

A Simple Way to Bring Back Contingent Liability for Equity and Options Compensation

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I appreciate the opportunity to comment on the joint notice of proposed rulemaking concerning incentive-based compensation arrangements pursuant to Section 956 of the Dodd–Frank Wall Street Reform and Consumer Protection Act. I am a senior research fellow at the Mercatus Center at George Mason University, and my comments reflect my own views and do not represent those of any party or special interest group. My views are formed by recent research on how to introduce some form of contingent liability that would implement clawback provisions for executives of banks that experience distress and incur ex post costs to restore solvency, such as when a bank fails or receives government assistance instead of voluntarily liquidating.

My comments will accordingly address questions 2.14 and 7.14 of the notice of proposed rulemaking. Question 2.14 concerns the definition of incentive-based compensation and what forms of incentive-based compensation should be covered in the definition and why. Question 7.14 concerns alternative means of addressing options as incentive-based compensation. In recent research, I show how you might subject executives to what I call “synthetic unlimited liability” compensation. It works

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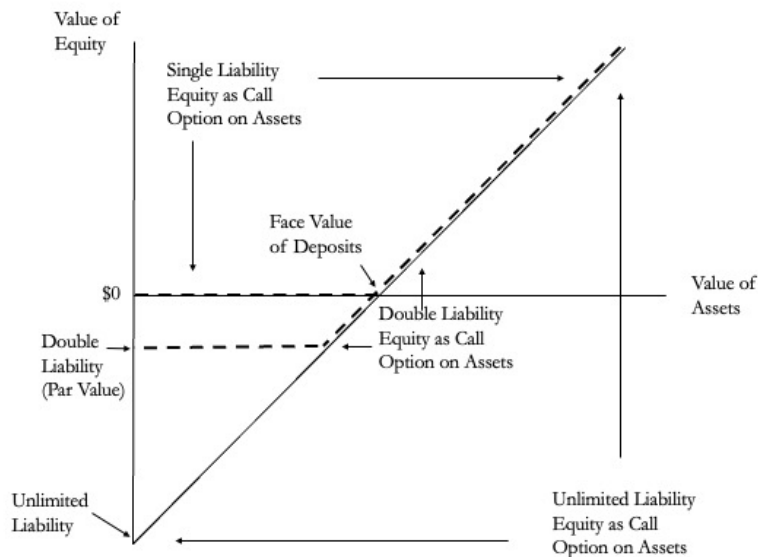
similarly to unlimited liability, except that synthetic unlimited liability compensation does not require introducing a new class of shares whose liability is different from single-liability common-equity shares (addressing question 2.14),¹ and, unlike traditional unlimited liability compensation, it can be applied to options compensation (addressing question 7.14).

How Contingent Liability Works and How It Performed Historically

Studies in economic history have shown that contingent liability, including double and unlimited liability, has served as an effective form of compensation to prevent executives from taking excessive risks. The success of contingent liability lies with the fact that executives who own contingent liability shares can lose their entire investment, as with traditional single-liability common-equity shares, and can also be required to pay creditors additional amounts (double or unlimited liability) to cover losses in the event of failure.

Figure 1 below depicts the payoffs for executives holding single-liability common-equity shares and contingent-liability equity shares, such as double- and unlimited-liability equity shares, which have sometimes served as instruments to discipline bank executive shareholders.² The worst outcome for

FIGURE 1. Traditional single-liability, double-liability, and unlimited-liability equity shares



executives who own single-liability common-equity shares is that these executives lose their entire investment, which is why the payoff becomes flat when the bank’s assets fall below the value of the deposits and equity falls to \$0. Executives who own contingent-liability shares, however, could be made to pay additional penalties to creditors. For instance, executives who are owners of double-liability equity shares would be required to pay creditors the par value, an amount specified in the shares, which, in the least favorable state of the world, equals the inverted right trapezoid area below the horizontal axis. Executives who are owners of unlimited-liability equity shares would, in the least

¹ See Stephen Matteo Miller, “Synthetic Unlimited Liability,” *Economics Letters* 241, (August 2024, forthcoming), <https://doi.org/10.1016/j.econlet.2024.111821>.

