19 May 2013 | 17 pages

Banks (Citi)
North America | United States

Potential New Capital Constraint Emerges

BK, MS Screen as Worst Positioned; WFC, PNC, USB as Best

- Industry Overview

- **Calculating Basel 3 supplementary leverage ratios for advanced approach banks** – One of the key takeaways from our recent "Beyond the Basics" conference was that higher capital ratios may be on the horizon for the largest U.S. banks (see Beyond the Basics Financial Services Forum - 2013 Takeaways – Capital Levels Remain Key Concern). Based on comments made at our conference as well as those made by regulators over the past several weeks, we believe the regulatory focus on the capital front may evolve to include not just the Basel 3 Tier 1 Common ratio but also the Basel 3 supplementary leverage ratio. If adopted, a higher supplementary leverage ratio requirement would apply only to banks subject to the "advanced" approach (BK, BAC, GS, JPM, MS, NTRS, PNC, STT, USB, and WFC in our coverage universe). Using both the supplementary leverage ratio definition found in the U.S. Basel 3 NPR documents as well as information gleaned from discussions with industry sources, we have estimated the supplementary leverage ratio for each of the aforementioned banks. Our calculations suggest that as of 1Q13, each of these banks exceeded the current minimum requirement of 3% with BK the lowest at 3.9% and WFC the highest at 7.0%. A detailed walk-through to calculating the supplemental leverage is in the appendix, including how we estimate the off balance sheet exposure for the banks.

- **BK and MS screen as worst positioned WFC, PNC and USB as best positioned** – Although investors typically focus on the Tier 1 Common ratio when sizing up a bank's ability to return capital, our analysis suggests that the supplementary leverage ratio could emerge as the new capital constraint should regulators raise the minimum from the current 3%. The level at which the supplementary leverage ratio would emerge as the new capital constraint varies across the advanced banks. If regulators opted to enforce a 5% minimum leverage ratio, we estimate that it would impact only BK and MS given that they currently stand at 3.9% and 4.3%, respectively. However, a 6% minimum leverage ratio could impact most of the advanced banks (GS, NTRS, BAC, STT and JPM in addition to BK and MS) as their supplementary leverage ratios range from 5.0% to 5.6%. Importantly, WFC, PNC and USB appear to be the best positioned given that they each currently stand in excess of 6.0%. In our note, we go thru implications of a higher supplemental leverage ratio for each bank under coverage.

- **A shift from a risk-based capital approach to a leverage ratio approach could impact how banks manage their balance sheets and capital return** – It is not certain if regulators will in fact raise the minimum supplementary leverage ratio requirement. Assuming they do, we see at least five additional areas of uncertainty including (1) what the new minimum will be, (2) how the final rules for the supplementary leverage calculation come out, and whether or not higher quality assets are treated differently than lower quality assets in that calculation, which could be particularly material for BK and MS given the excess liquidity on their balance sheets, (3) different avenues banks may go down in order to mitigate the impact (such as taking down the matched repo books which would have very limited impact on profitability), (4) to what extent banks elect to issue non-cumulative preferred to boost their Basel 3 Tier 1 Capital instead of retaining common equity and (5) the length of the phase in period for complying with the new minimum leverage ratio. Investors should be cognizant of all these issues as they may ultimately impact balance sheet management, capital return and business mix.

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What We Know…

Legislative and regulatory rhetoric focused on the issue of "too big to fail" – Regulators have historically focused more on risk-based capital ratios as the most important constraint on a bank's capital and have used leverage ratios as a check on a bank's leverage arising from low-risk-weighted assets. Recent political posturing regarding "too big to fail" banks and the real or perceived subsidies some banks may receive given their size has reignited the regulatory debate. Both regulators and legislators have been keenly focused on raising capital standards as they currently stand under Basel 3 proposals as an avenue to tackle "too big to fail". The issue of capital adequacy was also one of the main themes at our recent Beyond the Basics Financials Conference Beyond the Basics Financial Services Forum - 2013 Takeaways – Capital Levels Remain Key Concern.

