Where are we now?

• (Common equity – goodwill) / Total Assets

• JP Morgan Chase:
  • 2007: 5.0 %
  • 2016: 6.5 %
  • To me, a moderate improvement; changes include lots more equity but also lots more assets

• Credit Suisse:
  • 2006: 2.3 %
  • 2016: 4.8 %
  • Huge improvement, but still “behind.” Same equity, a lot less assets

• Is 6.5 % enough? What about 5 %?
How much is needed?

• My number is somewhere between 4.13 and 4.33 percent to preserve solvency (from my 2002 “absolute capital” paper...note that the mean loss rate is 2.17 percent in the relevant simulation).

• PLUS another 3 percent so that the bank taking a very bad-tail hit is still demonstrably solvent...or about 7 percent

• You will see that it would be very easy to argue that the “true” number is different.

• Thus, maybe 6.5% is not far from being enough. 5% is slightly below the mean loss rate plus 3 percent...too little.
Why not the 20 percent of Admati & Hellwig?

• Partly, they have not behaved well
• Partly, the example of Business Development Companies
  • 50 percent equity!
  • Corporate lenders...but only very high-coupon (and thus high-risk) loans
    • Banks as we know them would cease to exist...their functions would move to shadow banks...leaving us at least as vulnerable as currently
• Arguably, two of them “failed”
  • In particular, Allied Capital at one point had an equity price of 29 cents
  • Later sold to another BDC for $5 a share
  • Much like the Wachovia case...not a failure, but still disruptive to confidence at the time
• 20 percent is OK if there is a well-reasoned case, but I’m not aware of one, and clearly the “market” implies costs would be large
I don’t know the answer with certainty

• The debate about capital has become more rancorous: not productive

• But it’s more about “the number” (8%? 20%), which I feel is helpful

• Judgment cannot be avoided in constructing an answer

• My goal is to point out choices that MUST be made...which I hope will make conversations more constructive
Why are we (still) talking about this at all?

• Even in the wake of the crisis, bankers continue to resist increased capital requirements
• MAYBE because Modigliani-Miller does not hold, i.e. more equity is inefficient
• OR because bank shareholders ignore social costs of bank failure
• OR because the core problem is not equityholder behavior, but governance failures such that managers like imprudent risks
• OR because more equity alone is not sufficient to stave off failure
• OR all of the above
• An efficient choice depends heavily on the mix of frictions
Assumptions

• We want banks to survive a shock and continue to operate roughly normal-course-of-business
  • Distressed liquidation is not OK
  • Maybe crippled, slow shrinkage is OK, but this presumes the crippled bank’s functions are rapidly and smoothly taken over by others

• We cannot prevent all failures in the face of all shocks
  • We must take a position about the size of distress that a bank must absorb
  • Thus, we cannot avoid at least somewhat model-based reasoning (more on this)
What kind of capital am I talking about?
Equity (maybe plus ALLL)

• Capital with loss-absorbing, solvency-preserving capacity
• NOT
  • Subordinated debt
    • It may protect more senior claimants from losses in receivership, but it does not preserve solvency
  • Debt that converts to equity
    • Book-value triggers and regulatory discretion are not reliable
    • Neither are market-value triggers
  • “TLAC” debt
    • Same problems as convertibles and sub debt
  • All of these protect taxpayers and/or the DI fund...but I would argue not solvency
• And remember: Only equity has governance rights and responsibilities
What’s the goal? (Part 1)

• Option 1: Preserve market-value solvency in the event of large market-value losses...but allow a bank to be near-insolvent after absorbing the shock
  • Presumes VERY RAPID rebuild of market-value equity from some source OR rapid recovery of market value of a material fraction of distressed assets
  • For consistency, wouldn’t there be pressure to accept high market value of equity as evidence of capital adequacy in normal times?
    • E.g. U.S. investment banks had high market-to-book ratios pre-crisis
  • Measuring market-value solvency by the market value of equity will require us to take a position on the value that is equivalent to insolvency...very difficult and controversial
    • Equity will never go to zero
Another first-order problem with option 1: Prices depart from fundamental values

• Example: At the trough of the crisis, the index of syndicated loans to corporations was trading at 65 (where 100 is par)

• The ultimate loss-given-default (LGD) on such loans is about 25 percent.