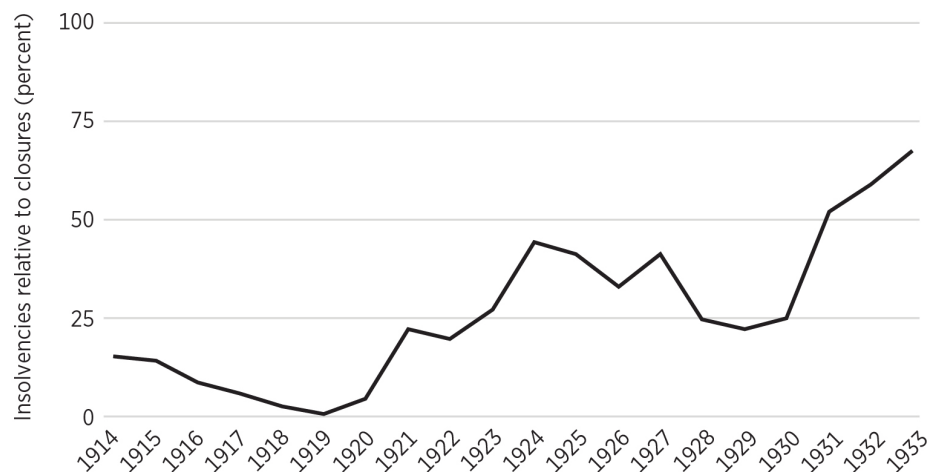
² See Benjamin Esty, “The Impact of Contingent Liability on Commercial Bank Risk Taking,” *Journal of Financial Economics* 47, no: 2 (1998): 189–218.

favorable state of the world, be required to cover the entire deposit base, which is the entire triangular area below the horizontal axis.

The National Currency Act of 1863 established the Office of the Comptroller of the Currency (OCC) and from the outset subjected national bank shareholders to double liability.³ For a number of reasons, including the fact that states relied on more costly court enforcement, the OCC's regulatory regime worked more effectively than the double-, triple-, and unlimited-liability regulatory regimes that some states used.⁴

As evidence of the success of the OCC's regime, most national banks (about 80 percent) that closed prior to the 1913 establishment of the Federal Reserve System voluntarily liquidated rather than failed.⁵ That was because upon failure, shareholders would be made to pay the contingent-liability penalty, which they wanted to avoid. However, once the Federal Reserve System was established and began lending to troubled banks through the Discount Window, many banks that might have voluntarily liquidated chose to remain in operation longer. As a result, from the early 1920s through the end of the Great Depression in 1933, an increasing number of banks failed as fewer banks chose to voluntarily liquidate. Figure 2 below confirms this by depicting the rates of insolvencies relative to all closures from 1914 through 1933.

FIGURE 2. Insolvencies relative to closures, 1914–33



Source: Data series computed as the ratio of voluntary liquidations relative to the quantity of the sum of consolidations, voluntary liquidations, and insolvencies, taken from Office of the Comptroller of the Currency, *78th Annual Report*, October 31, 1940, p. 58 (table 9).

Some estimates suggest that the cost of all bank insolvencies in the 1865–1913 era amounted to only about \$1 billion in 2009 US dollars, while crises since then, starting with the Great Depression,

³ See <https://fraser.stlouisfed.org/files/docs/historical/congressional/national-bank-act-1863.pdf>. The first introductory section of the Act establishes the Office of the Comptroller of the Currency, while Section 12 subjects shareholders to double liability.

⁴ See Eugene Nelson White, "To Establish a More Effective Supervision of Banking": How the Birth of the Fed Altered Bank Supervision," in *The Origins, History, and Future of the Federal Reserve: A Return to Jekyll Island*, ed. Michael D. Bordo and William Roberds (Cambridge, UK: Cambridge University Press, 2013), 7–54.