"As to regulatory measures of capital outside the customized context of stress testing, one approach is to revisit the calibration of two existing capital measures applicable to the largest firms. The first is the leverage ratio…The new Basel III leverage ratio does include off-balance-sheet assets, but it may have been set too low. Thus, the traditional complementarity of the capital ratios might be maintained by using Section 165 to set a higher leverage ratio for the largest firms."

- Fed Governor Tarullo, 5/3/2013

"The tangible leverage ratio is a superior alternative to risk-weighting schemes that have proven to be an illusion of precision and insufficient in defining adequate capital. The effect of relying on such measures has been to weaken the financial system and misallocate resources. The leverage ratio deserves serious consideration as the principal tool in judging the capital strength of financial firms."

- FDIC Vice Chairman Hoenig, 4/9/2013

"I think it is particularly important that we revisit the issue of the leverage ratio in the context of the Basel rulemaking."

- Comptroller of the Currency Curry, 5/9/2013

- **Growing interest to raise capital levels to tackle "too big to fail"** – Although Brown-Vitter in its current form is unlikely to become law, it does provide the regulators with political cover to pursue higher capital levels. Fed Governor Tarullo, Comptroller of the Currency Curry, and FDIC Vice Chairman Hoenig have all cited interest in raising capital ratios for the largest banks in recent speeches. Governor Tarullo pointed to two possibilities outside of the stress test framework where regulators could impact capital levels at banks - leverage and risk-based. More specifically, he pointed to the possibility of revisiting the "calibration" of the "leverage ratio" or the "risk-based capital surcharge."

- **Momentum shifting towards leverage ratio vs risk based measures** – Tarullo, Curry and Hoenig have recently increased focus on leverage ratios as an avenue to assess bank capital adequacy. Hoenig has been the most adamant about the short-comings of risk-based approaches and has placed increasing weight on leverage ratios. Tarullo and Curry, on the other hand, have been focused on using leverage ratios along with risk-based ratios to assess bank capital adequacy.

- **One option on the table is raising the minimum Basel 3 supplementary leverage ratio…** In the aforementioned speech, Tarullo seemed to favor an increase in the minimum Basel III supplementary leverage ratio over the US leverage ratio as a tool to increase leverage ratios. The minimum Basel 3 supplemental leverage ratio requirement has been specifically identified by key regulators as being "too low". We found that the banks in our universe are all comfortably above the supplemental leverage ratio minimum requirements, and we believe look at Tier 1 common ratios as the key capital constraint as things stand today.

  – **Supplementary leverage ratio vs standard leverage ratio.** Currently, US banks are subject to a 4% minimum leverage ratio. In Basel III, there is a proposal for a different approach on leverage called the supplementary leverage ratio in order to capture both on-balance sheet and off-balance sheet exposure. Currently, the minimum level for the supplementary leverage ratio is 3%.

- **…Since this would be a relatively "clean" solution** – Below we list three reasons why an increase in the minimum Basel 3 supplemental leverage ratio may be a favored tool for regulators use to increase capital levels at the largest banks.

  – **Focus on leverage** – Leverage ratios have recently gained weight as a measure to assess bank capital levels, since there is a view that risk based capital measures do not fully capture the inherent risk on the balance sheets.

- **Basel 3 supplementary leverage includes off-balance sheet exposure** – Unlike the standard US leverage ratio which does not include off-balance sheet exposure, the Basel 3 supplementary leverage ratio does include off-balance sheet exposure. In a recent speech (excerpted above) Tarullo seemed to favor the inclusion of off-balance sheet exposure when calculating the leverage ratio.

- **Basel 3 supplementary ratio impacts only the advanced approach banks** – Importantly, the Basel III supplementary leverage ratio only impacts the largest banks. Under the Basel 3 US NPR, the minimum supplementary ratio is exclusively applied to advanced approach banks. Advanced approach banks are defined as banks with either (1) over $250 billion in assets or (2) foreign on-balance sheet exposure of greater than $10 billion. Through the rhetoric of "too big to fail" it seems apparent that regulators are more focused on impacting only the largest banks if they were to implement more onerous capital requirements. Increasing the minimum Basel 3 supplementary leverage ratio would seem to fit the regulators' goals.

