggregate result is likely to be mutually assured fragmentation, possibly even liquidation, with significant costs to creditors as well as disruption to the financial markets and the economy at large.

Under the territorial approach to bank resolution, the foreign jurisdiction resolves the foreign branch separately from the rest of the bank. It uses the assets of the foreign branch to meet the obligations of the foreign branch to the creditors of that branch. Should any proceeds remain after the branch has fully met its obligations to its creditors, this excess would be remitted to the estate of the parent bank. Should a deficiency remain, the creditors of the foreign branch would have an unsecured claim on the estate of the parent bank. In effect, the territorial approach turns the liabilities of the foreign branch into what amounts to a covered bond, where the coverage constitutes the assets of the foreign branch. For this reason, the territorial approach is frequently reinforced by an asset maintenance requirement to assure that the foreign branch will have enough assets to cover its liabilities, if the bank enters resolution.

The territorial approach to resolution is essentially a liquidation approach. It is likely to result in significantly greater costs to creditors and to society as a whole. In particular, if the foreign jurisdiction begins to liquidate the foreign branch, the home country will for all practical purposes have to liquidate the parent bank as well. That will almost certainly disrupt financial markets and the economy at large. So the territorial approach amounts to something akin to a nuclear option.

Foreign authorities are particularly likely to want this option, if the home country grants preference in resolution to creditors of the domestic offices of the bank, either generally or within a certain class of liabilities (e.g. deposits).¹⁶ In such a case, the home country has the option to resolve the bank by transferring the obligations of the bank’s domestic offices to a bridge bank along with the bank’s best assets and leave the obligations of the bank’s foreign branches (along with the bank’s worst assets)

¹⁵ The home country resolution authority also needs to follow the unitary principle. This involves an acceptance that the liabilities of the foreign branches are on a par with those of the bank’s head office and domestic branches. Note that this commitment is easier to sustain, if the bank has an ample amount of reserve capital that can be bailed-in in the event the bank enters resolution. Without such reserve capital in place, the home country resolution authority may elect or be directed to prefer the obligations of the bank’s domestic branches over the bank’s foreign branches. This is particularly likely to be the case (and was the case in Iceland in 2008), if the unitary approach to resolution would result in severe losses to domestic depositors and/or punitive levies on domestic banks under the domestic deposit guarantee scheme.

¹⁶ See for example (PRA 2014).

behind in a rump bank. The bridge bank would continue in operation; the rump would not – it would be liquidated over time under the aegis of the home country resolution authority. As a result, creditors of the foreign branch would be likely to lose access to their funds for an extended period of time and to suffer severe losses as and when the estate of the rump bank made a distribution. The territorial approach of the foreign jurisdiction counteracts this by placing the liquidation of the foreign branch under the administration of the foreign resolution authority. And, the asset maintenance requirement effectively collateralizes the obligations of the foreign branch and therefore counteracts the preference that the home country seeks to give to creditors of the bank's domestic offices.

Ideally, countries would change their legislation to adopt the unitary approach, but one must realistically accept that this is unlikely to happen in the near future. However, what authorities can do is to commit that:

- the host country authorities will refrain from initiating the resolution of the branch in the host country without giving prior notice to the home country authority and giving the home country authority the opportunity to
 - cure the deficiency in the branch; or
 - initiate resolution of the bank as a whole.
- if the home country authorities do initiate resolution of the bank as a whole, the host country authorities will refrain from initiating the territorial approach provided the home country authorities act to stabilise the bank-in-resolution via the bail-in of investor capital and the provision of liquidity facilities to the bank-in-resolution.

Such a commitment offers the best hope of avoiding the “mutually assured fragmentation” that would result, if home and/or host authorities were to actually implement the territorial approach to resolving a globally systemically important bank.

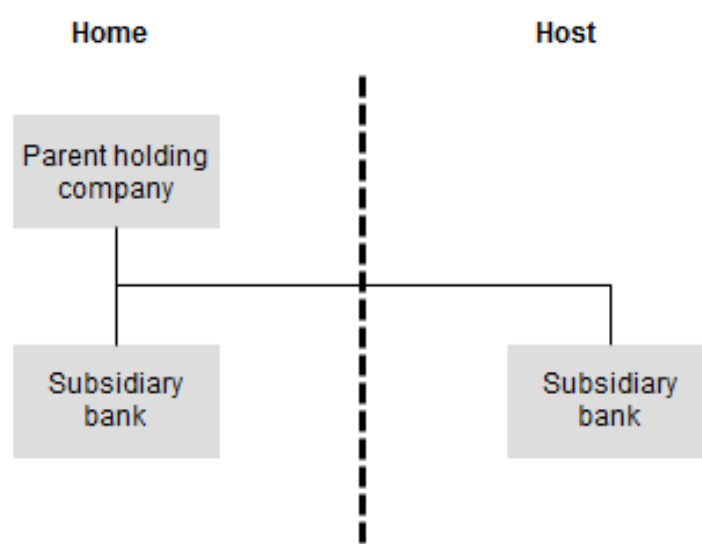
In sum, the existence of branches does not compromise the resolvable bank. In fact, the resolvable bank structure, with significant strength being injected by the parent up front, may provide the framework for jurisdictions to stand down from mutually assured fragmentation.