⁵ See White, "To Establish a More Effective Supervision of Banking," especially the discussion surrounding Figures 4, 5, 6 and 7.

have been much more costly.⁶ While Congress has attempted to address the lack of prompt and corrective action for weak banks, most bank closures today are insolvencies (e.g., in the spring of 2023, Silvergate voluntarily liquidated, but Silicon Valley Bank, Signature, and First Republic failed). Insolvencies are costly, while voluntary liquidations avoid much of these costs.

The root cause of the decline of voluntary liquidations and rise of insolvencies since the Great Depression lies with reformers blaming the precrisis regulatory regime, including the supposed ineffectiveness of double-liability shares.⁷ Accordingly double-liability shares were eliminated when the Federal Deposit Insurance Corporation was established. Reintroducing some form of contingent liability could be an effective way to address the still high rates of failure relative to closure. In particular, to address question 2.14, I propose a form of contingent liability I call “synthetic unlimited liability,” which exposes executives to unlimited liability without changing the actual liability of the underlying shares owned by executives.⁸

Synthetic Unlimited Liability for Equity Compensation

Synthetic unlimited liability would work like the double-liability regime that the OCC successfully applied prior to the establishment of the Federal Reserve System, as executives could not only lose their investment as with single/limited liability shares, but also be made to pay an additional penalty. The “synthetic” aspect of synthetic unlimited liability arises from the fact that this type of liability recreates the payoff of owning unlimited-liability shares, capturing both the upside and downside, without actually requiring that the liability of the underlying shares be changed.

To understand how, the contingent claims literature on corporate finance suggests that holding a company’s common equity shares is equivalent to holding (or “going long”) call options on the company’s underlying assets.⁹ If executives implicitly go long call options through equity shares, they capture the upside, but not the downside.

You can recreate the downside exposure by making executives pay a fraction of any bailout or resolution costs incurred by the taxpayer. Bailout or resolution costs can be valued as debt guarantees, which, for the guarantor, is equivalent to selling (or “shorting”) put options on the company’s assets.¹⁰ If you make executives short put options, say, by making them pay a part of any bailout/resolution costs, you recreate the downside exposure embedded in unlimited liability shares. This is done “synthetically,” in the sense that it creates the same exposure to monetary penalties as traditional unlimited liability does, without having to create a new class of shares that explicitly states what the monetary penalties would be.

Figure 3 shows how both the upside and downside of bank performance can be captured by pairing an executive’s single-liability equity shares (equivalent to call options on the underlying assets)

⁶ See White, “To Establish a More Effective Supervision of Banking,” Section III C, “The Costs of Bank Failures.” See also Stephen Matteo Miller, “The Costs of Crises Revisited,” *FinRegRag*, December 11, 2023, <https://www.finregrag.com/p/the-costs-of-crises-revisited>.

⁷ See White, “To Establish a More Effective Supervision of Banking.”

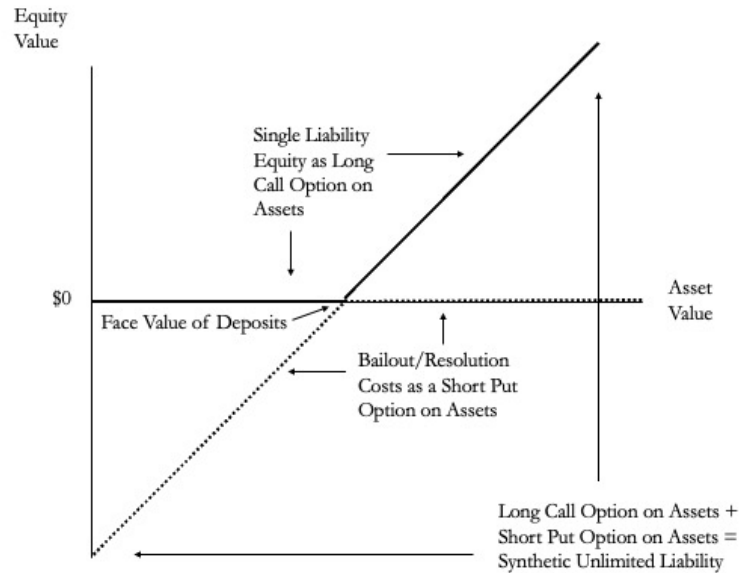
⁸ See Stephen Matteo Miller, “Synthetic Unlimited Liability.”