- **The formula for calculating Basel 3 supplementary leverage is laid out in the US Basel 3 NPR and there is enough publically available information to estimate the ratio** – While it is difficult to calculate the Basel 3 supplementary leverage ratio for banks with 100% precision, the data available through GAAP and regulatory filings gives us enough to come up with a reasonable estimate. At the current 3% minimum level, this leverage ratio is not a constraining factor for the advanced approach banks under our coverage universe given that we estimate the lowest ratio is BK at 3.9% (see Figure 1).

- **If the minimum Basel 3 leverage ratio is raised to 5% or higher, it may act as a new constraint on capital for some banks** – Management teams have historically managed their balance sheets from a risk-based approach however a material increase in the minimum leverage ratio requirement may force some banks to manage their balance sheets very differently. Additionally, currently investors view risk-based capital metrics as the main constraint on a bank's ability to return capital to shareholders.

Figure 1. Our Estimated 1Q13 Basel 3 Supplementary Ratios Ranges from 3.9% to 7.0% For Banks Under Coverage

	Basel 3 Supplementary Leverage Ratio
WFC	7.0%
PNC	6.8%
USB	6.2%
GS	5.6%
NTRS	5.4%
BAC	5.3%
STT	5.2%
JPM	5.0%
MS	4.3%
BK	3.9%
Average	**5.5%**
Median	**5.4%**

Source: Citi Research

Figure 2. Expected SIFI Buffers

Bank	Expected buffer
JPM	2.5 %
BAC	1.5
BK	1.5
GS	1.5
MS	1.5
STT	1.0
WFC	1.0

Source: Financial Stability Board, Citi Research
As of 11/12
NTRS, PNC, and USB are not classified as SIFIs

Figure 3. If the Basel 3 Supplementary Leverage Minimum Ratio Was Raised To 6%, This Could Be A New Capital Constraint For Most Banks...

	Basel 3 Supplementary Leverage Ratio	Incremental Capital Needed Given Leverage Ratios			
		5%	6%	7%	8%
WFC	7.0%	-	-	0.4	19.3
PNC	6.8%	-	-	0.9	5.0
USB	6.2%	-	-	4.1	9.1
GS	5.6%	-	5.7	18.8	31.8
NTRS	5.4%	-	0.7	2.0	3.3
BAC	5.3%	-	18.2	45.7	73.2
STT	5.2%	-	2.1	4.5	7.0
JPM	5.0%	-	29.6	60.6	91.6
MS	4.3%	7.7	19.1	30.5	41.9
BK	3.9%	4.2	8.0	11.8	15.5
Average	**5.5%**				
Median	**5.4%**				

Source: Citi Research, Company filings
Note: Incremental capital required to get to specified leverage ratios is shown in billions

Figure 4. ….And All Else Being Equal (No Change In Balance Sheet Mgmt and Entire Capital "Hole" Filled Via Common Equity), A 6% Level Equates To ~11% Tier 1 Common Ratios

	Current B3	Proforma T1 Common at Given Leverage Ratio			
	T1 Common	5%	6%	7%	8%
NTRS	12.5%	11.5%	13.8%	16.1%	18.4%
STT	10.6%	10.2%	12.4%	14.5%	16.6%
MS	9.8%	11.5%	14.0%	16.5%	19.0%
BAC	9.4%	8.7%	10.7%	12.7%	14.7%
BK	9.4%	12.2%	14.8%	17.4%	20.0%
GS	9.2%	8.2%	10.0%	11.8%	13.6%
JPM	8.9%	8.7%	10.6%	12.5%	14.4%
WFC	8.4%	5.7%	7.1%	8.4%	9.8%
USB	8.2%	6.3%	7.9%	9.5%	11.2%
PNC	8.0%	5.5%	6.9%	8.3%	9.7%
Average	**9.4%**	**8.9%**	**10.8%**	**12.8%**	**14.7%**
Median	**9.3%**	**8.7%**	**10.7%**	**12.6%**	**14.5%**

Source: Citi Research, Company filings

…What We Don't Know

Increase to leverage ratios is by no means a done deal and many uncertainties remain – We view our analysis as a good starting point for investors but note that uncertainties still remain.