The overall approach to resolution: the case for constructive certainty

The issue of how to deal with branches of an individual bank is a subset of the much more general issue of home and host country resolution authorities should deal with a banking group that has many different subsidiaries in many different jurisdictions (see Figure 7). According to the FSB (2011) the relevant authorities should develop an approach for each G-SIB and document this in a cooperation agreement.

Two approaches are under discussion. Under the first, single point of entry (SPE) approach, resolution is a unified, global process under the aegis of the home country resolution authority. Under the SPE approach, the failure of one or more subsidiaries to meet threshold conditions triggers resolution of the group as a whole. The home country resolution authority takes control of the parent holding company and acts to recapitalise the failing bank(s). This stabilises the banks in the group and the group as a whole, serves as the basis for the provision of a liquidity facility (see below), so that “subsidiaries would remain open and continue operations”.¹⁷ The SPE approach therefore assures continuity and removes any need for the taxpayer to provide solvency support.

Figure 7
Banking group with domestic and foreign subsidiaries



Under the second, multiple point of entry (MPE) approach, subsidiaries are resolved separately within each jurisdiction. If a subsidiary bank fails to meet threshold conditions, the resolution authority for that subsidiary resolves it, whilst the rest of the group continues in operation. In effect, the MPE approach follows the principle of limited liability and allows the parent holding company to walk away from a failing subsidiary.

Who should make the choice between the two approaches, and when should the choice be made? Should the choice be left entirely to resolution authorities, and entirely until resolution is initiated? That would be consistent with a long-standing bias among policymakers, particularly central banks, in favour of “constructive

¹⁷ (FDIC 2013).

ambiguity”. But this doctrine refers to the creation of doubt as to whether there will or will not be a bail-out.

What is required is “constructive certainty” -- a method to assure that markets know that investors, not taxpayers, will bear the cost of bank failure. Although the authorities may prefer ambiguity, for it enables them to retain the option to decide based on the facts of a specific resolution case, more certainty as to the path the authorities would actually take is likely to enhance resolvability. Policymakers and firms need to map out in advance, how an institution is likely to be resolved, and take steps – such as the institution-specific cooperation agreements advocated by the FSB – to anchor these commitments into what might be called a presumptive path.¹⁸ Not only will such a presumptive path underline that holders of investor obligations will indeed be exposed to loss, but it will enable investors in such instruments to form a better idea of the losses that they could incur, if resolution were required. That in turn will facilitate the sale of such instruments to investors and facilitate resolvability.

Today, no such certainty exists as to the presumptive path the authorities might follow. A firm can express a preference for resolution under an SPE approach, but there is no assurance that resolution authorities will respect or implement this choice. Alternatively, a firm can express a preference for an MPE approach, but there is no assurance that the resolution authorities will respect or implement this choice. There is a gap between theory and reality. In theory, all subsidiaries are equal. In practice, they are not. The bank subsidiary headquartered in the same jurisdiction as the parent holding company is plainly, in the eyes of the home country regulator, *primes inter pares*. This poses challenges to both the SPE and MPE approaches. Confronting those challenges holds the key to creating constructive certainty.

Single point of entry

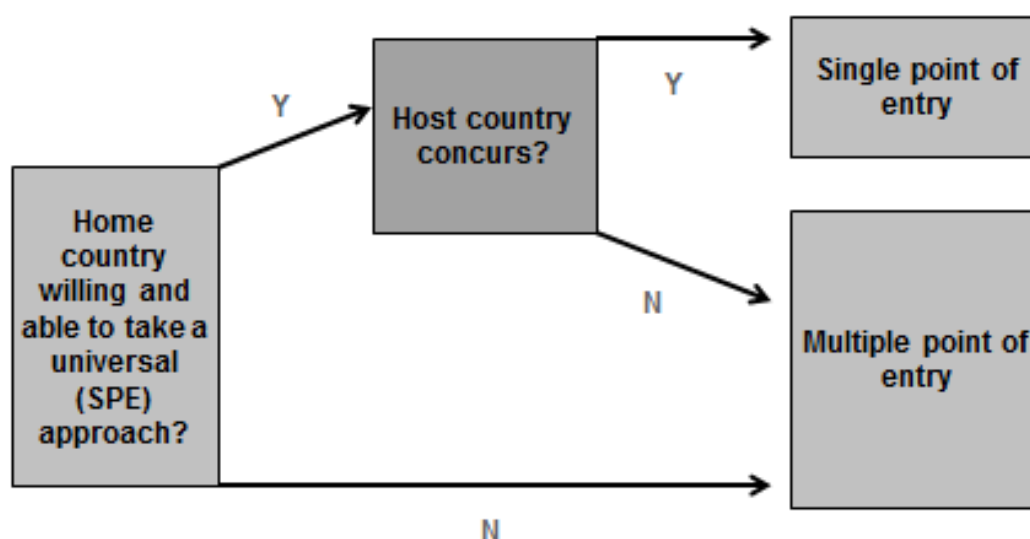
The SPE approach is viable, if and only if, (i) the home country resolution authority is authorised, able and willing to assume command of what amounts to a global resolution syndicate, and (ii) the host countries are willing to accept such leadership by the home country resolution authority (see Figure 8).