⁹ A call option gives owner the right but not the obligation to buy the underlying assets from the seller of the option. For a discussion of the application of option pricing theory to corporate finance see Robert C. Merton, “On the Pricing of Corporate Debt: The Risk Structure of Interest Rates,” *The Journal of Finance* 29, no. 2 (1974): 449–70.

¹⁰ A put option gives owner the right but not the obligation to sell the underlying assets to the seller of the option. For a discussion of the application of option pricing theory to debt guarantees see Robert C. Merton, “An Analytic Derivation of the Cost of Deposit Insurance and Loan Guarantees: An Application of Modern Option Pricing Theory,” *Journal of Banking and Finance* 1, no. 1 (1977): 3–11.

with a requirement that they sell the equivalent put options by agreeing to pay a fraction of the bailout or resolution costs captures.

FIGURE 3. Synthetic unlimited liability through equity shares and requirement to pay part of bailout/resolution costs



To make explicit the difference between traditional and synthetic unlimited liability, the total liability penalty paid by executives in the event of failure under traditional contingent liability equals the fraction of total shares owned multiplied by par value, or¹¹

$$Total\ Liability\ Exposure = \frac{Executive's\ Shares}{Total\ Shares\ Outstanding} \cdot Par\ Value$$

This total liability exposure is what successfully deterred most banks from failing in the pre-Federal Reserve era.

Under synthetic unlimited liability, the total liability exposure penalty for executives simply replaces the par value concept with the costs of restoring solvency, or resolution costs, if the bank fails, or the amount of direct or indirect taxpayer assistance under a bailout:¹²

$$Total\ Liability\ Exposure = \frac{Executive's\ Shares}{Total\ Shares\ Outstanding} \cdot Bailout/Resolution\ Costs$$

¹¹ See Esty, "The Impact of Contingent Liability on Commercial Bank Risk Taking." In the OCC's traditional double liability, shares specified the par value on paper, and the par value typically equaled \$100. But with unlimited liability the par value would be equivalent to the entire debt, rather than just a fraction of the debt.

¹² See Stephen Matteo Miller, "Synthetic Unlimited Liability." For a discussion of resolution costs valued as debt guarantees, see also Stephen Matteo Miller, "How Much Would It Cost to Guarantee Debt for All Publicly Traded US Corporations?" *Contemporary Economic Policy* (forthcoming).

This total liability exposure would create incentives for bank executives, who may currently receive common equity shares as part of their compensation, to voluntarily liquidate a bank before it fails or is bailed out. Now, contingent liability has traditionally applied to equity-shares compensation, but not options compensation. Next, I discuss how you can recreate the same downside exposure for options compensation as with traditional unlimited liability, which addresses question 7.14.

Synthetic Unlimited Liability for Options Compensation

Question 7.14 asks how to address concerns raised about call options compensation for executives. Executives often get paid in call options, often at the money in the sense that the strike price more or less equals the current stock price.¹³ Payment in call options creates incentives to perform well, since the common stock options will increase in value as the underlying stock price goes up.¹⁴ Here again, common stock options give executives upside exposure, but no downside exposure. It does not take much to create downside exposure as in traditional and “synthetic” forms of unlimited liability.