- **US Basel III rules not final, but are expected to be released this year; Increase in the minimum leverage ratio to range of 5% to 6% possible** – At this point the US Basel 3 rules are still not final and are subject to change. At our recent Beyond the Basics conference one industry expert speculated an increase in the minimum leverage ratio to 5 or 6% is a possibility. Given the results on our analysis on Figures 3 and 4, this range seems to make sense given that at those levels the supplemental leverage ratio could become a new constraint for many of the banks. However, until the final rules are released, which many experts expect could be by the end of this year, the required minimum and the calculation itself are subject to change.

- **Calculations under final rules may change** – The calculations for leveraged assets may change under the final rules and given the premium regulators previously put on highly liquid assets, we find it somewhat contradictory that leveraged asset calculations would include total book value of these assets. We think this could disproportionately impact some banks, particularly BK and MS, that have relatively high Tier 1 Common ratios but low leverage ratios.

  – **Governing measure for liquidity is LCR** – The governing measure for liquidity will be the liquidity coverage ratio (LCR), however so far only MS and JPM seems to have given an estimate - MS said "over 125%" on their 1Q13 call and JPM disclosed a 4Q12 ~83% LCR estimate at their investor day and reiterated their target of >= 100% by YE13 during 1Q13 earnings. The minimum LCR requirement is 100%. The LCR is defined as a bank's high-quality liquid assets divided by total net cash outflows over a 30 day stress period.

- **Calculation of derivatives exposure remains a key issue which could impact banks' leverage ratios** – Much of the debate around the use of the leverage ratio concerns the treatment of the potential future derivatives exposure

under the Basel 3 proposed rules. The potential future derivatives exposure included in the leveraged asset figure would be calculated using the current exposure method (CEM) – a much more crude calculation of derivatives exposure relative to the alternative Internal Model Method (IMM). Management teams and industry experts believe the CEM method overstates the true risk of the derivatives portfolio and punitively impacts the leverage ratio.

- **CEM more onerous than IMM** – The CEM method uses a gross notional basis to calculate potential future exposure instead of a net basis. The CEM method is also risk insensitive and tends to overstate risk exposures. Under the IMM method, banks can use internal models to assess possible future exposures embedded in derivative positions.

- **Banks may adjust business models if leverage is a constraint** – If the minimum leverage ratio is raised to 5 or 6%, banks have a number of levers to pull, which may allow them to meet the capital requirements and minimize the impact on return on equity.

  - **Optimize the balance sheet, possibly by winding down matched repo** – One way to do this would be a wind-down of the repo book, specifically the matched repo book which is not a very profitable business. Reducing the availability of matched repo to clients could very quickly and easily reduce assets and improve the leverage ratio, with minimal impact to revenue.

    Note that trying to estimate the size of the matched book is very difficult to disaggregate from the secured repo book used to finance trading inventory, and is a very valuable disclosure that we believe banks should provide to help investors better understand the business and how it impacts the balance sheet.

    - **Less profitable matched repo books could be wound down to improve the leverage ratio –** Repo books have two pieces: 1) Trading, which is used to finance the firm's own trading inventory, and 2) matched repo, which is a service provided to clients. While trading repo is an essential piece of managing dealer inventories, making it hard to part with, matched repo is one of the services in a broader client relationship package. Clients value this service provided by broker-dealers, however it could be one of the easier levers for broker-dealers to pull in order to manage the size of balance sheet assets, with a lesser impact to revenues than alternative options. Client repo activity is typically easy to wind down because it consists of contractual arrangements that are generally short-term in nature.

    - **But this could create unintended consequences** – Should the banks decide to wind down matched repo books, clients needing financing may be forced into other areas of the market, such as smaller broker-dealers. However, this could be problematic since leverage could be pushed into a part of the industry that is less sophisticated and does not have the benefits of scale, which could increase the costs to clients.

  - **Charge for deposits to control the size of the balance sheet** – Bank asset levels are currently being driven higher by strong deposit inflows from corporate and retail customers. One solution would be for banks to charge customers on "excess cash" deposits, which could help shrink the balance sheet and increase the leverage ratio.