For the SPE approach to work, the home country resolution statute must authorise the home country resolution authority to take control of the parent holding company upon (i) the failure of the group to meet threshold conditions on a consolidated basis, or (ii) in the event that a subsidiary bank fails to meet threshold conditions and is placed into resolution. However, seizing the parent due to losses at the subsidiary raises significant issues with respect to property rights, so that the authorisation to take control of the holding company may be (i) subject to prior approval by the

¹⁸ There is also a timing consideration in favour of ex ante cooperation agreements. Waiting until resolution is initiated to start negotiation of international cooperation is impractical, and raises the likelihood that resolution will result either in a bail-out or in disorderly liquidation.

central bank, finance ministry and/or head of government, (ii) restricted to certain resolution techniques, such as temporary public ownership, that involve the use of taxpayer funds, and/or restricted to cases where the failing bank is headquartered in the home country.¹⁹

Figure 8
SPE approach requires concurrence of home and host



From the standpoint of the host country authorities responsible for the home country's subsidiary in the host jurisdiction, this situation is not entirely satisfactory, as there is no guarantee the home country resolution authority can actually assume the role intended for it and assigned to it under the SPE approach. Not only does the home country resolution authority have to pass a test before it can implement the SPE approach, but the grades for that test are generally based on the impact that the failure of the G-SIB would have on financial stability in the home country only. Hence, from the vantage point of the host country authorities, it is unclear that the home country resolution authorities could always implement the SPE path, particularly if the losses prompting the entry into resolution were concentrated in the group's foreign subsidiaries.

¹⁹ In the United States, for example, the FDIC may employ the Orderly Liquidation Authority (the basis for the SPE approach) if and only if it can demonstrate that resolution under normal bankruptcy procedures (as called for under Title I) would be harmful to financial stability in the United States and this decision has the prior approval of the FDIC itself (2/3 of its Board), the Board of Governors of the Federal Reserve System (with 2/3 majority) and the Secretary of the Treasury "in consultation with the President".

For this reason, it will be entirely rational for host countries to require – if they are to concur with the SPE approach -- some greater assurance that the home country will actually implement the SPE approach regardless of the source of the loss and that the SPE approach will actually result in the stabilisation of the subsidiary in the host country. Failing such reassurance, it is natural to expect host authorities to take measures to protect the creditors of the subsidiaries located within their jurisdiction.

Multiple point of entry

The central premise of the MPE approach is that resolution can take place at the level of each individual subsidiary according to the rules and procedures of that jurisdiction. For this to be the case, each of the subsidiaries should be self-sufficient, with separate funding and no inter-affiliate transactions. In particular, the bank subsidiaries should not invest in instruments issued by the parent holding company; should not hold cash balances with other entities within the group and should refrain from using affiliates for services, such as cash management and/or custody that create a credit exposure to the affiliate. To the extent that the subsidiary obtains services from other affiliates within the group, the services should be provided from a separately capitalised central services subsidiary (rather than from another bank within the group) that can continue to provide services to the subsidiary in resolution for a transition period.

Under the MPE approach there is a premise is that the holding company can walk away from a subsidiary in country A where losses have exhausted its equity investment in that subsidiary. But the terms on which this could occur need to be spelled out. First, is each bank subsidiary within an MPE group required to issue an amount of reserve capital equal to the minimum CET1 requirement? This is the same requirement as the bank subsidiary has under the SPE approach. The only difference is the ability of the MPE bank to sell such debt to third parties. Second, to the extent that a bank within an MPE group does sell reserve capital instruments to third parties, is there a robust resolution process by which the holders of such instruments as a class can take control of the subsidiary bank-in-resolution? In particular, will the subsidiary bank be resolved on the unitary principle or the territorial principle (if the latter, the resolution process will in all likelihood result in liquidation rather than continuity [see above]). Third, will all resolution authorities in the jurisdictions in which an MPE group does business confirm that they will not exercise what amounts to a “cross-resolution” provision, whereby country B takes the entry into resolution of the group’s subsidiary in country A to put the group’s subsidiary in country B into resolution and sell this subsidiary to a third party at a knock-down price?

