

## Prepared Remarks

Book Launch for “Banking’s Final Exam”  
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Washington DC, May 23, 2017

### Introduction

Good afternoon and thank you all for coming.

This is a fat book about a contentious subject in finance. It would not have been completed without the help of colleagues, friends, and family.

Adam Posen and Mark Noland lent their wholehearted support to this project right from the beginning.

Without implicating them in any of the book’s policy prescriptions, Stan Fischer, Tim Geithner, Charles Goodhart, Tom Hoenig, and Philip Turner read and commented on two earlier versions of the manuscript; they also put me in contact with specialists who illuminated topics about which I was less familiar.

Colleagues, both at Peterson and outside, offered extremely helpful suggestions on an earlier draft.

Anish Tailor provided superb research assistance.

Chuck Morris and Kristen Regehr were invaluable in helping me to understand better a host of thorny data issues about US banks.

Steve Weisman, Madona Devasahayam, and their colleagues in Peterson’s publications department performed their magic in transforming the manuscript into its final form.

Last but most important, my family endured the time I spent writing this book with considerable understanding. I say “understanding” because this was a period during which I had previously pledged to be retired. For anyone who sent a gift at my retirement dinner celebration, I regret to inform you that there will be no refunds – mis-selling or not.

Anyway, to and for all of the above, I am most grateful for your help.

### Outline

As the title suggests, my book is about stress testing and bank capital reform.

Stress tests are exercises designed to determine whether a bank or group of banks will remain adequately capitalized even in a severely adverse economic scenario.

The most famous stress test – called the Supervisory Capital Assessment Program – or SCAP for short, was conducted by US authorities in May 2009 -- near the worst of the 2007-09 financial crisis. By now, there is widespread agreement that the scenario results and bank recapitalizations generated by the SCAP marked a critical turning point in that crisis.

Further rounds of supervisor-led US bank stress tests have been conducted annually by the Federal Reserve between 2011 and 2016. Similar stress tests have been conducted in the European Union over the same period. I argue that these EU-wide tests – taken as a group -- have been less effective than the US tests.

Bank capital is the self-insurance that banks maintain against unexpected losses. The amount and quality of capital that large banks held just before the 2007-09 crisis was grossly inadequate. In response, bank-capital reforms were undertaken domestically via the Dodd-Frank Act of 2010 in the United States and internationally via the Basel III agreement.

The central question that I address in this book is the following: given that we now have a regular stress-testing regime in place and given that banks have now met the minimum capital requirements of Dodd-Frank and Basel III, can we be confident that the largest US banks are now safe enough to avoid large taxpayer bailouts in a future severe crisis?

I answer that central question in the negative: No, the largest US banks are not yet safe enough?

Over the next 25 minutes or so, I will give you a summary of how I get to that conclusion. I will also outline a bold reform program for bank capital and stress testing that would fix the problem without endangering the macro-economic performance of the US economy.

Consider what it means to pass a bank stress test. A bank passes the quantitative part of the test if its capital ratio does not fall below a pre-specified minimum ratio –called the hurdle rate - - not only in the baseline economic scenario but also under the more adverse scenarios. The capital hurdle rates in these tests, in turn, are usually set at the minimum regulatory standard. For example, in the 2016 US stress test – known as the Comprehensive Capital Analysis and Review – or CCAR for short, one of the key hurdle rates was 4 percent for the tier 1 leverage ratio.

But what if this 4 percent hurdle rate is way below the capital ratio that would maximize net social benefits for the US economy? What if the risk-weighted measures of bank capital used for other hurdle rates are not the indicators that best distinguish sick from healthy large banks? What if the contagion effects of shocks to the U.S. economy that were so evident and

problematic during the global economic and financial crisis of 2007-09 are not yet adequately captured and simulated even in the test's severely-adverse scenario. And what if the expected social losses stemming from an insolvency of a very large bank holding company like JP Morgan Chase --with its almost \$2.5 trillion in total consolidated assets-- are much larger than those for a smaller bank-holding company like, Zions Bankcorporation, with less than \$60 billion in total consolidated assets—and this even after imposing a capital surcharge for systemic importance on JP Morgan?

If those suppositions were correct, then the fact that all 33 bank holding companies passed the quantitative part of the 2016 CCAR test would hardly be grounds for complacency. In this book, I examine those four suppositions and find them each to have strong support.

The rest of my talk is in two parts.

First, I summarize my main findings about the US and EU-wide stress tests conducted over the 2009-16 period.