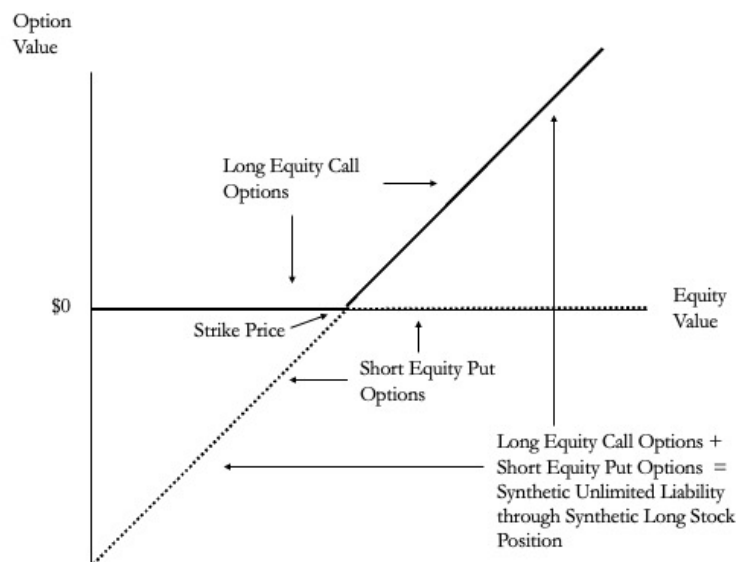
Recall that the innovation underlying synthetic unlimited liability for common equity shares (which are equivalent to call options on bank assets) lies with figuring out how to value the analogous put option to create downside exposure, since they are not actually traded instruments. However, with common stock options, both call and put options are traded instruments, and creating downside exposure for executives simply requires an additional transaction. In short, for every long call option received, which gives the upside, an executive would have to short an equal number of put options, which gives the downside. Option traders call this transaction a “synthetic long stock” position.¹⁵ Figure 4 below depicts this position’s payoff, which resembles traditional unlimited liability and synthetic unlimited liability payoffs for equity shares held.

¹³ Long call options held by an executive are worth $\text{Stock Price} - \text{Strike Price}$ if the stock price exceeds the strike/exercise price, and zero if the stock price is below the strike/exercise price, which in mathematical terms is often written as $\max[\text{Stock Price} - \text{Strike Price}, 0]$. By paying executives with at the money call options, the incentive to perform well comes from the company’s stock price rising above the current stock price (and exercise price) at the time of issuance.

¹⁴ One drawback here arises from higher stock price volatility also increasing the value of the call options.

¹⁵ See “Synthetic Long Stock,” The Options Industry Council, accessed June 28, 2024, <https://www.optionseducation.org/strategies/all-strategies/synthetic-long-stock>.

FIGURE 4. Synthetic unlimited liability through options



Implications of Synthetic Unlimited Liability on Executive Compensation

The likely effect of introducing synthetic unlimited liability for executive equity shares may possibly result in lower compensation. Most banks are a going concern, so if you pay executives in shares, and the bank's assets have a greater value than the debt, since equity is analogous to a call option on the bank's assets, assets greater in value than the debt would make the call option "in the money." If equity for a going concern bank is "in the money," then the analogous put option from valuing prospective bailout or resolution costs as debt guarantees would likely be small or zero. The combination of equity shares (a long call option on bank assets) and the the bailout/resolution cost exposure (the short put option on bank assets) would be close to, if not identical to, the value of limited-liability common-equity shares.

This scenario would only change when the bank gets into trouble, and the value of the bank's assets declines relative to its debt. Such an outcome would result in the equity shares losing value and potential synthetic unlimited liability penalties increasing, which on net would mean the executive's pay could decline, at least in an unrealized sense. As such, this would create incentives for a vigilant executive to take action to limit the decline of the bank's net worth.