Fourth, is the home country also willing to have the MPE process apply to the group’s domestic bank, so that the parent could keep healthy foreign subsidiaries whilst limiting its liability for losses at the domestic bank to the amount of its investment? It is doubtful that this would be the case, especially where the domestic

bank is systemically important in the domestic market and legislation in the home country allows the resolution authority to take control of the parent holding company upon entry of the domestic bank into resolution. Even though the owners of the parent holding may conclude that it would be economically rational for them to walk away from the domestic bank, the economics for the home resolution authority point in the direction of exercising its option to take over the holding company, employ a single point of entry approach, provide a continuity guarantee to host countries with respect to the group's subsidiaries in the host country, and use proceeds from the sale of the group's healthy foreign subsidiaries to reduce losses to creditors of the domestic subsidiary bank.

This brings us full circle. Although the SPE approach is likely to be most effective from a global standpoint in terms of preserving financial stability, political pressures in the home country (as well as the terms of the home country legislation) may lead to the impression that the home country wishes to have the option to implement an SPE approach when the losses have occurred at the domestic bank subsidiary, but reserve the right to resort to an MPE approach when the losses are at the foreign subsidiary. To defend against this possibility host countries will potentially want to ring fence their bank up front, demand significant infusions of capital up front and restrict inter-affiliate transactions.²⁰

Constructive certainty

Fragmentation is likely to be the end result. This will diminish efficiency without necessarily improving resolvability. What is needed is a presumptive path – call it constructive certainty -- that both home and host authorities can follow.

One possible approach is a hybrid between the SPE and MPE approaches. This would be driven by who holds the 'reserve capital' that all bank subsidiaries would be required to issue: the parent holding company or third-party investors. It is based on putting and keeping a certain amount of strength (either from the parent holding company or third-party investors) up front into the subsidiary banks within a group, rather than requiring the parent holding company to act as a source of strength after the subsidiary bank has failed.

For all groups designated as G-SIBs, this would entail the following steps:

²⁰ Recent policy proposals by the United States illustrate the differing perspectives of home and host. As home, the United States (FDIC 2013) advocates the SPE approach for US headquartered institutions and proposes that the FDIC act as a global resolution authority in a manner that will assure that subsidiaries "remain open and continue operations". As host, the United States (FRB 2014) has expressed doubt regarding the ability of foreign banking organisations (FBOs) "to provide support to all parts of its organization." For this reason, the Federal Reserve Board, as the principal host regulator of FBOs in the United States, has imposed a rule requiring FBOs to establish intermediate holding companies that meet US standards. In the view of the Federal Reserve, this "reduces the need for an FBO to contribute additional capital and liquidity to its U.S. operations during times of home country or other international stresses, thereby reducing the likelihood that a banking organization that comes under stress in multiple jurisdictions will be required to choose which of its operations to support."

1. each bank subsidiary within a group to issue and keep outstanding ‘reserve capital’ greater than or equal to the threshold level required for that bank under [3] or [4]. Such reserve capital shall be mandatorily convertible into CET1 capital in the bank immediately upon entry of the bank subsidiary into resolution.
2. The parent holding company may not pay dividends or make distributions unless all the group’s bank subsidiaries – both domestic and foreign -- meet both (i) their minimum CET1 capital requirement (7% of RWAs including the capital conservation buffer) and (ii) the ‘reserve capital requirement’ outlined in [3] or [4].
3. *Where the parent holding company does not own 100% of the reserve capital issued by the bank subsidiary,*
 - a. The threshold amount of reserve capital at the bank subsidiary shall be equal to the minimum required CET1 capital ratio (including capital conservation buffer) *plus* the SIFI surcharge. The terms and conditions for the conversion of such reserve capital into CET1 capital in the bank shall be established in advance, including the process by which the holders of such debt as a class could assume control of the subsidiary bank-in-resolution.²¹
 - b. The bank subsidiary shall fulfil what might be called an “independence requirement” so that the bank subsidiary could continue in operation, even if the parent holding company and/or a sister affiliate were to enter resolution. This independence requirement would include strict limits on inter-affiliate transactions. To the extent that the bank subsidiary obtained services from the rest of the group, contracts for such services should assure that such services could continue to be provided to the bank subsidiary for an extended transition period in the event that the bank subsidiary entered resolution, notwithstanding the possibility that such a subsidiary could cease to be part of the group.²²
4. *Where the parent holding company owns 100% of the reserve capital issued by the bank subsidiary,*

²¹ In particular, such a process shall make clear that the original parent holding company has no claim on the subsidiary bank-in-resolution, but mandate that the original parent holding company provide a warranty and indemnity to the restructured bank-in-resolution for liabilities relating to misconduct at the subsidiary bank-in-resolution prior to the entry of the subsidiary bank into resolution.

²² To fulfil such an independence requirement the banking group may find it advantageous to form a separately capitalised services subsidiary (OpCo) that is bankruptcy remote from the entry of either the bank subsidiary or the parent holding company/sister affiliate. This would assure continuity of services to the subsidiary bank, even if the parent holding company or a sister affiliate entered resolution.