And second, I summarize my findings about why we still need bold bank-capital reform and what shape that reform should take.

Chapter 9 of the book is a postscript where I give my preliminary reaction to the Trump administration's financial deregulation plans. If we have time during the Q&A period, perhaps we can get into that discussion a bit. I won't hold you in suspense. I am not a man who tweets. But if I did, my tweet would be the following: "Trump financial deregulation plan: sad and very bad."

Because the number of minutes I can speak is tightly controlled while the number of words per minute is not, I plan to speak pretty fast.

Before I get to the beef, there is one necessary preliminary. For non-specialists, a brief note on the measurement of bank-capital ratios may be helpful.

In the numerator is a measure of bank capital. A key factor to keep in mind: equity is better than debt for absorbing losses. Common equity is regarded as the highest quality of capital because it doesn't have to be repaid, it doesn't require payments of dividends or interest, and it stands last in line in insolvency or bankruptcy proceedings.

In the denominator of the capital ratio is a measure of bank assets. In this book, I refer to two measures of bank assets --risk-weighted assets and un-weighted total assets. For risk-weighted assets, one is multiplying each category of bank assets by a risk weight and then calculating the weighted average. Risk weights typically fall between 0 and 100 percent but can exceed 100

percent for some very risky assets. For un-weighted total assets, there are no risk weights; each asset is given the same weight.

Consider the following simple example. Suppose that a bank has five dollars in high-quality capital and two kinds of assets: 50 dollars in cash and 50 dollars in loans to commercial and industrial firms. Its total assets are thus \$100. Suppose further that the regulatory risk weight on cash is zero, while that on loans is 100 percent. Then the bank's risk-weighted assets would be fifty dollars: calculated as zero percent times 50 dollars of cash, plus 100 percent times 50 dollars of loans. Its risk-weighted capital ratio would then be 10 percent: \$5 of capital in the numerator, divided by \$50 of risk-weighted assets in the denominator. In contrast, its un-weighted capital ratio – known as a leverage ratio --would be only 5 percent – composed of the same \$5 of capital in the numerator but \$100 of total assets in the denominator.

In reality, there are huge numbers of regulatory risk weights, including risk weights obtained from the internal risk models of banks themselves. You might think that the risk-weighted measures of bank assets would almost always be better than un-weighted measures since there are large differences in default rates among different bank assets. But this is not so. Risk changes over time and regulatory risk weights can be inflexible – especially when bank supervisors or bank themselves do not want to acknowledge that risk has increased. The maintenance of a zero risk weight for sovereign bonds during a sovereign debt crisis is a case in point. In addition, evidence reviewed in this book, shows that large banks have sometimes manipulated the risk weights from their internal models to lower their reported risk-weighted assets and thereby artificially inflate their risk-weighted capital ratios.

OK – on to stress tests and bank-capital reform.

### **On Stress Tests**

1. Stress tests are here to stay. Whereas Basel capital requirements are backward-looking and rigid in design, stress tests address tail risk in forward-looking scenarios. These scenarios can be custom-tailored to meet the specifics of a country's risk profile. Whereas the setting of regulatory capital ratios has been heavily dependent on the low historical probability of banking crises, stress tests employ the less demanding but often more revealing standard that their adverse risk scenarios have to be "severe but plausible." This permits stress tests to consider a wider set of crisis vulnerabilities. Stress tests also provide a simple and understandable metric

with which to evaluate the capital adequacy of banks—namely, a comparison of what the capital ratio would be under adverse conditions with the capital hurdle rate. And the reputational damage associated with failing a stress test under a public spotlight and thereby upsetting plans for dividends and share buybacks serves as an incentive not to allow capital to fall too low.

If certain current weaknesses of stress tests can be remedied, their influence is likely to increase even further relative to other bank supervisory tools.

The most successful single stress test over the 2009–16 period was the 2009 SCAP in the United States. So far, stress testing has been more successful as a crisis management instrument than as an early warning or crisis prevention mechanism.

On the whole, the set of EU-wide stress tests received poorer reception by markets than the US tests.

There are good reasons for the poor reception of the EU-wide tests. They include lack of authority in the 2009–11 tests to compel rather than just recommend recapitalization for undercapitalized banks; a weak supporting crisis management cast for stress tests which produced an anemic recovery from the 2007–09 crisis; outside estimates of capital shortfalls that were consistently higher than the official estimates emanating from the stress tests; likely overstatement of capital ratios as a result of low loan-loss provisioning and low credit write-downs; and a failure in the 2011 EU-wide capital exercise to specify capital targets in terms of absolute amounts rather than as a ratio. In addition, a leverage ratio test was not introduced until the 2016 test, thereby allowing large German, French, and Dutch banks with high risk-weighted capital ratios but low leverage ratios to fare much better on the tests than they should have.