• Taking the price literally, either the implication was that ALL would default...
  • Actually the peak default rate was similar to 1989-91 and 2000-2002

• OR that LGD would be far larger than historical averages AND the default rate would be much higher than previous peaks

• My interpretation of the price is that it reflected fire-sales and illiquidity, and thus that it should not be taken literally in measuring solvency
What’s the goal? (Part 2)

• Option 2: Preserve book-value solvency in the event of large book-value losses...but allow the banks to be near-insolvent after absorbing the shock
  • Presumes banks will be VERY RAPIDLY recapitalized...
  • ...either by raising external equity under poor market conditions
    • Shareholders will resist, so regulators must force it
  • ...or by purchase by another firm (under poor market conditions)
    • Seems unlikely after crisis experience
  • ...or by bailing-in convertible debt, sub debt, etc.
    • Would require triggers that work...as a practical matter, action by regulators?
What’s the goal? (Part 3)

• Option 3: Preserve book-value solvency in the event of large book-value losses…and require banks to be demonstrably solvent after absorbing the shock
  • This is a stress-test view of required capital…a bank has to not only absorb the shock, but it has to be “adequately” capitalized after such absorption
  • A bank might still have to raise equity…but it should be able to do so over a longer period of time
  • My personal number for the post-shock equity-to-assets ratio: 3 percent.
    • A somewhat arbitrary choice. It matches the Basel 3 minimum leverage ratio requirement.

• I prefer option 3. Others may differ. Let’s all recognize that each option has problems.
Let’s examine take positions on key issues

• I will choose options for which results are available in my 2002 paper.
• Importantly, the focus there was only on corporate loans.
• There are no consumer or CRE loans in the analysis, and their stressed behavior might differ.
• But this is only an illustration, not a serious attempt.
Do we allow PPNR to count as “capital”? 

• In effect, it does in U.S. stress tests, because bottom-up losses are partly offset by projected pre-petition net revenue 

• I say no: 
  • Historically, losses from a shock are projected over some horizon by market participants and compared to existing equity 
  • They tend not to give “credit” for PPNR, perhaps partly because if the bank fails due to the losses it will not be able to earn the PPNR 

• “No” has material implications, because PPNR is material over a horizon of two or three years
What’s the horizon for cumulating losses?

• This is crucial to modeling the size of losses in response to a shock
  • Cumulating twice as long does not double projected losses, but it’s pretty close.

• My answer is two years
  • Partly because my sense during the crisis was that people felt they had a pretty good handle on likely credit losses by end-2009 or early-to-mid-2010
How bad is the stress scenario?

• 1991?
• 1931?
• Somewhere in between? I’ll choose in-between, for convenience
What’s the acceptable failure frequency in that scenario?

• That is, what percentile of the loss distribution are we targeting?
  • Remember, we cannot prevent all failures
• In my view, we’re talking about very large banks. Let’s say there are about 50 of them globally.
• It would be OK if one fails every 200 years.
• That means the 99\textsuperscript{th} percentile.
  • 99.9 might increase the requirement a couple of percentage points…but that depends on the curvature of the loss function.
  • My 8.27 number is the 95\textsuperscript{th} percentile...2.5 every 100 years.
What’s the LGD in the stress scenario

• I assume 25 percent.
• That’s near the long-run average LGD for corporate loans.
• Maybe LGDs are higher under stress, but available data seem to imply not enormously higher.
What’s the riskiness of the underlying portfolio?

• I assume PD=1%

• Perhaps crucially, that’s achieved with a mix of loans rated BBB and BB...there are no B- or C-rated loans.
  • That may be very important to tail losses, because B-rated and below are disproportionately likely to default
What did we have to take positions on?

• Roughly, Tier 1 common equity leverage, using GAAP total assets
• Book-value capital with a 3 percent post-stress ratio
• “normal” PD = 1%
• “stressed” LGD = 25%
• No PPNR credit
• 99th percentile
• 2 year loss cumulation
• Stress between Great Depression and 1989-91
This was not fun

• We lack confidence in each of the assumptions I made
• But pretending we do not have to make assumptions is fantasy
• And picking arbitrary numbers with potentially large distortion costs is not responsible
• Failing to confront the complexities leaves us at the mercy of equity analysts and mercantilists...which is very likely not to leave us with enough capital next time