Individual Bank Implications

We calculate that increased minimum Basel 3 leverage ratios at 5% or 6% would be a constraining factor for some but not all banks – Banks will be impacted differently and will have different ways to mitigate the impact from a higher leverage ratio requirement.

- **5% minimum would be an issue for BK and possibly MS…**
  - **BK screens poorly** – Trust banks, including BK, have historically operated at lower leverage ratios than traditional banks given the high quality, short duration of their balance sheets. Unlike risk-based approaches, the Basel 3 supplementary leverage framework does not distinguish between riskier and safer assets. Under a leverage framework, BK screens poorly at ~3.9%, which is the lowest in our advanced bank coverage universe, but screens in line with the average capital position under a risk-based approach (9.4% Basel 3 Tier 1 Common vs group average of 9.5%).
  - **MS excess liquidity position and ability to shrink repo book should give it tools to manage this issue, but also implies that it does not have a ton of excess capital** – MS is among the strongest on a Tier 1 Common basis, and is commonly viewed as having a lot of excess capital. When looked at thru the prism of the leverage ratio, we think that MS is more adequately positioned vs peers rather than having significant excess capital

    While MS screens low, we believe the 1) higher level of liquidity (23% of assets) and 2) ability to bring down repo book makes this a very manageable issue for the firm. MS estimated they are "over 125%" on the LCR during their 1Q call (vs a minimum of 100%), so they may have some room to reduce liquid assets in order to boost the leverage ratio.
- **…While a 6% minimum could raise capital requirements for BAC, JPM, GS, NTRS and STT…**
  - **BAC and JPM Tier 1 common ratios probably moving higher, but 11% Tier 1 common seems like upper bound based on what we can assess today** – Increasing the minimum required leverage ratio could lead to banks targeting higher Tier 1 common ratios. Based on a 6% leverage ratio, BAC and JPM would need to hold 11% Tier 1 common to meet both the leverage and Tier 1 Common ratio requirements – it is important to note that this analysis in Figure 4 assumes all else being equal, which is not likely as JPM and BAC are likely find ways to optimize the balance sheet for the leverage ratio (such as shrink matched repo book) and could potentially raise preferred rather than retain more common equity.
    - **JPM** has a 250 bp SIFI buffer or 9.5% Tier 1 common, and we have been assuming they operate at closer to 10% Tier 1 common to allow for a slight buffer on top of that…but feels like that our 10% estimate may be too low. While 11% seems high to us, we do not view it as overly conservative…and would think a reasonable range for JPM's normalized capital levels is 10-11% Tier 1 common.
    - **BAC** has a 150 bp SIFI buffer or 8.5% Tier 1 common, and we have been assuming at they operate in the 9.5-10% range…and now feel that number also might be a bit too low, and that 10% would be more appropriate. .
  - **Our view on required capital for GS does not change significantly even with a 6% minimum supplemental leverage ratio** – GS has a 150 bp SIFI buffer or 8.5% Tier 1 common ratio, but we have been assuming that GS will

operate significantly higher than that at close to 10% Tier 1 common. In Figure 4, we found that holding everything else equal at a 6% supplemental leverage ratio, that GS Tier 1 common would move to 10%. Given that its in line with our prior view on capital and that GS clearly has some opportunities to optimize balance sheet via reducing matched book, we do not view this as a significant issue for GS.

While GS provides data on what it views as its excess liquidity balances, its hard to say if there is room there to reduce these balances (similar to what we noted on MS) given GS has not disclosed any proforma LCR ratios.

– **NTRS and STT could face constraints at 6% -** Even though NTRS and STT are over capitalized when considered on a risk-based approach, this would no longer be the case if a 6% minimum supplementary leverage ratio were adopted. NTRS is often considered one of the most the most well capitalized financial institutions, so we believe that NTRS' case illustrates the difficulties of adopting an overly punitive supplementary leverage ratio.

- **…And this issue is likely not going to be a material capital constraint for the large regional banks (PNC, USB and WFC)**

– **Regional banks appear to be best positioned** – With leverage ratios above 6%, PNC, USB, and WFC appear best positioned should the leverage ratio requirement increase.