Banks participating in stress tests should account for a substantial part of the banking system's assets. If the country's financial system is not bank dominated, a way needs to be found to assess how fragilities in the nonbank sector and in systemically important nonbanks could affect the banking system.

Bank supervisors should continue to develop their own suites of models, both to guard against model risk from a particular model or two and to validate the reasonableness of models used by

the banks in any bank-run tests.

Test coordinators must have the political independence to be able to call the results of the tests as they see them. If instead markets perceive that the tests are “rigged” to produce an overly optimistic and politically convenient pattern of outcomes, publication is likely to do little to bolster confidence.

The quality of the capital contained in the hurdle rate matters, especially in a crisis, when there are more losses to absorb. During the worst of the global financial crisis, the only capital ratios that market participants were interested in were those that had tangible equity in the numerator.

Disclosure of bank-by-bank results is essential for obtaining the market discipline effects of stress tests. All US tests except the 2011 CCAR and all EU-wide tests except the initial 2009 test have included bank-by-bank results.

Linking the results of the stress test with remedial actions to correct undercapitalization is crucial. The innovation of the US CCAR exercises— to embed the stress tests in the capital planning process of banks—is a good one. Bank supervisors need a mandate to temporarily suspend dividend payments, share buybacks, and parts of executive compensation when capital hurdle rates in stress tests are not achieved as well as the will to enforce that mandate.

If severely undercapitalized banks are unable to raise enough capital from private markets and the decision is made not to close them, enough public funds need to be available to make public recapitalization feasible. Otherwise, it will be difficult to make stress test results credible, because market participants will reason that the stress test architects are lowballing the capital shortfalls to match the small amount of recapitalization resources.

Official stress test estimates of capital shortfalls will be less credible when outside estimates of these shortfalls are consistently much larger. When the gap between official and private shortfall estimates is large, officials should address the main reasons for this discrepancy.

It is troubling that stress tests performed so poorly in the run-up to the worst economic and financial crisis since the Great Depression. Two corrective actions are called for.

First, the authorities need to draw more heavily on early warning models of banking crises and integrate them into the stress testing exercise. These dual threshold models find that banking system vulnerability is greatest when there is both an abnormally rapid rate of growth in credit to the nonfinancial private sector and an abnormally rapid rise in real property prices.

Second, the modeling of the financial sector during a crisis needs to include enough feedback, contagion, and amplification effects that a seemingly moderate shock to the banking system can produce the kind of real economy and bank-capital effects observed in an actual severe crisis. Current stress test models do not incorporate enough elements of the leverage cycle, enough shifts in expectations, enough funding problems, enough fire sales of assets, enough interaction between the bank and nonbank financial sectors, and enough adaptation by agents. These analytical issues are not a technical sideshow. In stress test modeling, they are the main event. Even the most advanced stress testing programs admit that they are in the early stages of dealing with this difficult challenge. Until they get farther, true capital shortfalls are likely to be underestimated

When stress tests indicate that a bank is undercapitalized, the capital target should be expressed in terms of the absolute amount of capital that should be raised. If instead supervisors allow banks to choose how they will achieve the higher capital ratio, there is a good chance the banks will opt to make much of the adjustment by cutting back on loans, engaging in fire sales of assets, and derisking-- all with the aim of reducing their risk-weighted assets. The problem is that these methods of lowering the denominator of the capital ratio will not be the lowest-cost option for the macroeconomy. They will be contractionary.

All stress tests should contain a leverage ratio test. Almost all of the largest US banks that ran into trouble during the global financial crisis had risk-weighted capital measures that allowed them to be classified as "well capitalized" on their last reports while low leverage ratios were simultaneously pointing to very thin capital cushions. The story was similar in Europe. This situation could be avoided in the future by requiring a leverage ratio test. US stress tests have contained a leverage ratio test since 2011. The EU-wide tests added one only in 2016.

**I next move to Bank-Capital Reform**

None of the approaches to estimating optimal capital ratios is comprehensive enough on its own to provide a good guide. Better therefore to combine the insights from all of these approaches to reach a sensible judgment call on the preferred answer. My call is that the optimal (weighted-average) leverage ratio for US banks should be in the neighborhood of 15 percent—with the eight G-SIBs in the 14 to 18 percent range, other large banks with \$50 billion or more in total assets in the 11 to 13 percent range, and small banks at 10 percent.