- a. The threshold amount of reserve capital at the bank subsidiary shall be equal to the minimum required CET1 capital ratio (i.e. 7%, including capital conservation buffer). The bank subsidiary shall be prohibited from paying interest and dividends or making distributions to the parent holding company unless the subordinated debt issued to and held by the parent (the 'reserve capital' ratio) exceeds the threshold amount. Should the bank subsidiary not be permitted to pay interest in cash to the parent holding, it shall pay interest in kind (i.e. it shall issue additional subordinated debt to the parent on the same terms and conditions as the previous debt in an amount equal to the interest payable).
- b. Should such PIK payments be insufficient to restore the reserve capital to the threshold 7% level, the subsidiary bank shall have the right to sell additional reserve capital to the parent holding company and the parent holding company shall have the obligation to subscribe to such capital. To help assure that the parent holding can meet such commitments, the parent holding shall maintain a reserve of cash and marketable securities at the parent level equal to the SIFI surcharge for the group as a whole on a consolidated basis.

Together, these measures would assure that each of the group's bank subsidiaries – domestic or foreign – could be recapitalised in the event that the subsidiary in question failed to meet threshold conditions. Moreover, the measures go a long way to establishing a presumptive path for resolution. Finally, the measures should help assure host country authorities that the subsidiary in their country could be resolved without recourse to their taxpayer and without significant disruption to their economy.

The provision of liquidity to the bank in resolution

As outlined above for individual banks, recapitalisation is necessary but insufficient to stabilise the bank-in-resolution. In addition to fresh capital, the bank-in-resolution will need access to liquidity. This will be especially true for G-SIBs. If a G-SIB were to enter resolution, it would in all likelihood require very significant amounts of liquidity, starting immediately upon the opening of business in Asia.

The recapitalisation of the subsidiary banks via the conversion of reserve capital into CET1 capital should enable the bank-in-resolution to remain solvent and therefore to fulfil the minimum eligibility requirement to access central bank liquidity facilities against the provision of collateral. For subsidiaries where third parties have supplied the bank's 'reserve capital', the liquidity facility to that subsidiary would be based solely on that subsidiary's collateral as pledged to that bank's resolution authority/central bank as lender. In making this loan, the local resolution authority/central bank would act as principal and keep the home country (group) resolution authority/central bank informed that it had made the loan. Should the

subsidiary bank fail to repay the credit and the collateral prove insufficient to extinguish the bank's obligations to the liquidity provider, the lender would have recourse against that subsidiary only and no claim on either the parent holding company or other subsidiaries within the group.

For the subsidiaries whose 'reserve capital' is held by the parent, it would potentially be advantageous for the home country resolution authority/central bank to arrange a global liquidity facility for the group as a whole. This would effectively allow collateral to be pooled across the group and funds to flow to the point at which they were most needed within the group. In practical terms, the parent holding company would take a fixed and floating charge over the parent holding company's assets as well as over any unencumbered assets that the subsidiary might currently have or obtain in the future. To the extent that local resolution authorities/central banks figured in such a facility, it would be as agents of the home resolution authority/central bank.

Summary assessment

In sum, resolving a G-SIB is a complex, multi-faceted task. But it is a do-able task, on which banks and the authorities have already made much progress. What remains to be done are above all four things:

- Complete the reserve capital/bail-in regime so that banks can be readily recapitalised;
- Complete arrangements for provision of liquidity to the bank in resolution;
- Assure that resolution is not derailed either by derivatives counterparties or financial market infrastructures; and
- Conclude cooperation agreements among the G-SIB's supervisors and resolution authorities that create 'constructive certainty' as to how the G-SIB would be resolved.

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Appendix

Case studies

To illustrate points made in the text we take the case of a simple bank with a parent holding company and examine the effect of various loss levels on the bank subsidiary and the parent holding company. Table A1 provides a summary of the initial balance sheets for the parent holding company and its bank subsidiary.

Table A1 Parent company only and bank subsidiary: initial balance sheets			
Parent holding company only			
Assets		Liabilities	
Common equity in bank sub	100	Common equity	100
Subordinated debt in bank sub	100	Senior debt	150
Cash	25		
Marketable securities	25		
Total	250	Total	250
Bank subsidiary		Risk weighted assets	1000
		CET1 capital ratio (Basel III)	10%
		Reserve capital ratio	10%
		Minimum risk capacity	60
		Maximum risk capacity	130
		PLAC	200
Assets		Liabilities	
Loans	1000	Common equity	100
Investments	400	Subordinated debt	100
Derivatives	500	Senior debt (3 rd party)	100
Other assets	100	Derivatives and other customer obligations	800
		Deposits	900
Total	2000	Total	2000

At the bank level risk weighted assets (RWA) are 1000, and the minimum CET1 capital requirement (including the capital conservation buffer) is 70 (7% of RWAs). Actual CET1 capital is 100, so the excess CET1 capital over the minimum is 30. Reserve capital (subordinated debt) is also 100, and the excess reserve capital is also 30. Accordingly the minimum risk capacity (excess CET1 capital plus excess reserve capital) is 60. The bank could lose this amount and still be able to pay cash interest on its subordinated debt. The maximum risk capacity (entire CET 1 capital plus excess reserve capital) is 130. The bank could lose this amount and still – thanks to the bail-in conversion of the reserve capital into CET1 capital – meet the minimum 7% requirement for CET1 capital.

