Capital Regulation: How Much Capital is Needed?

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November 3, 2016

Slides and remarks are Carey's opinions, not those of the Federal Reserve.

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 99th 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 95th 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