The consensus in official circles is for a much lower leverage ratio. For US banks, minimum leverage ratios are in the 4 to 6 percent range. The minimum for the Basel III leverage ratio is 3 percent. Actual leverage ratios (be it tangible equity ratios or tier 1 leverage ratios) for the eight US G-SIBs in US GAAP terms currently stand at about 8 to 9 percent. The official consensus is wrong: It underestimates the benefits of higher capital ratios and overestimates the costs.

The consensus relies almost exclusively on observed losses incurred by banks, with particular attention rightly devoted to the 2007–09 global financial crisis. The consensus ignores “counterfactual” losses. By counterfactual losses, I mean the losses that banks would have suffered in the global crisis had there not been such a massive and multifaceted array of government interventions. Without those interventions—including widespread government guarantees, public capital injections into banks and measures to aid the asset-backed securities markets, not just super-easy monetary policy and large fiscal expansion—bank losses would surely have been much higher. A proper treatment of the counterfactual (for US banks) would include not only the effect of US crisis intervention measures but also those of other G-20 governments since those foreign interventions also helped reduce US bank losses. IMF data indicate that observed (peak) credit write-downs by US banks during the global financial crisis amounted to more than 8 percent of their total assets; counterfactual losses would have been much bigger. The counterfactual is highly relevant because G-20 leaders have pledged publicly not to repeat this extraordinary set of government interventions during any future crisis.

Another common practice is to assume that after suffering losses during the upswing of the business cycle, banks can run their capital down very close to zero. This assumption ignores the fact that banks typically maintain capital ratios considerably above the regulatory minimum at the bottom of the credit/financial cycle --reflecting market pressures to do so. The right question is therefore how much capital would banks need to sustain the losses experienced

during the upswing of the credit cycle and still have enough capital left to meet market pressures at the bottom of the cycle.

The consensus measures bank losses during the global financial crisis using an income statement approach rather than a balance sheet approach. Using net income as the preferred measure of losses leads to a lower estimate of the optimal capital ratio because credit losses are offset against bank revenues and those revenues usually do not stay negative for long in a surviving bank, even in a severe crisis. But in severe crisis conditions, when many banks are failing or close to failing, market participants will find it difficult to know which banks will survive long enough to earn those positive revenues over the next year or two. Put in other words, they won't know which banks are "going concerns" and which are "gone concerns." The appropriate assumption for measuring losses during the worst financial crisis since the Great Depression is to use the balance sheet approach..

The consensus usually fails to incorporate a key insight —namely, that the capital ratio that the economy needs to sustain a healthy rate of bank lending is higher than the capital ratio needed just to absorb losses.

The consensus usually assumes that output losses in systemic banking crises are mostly temporary and do not have a large negative impact on potential output. But during the global financial crisis, the negative effect on potential output in advanced economies was about as large as the effect on actual output. Ceteris paribus, the higher the output cost of a banking crisis, the higher the optimal capital ratio.

The consensus uses historical databases on the unconditional annual probability of a systemic banking crisis to drive its estimate of the benefits of higher capital ratios. This probability is typically assumed to be in the range of 2 to 5 percent. With such a low probability, it does not take much capital before the reduction in the probability of a crisis induced by higher capital ratios hits zero. The rub is that the historical probability of a crisis may not be a good guide to future crisis probabilities. The low historical probability of large losses at large US banks during the 1986–2005 period provided a way too optimistic forecast of the losses experienced by those banks during the 2007–09 crisis. Nor does the (average) historical crisis probability fully capture the rise of the US shadow banking system, with its large stock of uninsured, runnable, short-term liabilities and the potential adverse spillover effects on the banking system of

another run on these shadow banks. [Setbacks to the crisis management arsenal that have taken place in the wake of the 2007–09 crisis also count. Here, former US Treasury Secretary Timothy Geithner underlines that of 21 financial crisis tools used during the 2007–09 crisis, 12 of them could not be activated if needed today. Likewise, monetary and fiscal policy tools are more constrained today than they were in 2007.

A sensible guideline for crisis prevention is to hope for the best but prepare for the worst. A poor substitute is to hope for the best but prepare for the global average.

At the heart of the banking industry's opposition to much higher capital requirements is the assertion that higher bank capital requirements will depress bank lending and thereby reduce output and employment in the economy. This assertion is increasingly at odds with the best recent empirical evidence—as well as with the appraisals of senior bank supervisors. I cannot emphasize this enough: Better-capitalized banks lend more, not less, than weakly capitalized ones.