Appendix

Calculation of the Supplemental Leverage Ratio

Below we walk through our calculation of the supplemental leverage ratio under the US Basel III NPR, including the sources for the data in the company filings. The supplemental leverage ratio is calculated by dividing Basel 3 Tier 1 Capital by Leveraged Assets as defined in the US Basel III NPR.

Calculating the Numerator - Basel 3 Tier 1 Capital

Figure 5. Our Estimates For the Numerator of the Basel 3 Supplemental Leverage Ratio…

		Add Adjts to get to B3 T1 Capital		
	Reported B3 T 1 Common	Non-Cum Perp Pfrd Eq	[1] Qualifed Min Interest	B3 T 1 Capital
BAC	130,749	15,862	-	146,611
BK	13,747	1,068	-	14,815
GS	66,355 *	6,200	-	72,555
JPM	146,000	9,958	409	156,367
MS	44,590 *	1,508	3,369	49,467
NTRS	7,028 *	-	-	7,028
PNC	23,526	3,441	983	27,950
STT	12,168	489	-	12,657
USB	25,547	4,769	684	31,000
WFC	118,000	12,597	780	131,377

Source: Citi Research, Company filings

[1] Qualified Min Interest – Source: Qualifying Class A, B and C minority interest in schedule HC – R of Y-9C

* Citi Estimates

Basel 3 Tier 1 Capital – We estimate Basel 3 Tier 1 Capital by starting with Basel 3 Tier 1 Common Equity, and then add non-cumulative perpetual preferred equity and qualified minority interests as disclosed in the Y-9C filings (for example, MS's ~$3.4 billion in qualified minority interest represents the stake in the JV with MUFG and managed real estate partnerships, and PNC's consists largely of REIT preferred securities). While many of our banks provide an estimate of Basel 3 Tier 1 Common Equity, we have to make rough estimates of Basel 3 Tier 1 Common Equity for NTRS, GS and MS, which do not provide this number.

Calculating the Denominator – Leveraged Assets

Figure 6. ….And Our Estimates For The Denominator Of the Supplemental Leverage Ratio As of March 31

		Add Adjustments to get to B3 Leverage Assets					
	Total Assets	Total Adjts from Common Equity to B3 T1 Capital	Derivative Exposure	10% of Uncond Cancellable Commits	All other Unused Commits	Total Adjts from Equity to B3 T1 Capital	Leverage Assets
BAC	2,176,625	(90,774)	159,293	37,647	464,485	570,651	2,747,276
BK	355,984	(21,859)	5,540	-	39,879	23,560	379,544
GS	959,426	(5,105)	201,196	-	148,917	345,008	1,304,434
JPM	2,389,349	(51,295)	231,509	53,402	476,626	710,242	3,099,591
MS	801,383	(21,030)	215,429	-	146,852	341,251	1,142,634
NTRS	93,157	(584)	1,467	-	35,505	36,387	129,544
PNC	300,946	(14,127)	1,088	1,736	121,894	110,590	411,536
STT	217,853	(8,213)	7,081	-	28,437	27,305	245,158
USB	355,447	(9,847)	291	8,776	146,891	146,111	501,558
WFC	1,436,634	(32,018)	8,548	8,547	461,503	446,580	1,883,214

Source: Citi Research, Company filings

Estimating leveraged assets – Under the Basel 3 proposal leveraged assets are meant to represent both on-and-off balance sheet exposure as well as current and potential future exposure on a bank's balance sheet. The specific steps to calculate Basel 3 leveraged assets for the supplementary leverage ratio are detailed on page 27 of the US Basel 3 NPR Proposal and excerpted below:

> *"As proposed, total leverage exposure would equal the sum of the following exposures:*
>
> *(1) The balance sheet carrying value of all of the banking organization's on-balance sheet assets; minus amounts deducted from tier 1 capital;*
>
> *(2) The potential future exposure amount for each derivative contract to which the banking organization is a counterparty (or each single-product netting set for such transactions) determined in accordance with section 34 of the proposal;*
>
> *(3) 10 percent of the notional amount of unconditionally cancellable commitments made by the banking organization; and*
>
> *(4) The notional amount of all other off-balance sheet exposures of the banking organization (excluding securities lending, securities borrowing, reverse repurchase transactions, derivatives and unconditionally cancellable commitments)."*
>
> \- Page 27, Basel 3 US NPR Proposal