While synthetic unlimited liability equity compensation would on net have little to no effect on an executive's pay in good times, and would only begin to decline in more adverse situations, the outcome would be quite different for option compensation. Synthetic unlimited liability for options compensation would make options compensation less attractive.¹⁶ Since executives typically receive "at

¹⁶ Synthetic unlimited liability may introduce a bias toward shares compensation and away from options compensation, and that would be consistent with some results in the executive compensation literature. See for instance, Bengt Holmstrom and Paul Milgrom, "Aggregation and Linearity in the Provision of Intertemporal Incentives," *Econometrica* 55, no. 2 (1987): 303-28 and Ingolf Dittmann and Ernst Maug, "Lower Salaries and No Options? On the Optimal Structure of Executive Pay," *Journal of Finance* 62, no 1. (2007): 303-43. For other views about the benefits of options compensation, see Alex Edmans and Xavier Gabaix, "Executive Compensation: A Modern Primer," *Journal of Economic Literature* 54, no. 4 (2016): 1232-87.

the money” call options, under synthetic unlimited liability they would have to sell “at the money” put options, which would also have value and would therefore tend to reduce an executive’s options compensation on net.

Synthetic Contingent Liability as a Less Onerous Form of Executive Compensation

As figure 1 shows, for executives of failed banks, traditional double liability provides a less onerous penalty than traditional unlimited liability. Similarly, lower synthetic contingent liability penalties can be introduced in equity and options compensation than under synthetic unlimited liability penalties.

To introduce a lower penalty synthetically for executive shares compensation, you can simply put a cap on how much of the bailout/resolution costs an executive might bear as follows:

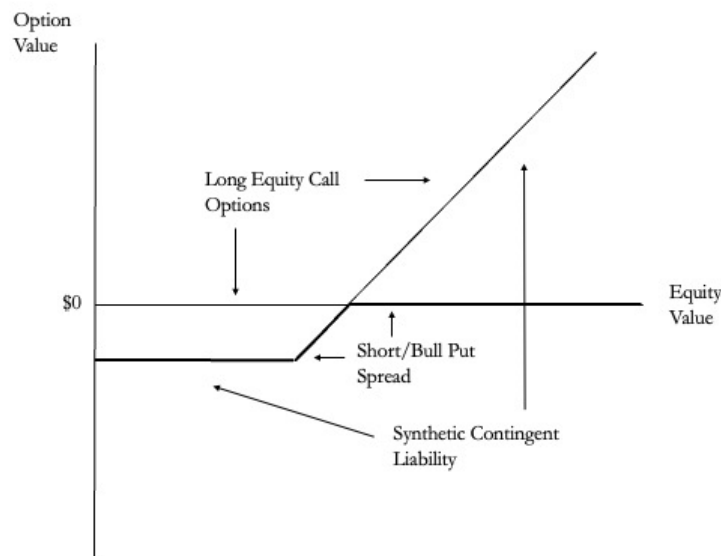
$$Total\ Liability\ Exposure = \frac{Executive's\ Shares}{Total\ Shares\ Outstanding} \cdot Bailout/Resolution\ Costs \cdot C$$

where the fraction C further reduces how much of the total bailout/resolution costs the executive is assessed.

To introduce a lower penalty synthetically for executive call options compensation, you could lower the associated penalty by requiring executives to sell put spreads, sometimes called a “bull put spread,” where you sell “at the money” puts but also buy puts at lower strike prices.¹⁷ As with synthetic unlimited liability for options, the number of put spreads (rather than puts) sold would equal the number of calls received.

In figure 5 I show the result of adding put spreads sold to call options received. The payoff from

FIGURE 5. Synthetic contingent liability for options compensation



¹⁷ See “Bull Put Spread (Credit Put Spread),” The Options Industry Council, accessed June 28, 2024, <https://www.optionseducation.org/strategies/all-strategies/bull-put-spread-credit-put-spread>.

selling put spreads would result in a payoff that resembles traditional double liability as depicted in figure 1. While synthetic unlimited liability may result in a significant reduction in option compensation, under synthetic contingent liability for options compensation, the reduction in the liability for executives could still make options compensation attractive, as the value on net could still be positive.

Conclusion

Since 2010 regulators and other interested parties have been pondering how best to institute clawbacks pursuant to the Dodd–Frank Act. Synthetic unlimited liability, as well as the less onerous synthetic contingent liability discussed here, provide simple ways to implement clawbacks without having to make the drastic changes presented in current proposals.