The consensus view of the effect of higher capital requirements on banks' overall funding cost sits on shaky ground. Most studies either fail to allow for any Modigliani-Miller (M&M) offset or, if they do, focus too much on the cost of new equity and not enough on the cost of raising new debt financing.

Focusing on the effect of higher capital on debt funding costs makes sense because debt is the dominant form of financing for banks. One important new BIS study reports that, all else equal, a 1 percentage point increase in the leverage ratio was associated with approximately a 4-basis-point reduction in the average cost of debt funding. The authors then use this estimate, along with data on the “average” bank in their sample, to calculate the overall increase in the cost of bank funding from a 1 percentage point increase in the leverage ratio. Their answer is 3 basis points.

Using their estimates and assuming that 80 percent of the increase in bank funding costs were passed on to bank customers would imply that an 800-basis-point increase in the G-SIB leverage ratio—from its current (weighted-average) level of about 8 percent to 16 percent—would yield an increase in G-SIB bank lending rates of only 20 basis points. Since G-SIBs represent just above 60 percent of total consolidated US bank holding company assets, the increase in overall bank

lending rates would be lower still—about 12 basis points. Adding in modest increases in minimum leverage ratios for large non-G-SIB banks and for smaller banks raises the increase in overall bank lending rates to only 14 basis points. The consensus typically assumes an increase in bank lending rates considerably higher than that.

It is useful to compare my estimated 20-basis-point increase in G-SIB bank funding costs to the estimated bank funding effects of too big to fail subsidies for systemically important banks (SIBs). According to the IMF, the annual too big to fail subsidy for US SIBs was roughly 15 basis points in normal periods -- rising to 75 basis points for a distressed SIB. As these subsidies are funded by the government, elimination of them should not count as a social cost.

To translate any increase in bank funding costs into increases in bank lending rates, the consensus almost always assumes full pass-through. The argument for doing so is that failure to pass on fully the increase in funding costs would induce resources to leave the banking industry, with adverse consequences for economic growth. However, beyond a certain threshold --which US and EU financial systems have already passed -- a larger banking and a large financial system become a drag on economic growth, not a spur to it.

Recent empirical evidence is not kind to the full pass-through assumption. Cecchetti examines the effects of the Basel III capital increases using data for 15 large economies. He stresses that contrary to the predictions of pessimists, there was no ballooning of interest margins..

Increases in minimum capital requirements that are phased in gradually and that can be funded largely by retained earnings are less costly than increases implemented more quickly and funded largely by new equity issuance.

A useful rule of thumb – employed by the Federal Reserve -- says that a 100-basis-point increase in the US federal funds rate --which boosts the entire term structure of interest rates-- lowers the level of real GDP by about 100 basis points over eight quarters. A similar size increase in the overall bank lending rate should produce just a fraction of that effect given its narrower impact. Banks are responsible for only about a third of the credit extended to the private nonfinancial sector in the United States. On the basis of this rule of thumb, the macroeconomic impact of a 14-basis-point increase in overall bank lending rates spread over 10 years --is likely to be so small as to be barely detectable in the macro data. Moreover, such a tiny macro effect

could be easily offset by the Fed lowering the path (infinitesimally) for the federal funds rate. The consensus assumes larger output effects.

The primary capital standard for bank regulation should be better than the alternatives in distinguishing sick from healthy banks; it should be easy to understand, inexpensive to compute, and difficult to manipulate by banks; and it should possess superior loss absorbency. By no stretch of the imagination do the existing risk-based measures of capital fit this job description. The leverage ratio should therefore become the primary measuring rod for capital adequacy.

Making the leverage ratio king of the hill need not mean that there would be no risk sensitivity in bank supervision or stress tests. To incentivize banks not to load up on risky assets and to compensate for some of the weaknesses of existing stress tests, I propose that large banks be subject to a risk surcharge. This surcharge would be based on six types of indicators:

- ☐☐a measure of tail risk dependence,

- ☐☐the rate of loan growth cum a measure of the overvaluation of property prices,

- ☐☐market-based measures of bank health (e.g., contingent claims analysis of distance to default, leverage ratios that depend on market value of equity rather than book values),

- ☐☐risk derived from reverse scenarios, in which one solves for the shocks that will produce a given decline in the capital ratio,

- ☐☐areas of risk where the supervisors have special concerns (e.g., leveraged loans, commercial real estate, etc.), and

- ☐☐the ratio of risk-weighted assets to total assets, where risk-weighted assets come from a revised standardized approach to risk weighting.