Case 1: Loss within minimum risk capacity

We start with a loss (50) at the bank level that remains within the bank's minimum risk capacity but is large enough to cause the bank to breach its minimum CET1 capital requirement. In this case the bank subsidiary would bail-in/convert the sub

debt into CET1 capital in an amount (25) sufficient to restore the bank's CET1 capital ratio to the minimum required level. As a result of this conversion common equity at the bank level rises from 50 to 75 and sub debt falls from 100 to 75 (see Table A2). As the bank's reserve capital remains above the 7% threshold, it can continue to pay cash interest on its subordinated debt to the parent holding company as well as pay dividends and make distributions.

Table A2
Effect of loss (L) within minimum risk capacity
and bail-in at bank (BB)

Parent holding company only

Assets	I	L	BB	Liabilities	I	L	BB
CET1 capital in bank sub	100	60	75	Common equity	100	60	60
Sub debt in bank sub	100	100	75	Senior debt	160	160	160
Cash	25	25	25				
Marketable securities	25	25	25				
Total	250	200	200	Total	260	200	200

Bank subsidiary

Assets	I	L	BB	Liabilities	I	L	BB
Loans	1000	850	850	CET1 capital	100	60	75
Investments	400	400	400	Subordinated debt	100	100	75
Derivatives	600	600	600	Senior debt (3 rd party)	100	100	100
Other assets	100	100	100	Derivatives and other customer obligations	800	800	800
				Deposits	800	800	800
Total	2000	1850	1850	Total	2000	1850	1850

At the parent level, the loss at the bank level reduces the parent's common equity by an equal amount to 50. The bail-in conversion of sub debt to equity at the bank level has no impact on equity at the parent level: this is merely a reclassification of assets. The bail-in at the bank level creates no new cash, no new assets and no new equity at the parent level. Consequently leverage at the parent only level rises and the risk of debt issued by the parent to third party investors rises as well. However, the parent remains balance sheet solvent and need not file for bankruptcy.

As the above example illustrates, the availability of back-up capital at the bank subsidiary level facilitates recovery. The conversion of the parent's holdings of subordinated debt in the bank into common equity in the bank can occur very rapidly indeed and give the bank the breathing space it requires.

Case 2: Loss exceeding minimum risk capacity but not maximum risk capacity

We now examine a somewhat larger loss (75) that exceeds the bank's minimum risk capacity (60) but does not exceed its maximum risk capacity (130). As the loss (75) causes the bank to breach its minimum capital requirement, the resolution authority would order the bail-in/conversion of an amount (50) sufficient to restore the bank's CET1 ratio to its minimum level. This leaves the bank's reserve capital ratio at 5%, still positive, but insufficient to meet the ratio of 7% required under condition (b) of the subordinated debt indenture (see Table A3).

As a result the bank subsidiary can no longer pay interest in cash on the subordinated debt to the parent holding company. Nor can the bank subsidiary pay dividends or make distributions to the parent holding company. This reduces the cash flow from the bank subsidiary to the parent holding company and raises the probability that the parent holding company will not be able to service its debt to third party investors.

Table A3
Effect of loss (L) within maximum but above minimum risk capacity and bail-in at bank (BB)

Parent holding company only

Assets	I	L	BB	Liabilities	I	L	BB
CET1 capital in bank sub	100	25	75	Common equity	100	25	25
Sub debt in bank sub	100	100	60	Senior debt	160	160	160
Cash	25	25	25				
Marketable securities	25	25	25				
Total	250	175	175	Total	260	175	175

Bank subsidiary

Assets	I	L	BB	Liabilities	I	L	BB
Loans	1000	825	825	CET1 capital	100	25	75
Investments	400	400	400	Subordinated debt	100	100	60
Derivatives	600	600	600	Senior debt (3 rd party)	100	100	100
Other assets	100	100	100	Derivatives and other customer obligations	800	800	800
				Deposits	900	900	900
Total	2000	1925	1925	Total	2000	1925	1925

At the parent level, the loss of 75 at the bank level reduces equity at the parent level to 25. As in case 1, the bail-in at the subsidiary bank level does not affect equity at the parent level. Risk of parent company debt to third parties will be much higher than in case 1 as a result of (i) higher leverage and (ii) restrictions on cash flow from the bank subsidiary to the parent.