Banks with high risk scores would be subject to a capital surcharge; banks with normal or low scores would not.

To remedy the most glaring deficiencies in the existing bank capital regime in the United States, I propose a bold reform plan. The four existing bank-capital standards would be replaced with a single standard, the tangible leverage ratio. Long-term minimums for the tangible leverage ratio would be 14 to 18 percent for the eight US G-SIBs --depending on the bank's systemic importance). For other large banks, the long-term target would be 11 to 13 percent. For smaller banks, the long-term target would be 10 percent. These long-term targets would be phased in in

roughly equal annual installments over 10 years. Risk sensitivity would be introduced into the regime via the aforementioned new risk surcharge.. The new leverage minimums would be translated into the baseline (unstressed) capital hurdle rates in the annual CCAR stress tests..

This plan has a number of important advantages.

The plan would deliver a quantum jump in the amount of loss-absorbing high-quality capital in the largest US banks.

The plan's proposed size and pace of capital increases are perfectly consistent with maintaining satisfactory macroeconomic performance. Well-capitalized banks lend more, not less, than weakly capitalized ones.

The plan's three-level structure puts the largest increases in bank capital where they are needed most—at the nation's largest and most systemically important banks.

That same three-level structure would also put regulatory relief where it can be implemented without increasing systemic risk, namely in small banks.

The plan offers a new answer to the question of how an un-weighted leverage ratio and some risk weighting of assets can best be used in tandem. The conventional dual standard bank-capital model has been a failure. The leverage ratio gets much closer to what one should want from a single minimum capital requirement, and the proposed risk surcharge framework would compensate for some weaknesses and omissions in the existing supervisor-led stress tests,

The plan would steepen the leverage surcharge schedule for G-SIBs and thereby provide the necessary price incentives to induce those banks to decrease over time the size of their systemic footprint.

The likely objections to the plan are not persuasive.

Recent empirical evidence strongly suggests that if the plan were to shrink the size of the largest banks, the banking system, and the financial system as a whole, the results would not be adverse for US macroeconomic performance. This is because the United States has already passed the point where, without subsidies, getting bigger generates increasing returns.

Of the potential objections, the weightiest one is that heightened capital requirements for banks could induce increased migration to the shadow banking system, where regulation is laxer. Even though the size of the cash-like part of the shadow banking system has fallen from its pre-crisis peak, this risk has to be taken seriously (Stein, Greenwood, and Hanson 2016).

Here, I propose a backup contingency initiative to better run-proof the shadow banks. This initiative owes to former Bank of England governor Mervyn King, who calls it the “pawnbroker for all seasons” or PFAS for short.. At the heart of PFAS is a limit on the amount of short-term (one year or less) liabilities a bank or shadow bank can issue. These liabilities cannot exceed the sum of reserves held at the central bank plus the estimated value of haircut-adjusted collateral positioned with the central bank. This PFAS “liquidity” reform would be a valuable complement to the higher-capital solvency plan outlined in my book. It could replace the liquidity coverage ratio and the net stable funding ratio, which apply only to banks.

The G-20’s Total Loss-Absorbing Capacity (TLAC) initiative – TLAC for short, also sets higher minimum capital standards for G-SIBs. It would add minimum requirements for the sum of contingent convertible bonds and for subordinated debt to the mix. TLAC is not a good substitute for my plan.

The minimum leverage ratio for G-SIBs under my plan is 14 to 18 percent versus about 7-9 percent under TLAC. My plan therefore provides much greater loss absorbency. Equity already in place is superior to a bond that converts to equity under a set of pre-specified criteria. Setting the trigger for bail-in bonds at the right level is tricky. Pure equity has no trigger issue; it already is equity. Bail-in bonds have a much higher probability than equity of being bailed out in a severe crisis. Ask yourself: Which is going to produce the better crisis dynamic: trying to bail in bondholders in a severe crisis when banks are trying to keep their funding sources from drying up, or having a comfortable equity cushion in place and allowing that equity capital to be drawn down to offset losses?

For all the additional risks the TLAC initiative brings with it relative to my plan, it is not much cheaper in terms of its effects on overall bank lending rates and on the level of real GDP.. If the macroeconomic effects of a 14-basis-point increase in overall bank lending rates, implemented gradually over a decade, is barely detectable, the macroeconomic savings from a rate rise smaller than that under TLAC would be virtually invisible. TLAC is penny wise and pound foolish.

Let me stop here.