In order to unlock the ability of the bank subsidiary to pay the parent holding company interest in cash on its subordinated debt, the bank subsidiary would have

to issue (and the parent holding company would have to acquire) additional subordinated debt sufficient to meet the terms of condition (B). Under the PIK provision (condition [C]) in the subordinated debt contract, the bank subsidiary would meet this requirement over time, as the bank issued additional subordinated debt to the parent in lieu of cash as interest payments came due. However, relying on the PIK provision alone to cure the problem is likely to constrain the cash flow of the parent holding company for some time and to raise the probability that the parent holding company could default on its obligations to third party investors.

Hence, the parent holding company may find it advantageous to make a contribution in kind (CIK) or cash and/or marketable securities to its bank subsidiary in exchange for additional subordinated debt from the bank subsidiary. This reduces and may possibly eliminate the waiting time prior to unlocking the bank subsidiary's ability to pay cash interest that the parent holding company would incur, if it relied solely on the PIK provision to cure the problem.

Table A4
Drawing down cash reserves at parent can restore cash flow from bank to parent

Parent holding company only

Assets	I	BB	CIK	Liabilities	I	BB	CIK
CET1 capital in bank sub	100	75	75	Common equity	100	25	25
Sub debt in bank sub	100	60	75	Senior debt	160	160	160
Cash	25	25	0				
Marketable securities	25	25	25				
Total	250	175	175	Total	260	175	175

Bank subsidiary

Assets	I	BB	CIK	Liabilities	I	BB	CIK
Loans	1000	925	925	CET1 capital	100	75	75
Investments	400	400	400	Subordinated debt	100	60	75
Derivatives	600	600	600	Senior debt (3 rd party)	100	100	100
Other assets	100	100	100	Derivatives and other customer obligations	800	800	800
Cash			25	Deposits	900	900	900
Total	2000	1925	1950	Total	2000	1925	1950

To illustrate, let's return to the example. In order to be able to resume paying cash interest on its subordinated debt (and to make dividends and distributions) the subordinated debt at the bank level must rise from 50 to 75. Even if interest on the subordinated debt is 6% pa, it would take approximately seven years for the PIK provision alone to restore the ability of the bank subsidiary to make cash payments to the parent holding company. During that period the cash flow of the parent holding company would be limited to earnings on its holdings of cash and marketable securities. If however the parent holding company uses the 25 in cash to make a

contribution in kind to the bank subsidiary in exchange for an equivalent amount of subordinated debt from the bank subsidiary, the bank subsidiary would again be able to meet condition (b) and again able to pay interest in cash to the parent on the entire amount of subordinated debt (see Table A4). This in turn helps the parent holding company service its debt.

Note that the ability to unlock the cash flow from the bank subsidiary to the parent holding company depends primarily on the availability of investable reserves on the asset side of the parent-only balance sheet, not on the capital structure of the parent. From the standpoint of the bank subsidiary, it is the parent's investments that enable it to act as an immediate source of strength to the bank subsidiary over and above the up-front strength with which the parent has endowed the bank sub via the parent's investment in the bank's common equity and subordinated debt.

Case 3: loss within maximum risk capacity but making parent balance sheet insolvent

We now examine an even larger loss (100) at the bank level. This is within the bank's maximum risk capacity (130) but is sufficiently large to cause the parent holding company to become balance sheet insolvent (see Table A5). This forces the parent holding company to trigger the "pre-pack" bankruptcy proceedings outlined in the text (see Figure 5) and to form Newco as the owner of the bank subsidiary.

Table A5
Effect of loss (L) sufficient to make parent insolvent

Parent holding company only

Assets	I	L	BB	Liabilities	I	L	BB
CET1 capital in bank sub	100	0	75	Common equity	100	0	0
Sub debt in bank sub	100	100	25	Senior debt	150	150	150
Cash	25	25	25				
Marketable securities	25	25	25				
Total	250	150	150	Total	250	150	150

Bank subsidiary

Assets	I	L	BB	Liabilities	I	L	BB
Loans	1000	900	900	CET1 capital	100	0	75
Investments	400	400	400	Subordinated debt	100	100	25
Derivatives	500	500	500	Senior debt (3 rd party)	100	100	100
Other assets	100	100	100	Derivatives and other customer obligations	800	800	800
				Deposits	900	900	900
Total	2000	1900	1900	Total	2000	1900	1900

At the bank level, the resolution authority will force the bail-in of at least 75 in reserve capital. The conversion of this sub debt into equity at the bank subsidiary will restore the equity capital of the bank to its minimum (7%) level and leave 25 in reserve capital remaining. The bank can continue in operation (although it cannot pay interest in cash on the sub debt to the parent holding company).

In this case the bail-in at the bank level is sufficient to restore CET1 capital to its minimum level, so the debtor-in-possession retains decision rights over Newco. One of the first decisions Newco will have to make is whether or not to use any cash and marketable securities that may remain at the parent level to replenish the sub debt at the bank level so that the bank may pay cash interest to Newco and/or become a more attractive candidate for sale to a third party. The answer may depend on the capital structure of the parent holding. If this has a senior/subordinated structure, the senior debt at the parent holding may find it more advantageous to insist that Newco use any cash and marketable securities to repay the senior debt.

Case 4: loss that exceeds maximum risk capacity

We now examine an even larger loss (160) at the bank level. This exceeds bank's maximum risk capacity (130) but is less than the bank's PLAC. Thus, the bail-in conversion of the bank's entire reserve capital is sufficient to restore the bank's CET1 capital to a positive level (40), but insufficient to bring the bank's capital back to the minimum required level (see Table A6).

Table A6
Effect of loss (L) that exceeds maximum risk capacity
but falls short of PLAC

Parent holding company only

Assets	I	L	BB	Liabilities	I	L	BB
CET1 capital in bank sub	100	(80)	40	Common equity	100	(80)	(80)
Sub debt in bank sub	100	100	0	Senior debt	160	160	160
Cash	25	25	25				
Marketable securities	25	25	25				
Total	250	90	90	Total	260	90	90

Bank subsidiary

Assets	I	L	BB	Liabilities	I	L	BB
Loans	1000	840	840	CET1 capital	100	(80)	40
Investments	400	400	400	Subordinated debt	100	100	0
Derivatives	600	600	600	Senior debt (3 rd party)	100	100	100
Other assets	100	100	100	Derivatives and other customer obligations	800	800	800
				Deposits	900	900	900
Total	2000	1840	1840	Total	2000	1840	1840

The loss also causes the parent holding company to become balance sheet insolvent. This forces the parent holding company to trigger the “pre-pack” bankruptcy proceedings outlined in the text (see Figure 5) and to form Newco as the owner of the bank subsidiary. As the bank subsidiary fails to meet threshold conditions, decision rights over Newco will rest with the resolution authority for the bank subsidiary.

To the extent that Newco still directly owns cash and marketable securities, these can be contributed in kind to the bank subsidiary in exchange for additional CET1 capital. If such holdings are large enough, the additional equity can bring the bank subsidiary back to the point where it again meets threshold conditions (at which point decision rights over Newco would pass from the resolution authority to the debtor in possession [investors in Oldco]).

Case 5: loss that exceeds PLAC

Finally, we examine a massive loss (225) at the bank level, sufficient to exhaust the bank’s reserve capital (see Table A7). Under these circumstances, the bail-in/conversion of the reserve capital (100) is insufficient to recapitalise the bank. Indeed, after conversion, the common equity (retained earnings) of the bank show a negative (- 25) balance. Consequently, bail-in at the bank level cannot stop at the subordinated debt issued to the parent. It should continue down the bank’s capital stack starting ideally with a “mezzanine” layer of capital (e.g. the bank’s unsecured senior debt that is subordinated to customer liabilities, such as deposits and derivatives).

As in case 4, the loss at the bank subsidiary also causes the parent holding company to become balance sheet insolvent. This forces the parent holding company to trigger the “pre-pack” bankruptcy proceedings outlined in the text (see Figure 5) and to form Newco as the owner of the bank subsidiary. As the bank subsidiary fails to meet threshold conditions, decision rights over Newco will rest with the resolution authority for the bank subsidiary.

To the extent that Newco still directly owns cash and marketable securities, these can be contributed in kind to the bank subsidiary in exchange for additional CET1 capital. If such holdings are large enough, the additional equity can bring the bank subsidiary back to the point where it again meets threshold conditions (at which point decision rights over Newco would pass from the resolution authority to the debtor in possession [investors in Oldco]). However, the first part of any such infusion of additional cash into the bank subsidiary would go to offset the losses that third party creditors of the bank might suffer. This could have the effect of making the holders of senior debt in the parent holding worse off than they would have been under liquidation of the parent holding company (where they would receive the positive value (50) of the parent’s cash and securities and zero (under limited liability) for their investment in the subsidiary bank’s CET1 capital and subordinated debt. If such creditors of the parent holding company did become worse off, they would be

entitled to compensation from the resolution authority under the “no creditor worse off” principle.

Table A7
Effect of loss (L) that exceeds PLAC

Parent holding company only

Assets	I	L	BB	Liabilities	I	L	BB
CET1 capital in bank sub	100	(126)	(26)	Common equity	100	(126)	(126)
Sub debt in bank sub	100	100	0	Senior debt	160	160	160
Cash	26	26	26				
Marketable securities	26	26	26				
Total	260	26	26	Total	260	26	26

Bank subsidiary

Assets	I	L	BB	Liabilities	I	L	BB
Loans	1000	776	776	CET1 capital	100	(126)	(26)
Investments	400	400	400	Subordinated debt	100	100	0
Derivatives	600	600	600	Senior debt (3 rd party)	100	100	100
Other assets	100	100	100	Derivatives and other customer obligations	800	800	800
				Deposits	900	900	900
Total	2000	1776	1776	Total	2000	1776	1776