To calculate Basel 3 leveraged assets, we start with average assets as reported on the regulatory balance sheet found in the Y-9C and make the following adjustments consistent with the proposal:

- **Adjustment 1 – Subtract deductions from Tier 1 –** The difference between the reported shareholder's equity and Tier 1 capital under Basel 3 is equivalent to the deductions from capital. As stated in the Basel III NPR, we subtract these deductions from average assets.
- **Adjustment 2 – Add potential future derivative exposure –** Under the Basel 3 framework, potential future exposure of derivatives is calculated using the current

exposure method (CEM). The calculation is dependent on the underlying asset type and tenor (<= 1yr, > 1yr and <= 5yrs, > 5yrs) of the derivative contract. We walk through the calculation below. We note that this calculation is one of the more difficult and is subject to uncertainty.

– To calculate the future potential exposure one needs to know (1) the notional amount of OTC derivatives broken up by underlying asset type and tenor, (2) the positive current credit exposure of OTC derivative contracts and (3) the net current credit exposure. The formula is below:

Total potential future exposure = (40% x gross potential future exposure) + (60% x net to gross ratio x gross potential future exposure)

– **Gross potential future exposure** – The gross potential future exposure is the sum of the notional amount of derivatives by type and tenor multiplied by a conversion factor. This information can be found in HC-R line 2 a through 2 g in the Y-9C. The Basel 3 NPR includes a conversion matrix for derivative contracts split by type and tenor as shown below:

Figure 7. Conversion Factor Matrix for Derivative Contracts

	Interest Rate	FX and Gold	Investment Grade Credit	Sub-investment Grade Credit	Equity	Precious Metals (ex Gold)	Other
<=1 year	0.00	0.01	0.05	0.10	0.06	0.07	0.10
>1 year and <=5 years	0.005	0.05	0.05	0.10	0.08	0.07	0.12
>5 years	0.015	0.075	0.05	0.10	0.10	0.08	0.15

Source: Page 91 of Basel 3 US NPR Proposal – Advanced Banks

– **Net to gross ratio** – The net to gross ratio is calculated by dividing the net current credit exposure by the gross current credit exposure.

- **Gross current credit exposure** – This is the mark-to-market of only the receivable portion of derivative contracts held by the bank. This can be found in line 14(a)(1) and 14(b)(1).

- **Net current credit exposure** – The net current credit exposure is the mark to market of positive receivables less netting agreements. This can be found by adding columns A-E in schedule HC-L, line 15 a of the Y-9C.

Figure 8. Components to Calculate Potential Future Exposure

	Gross Potential Future Exposure	Gross Current Credit Exposure	Net Current Credit Exposure	Net to Gross Ratio	Total Potential Future Exposure
BAC	349,080	1,177,237	110,506	0.09	159,293
BK	8,140	25,698	12,021	0.47	5,540
GS	376,604	682,430	152,679	0.22	201,196
JPM	502,256	1,422,643	144,490	0.10	231,509
MS	453,418	829,144	103,813	0.13	215,429
NTRS	2,226	2,674	1,154	0.43	1,467
PNC	1,624	7,885	3,547	0.45	1,088
STT	8,864	10,233	6,802	0.66	7,081
USB	718	1,752	17	0.01	291
WFC	16,429	74,889	15,015	0.20	8,548

Source: Citi Research

– **Alternative method to calculate derivative exposure** – A simpler method to size up total derivative exposure can be found in the Y-9C under schedule HC-R Line 54 column B. This is not an exact measure of a bank's total derivative

exposure as calculated under CEM but according to discussions with some of our companies, it represents a good proxy. We note that some differences exist between our calculation of total potential derivative exposure and the number reported in the Y-9C, however this has a negligible impact on pro-forma supplementary leverage ratios.

- **Adjustment 3 – Add 10% of unconditionally cancellable commitments** – These commitments are composed of credit card lines. This can be found in schedule HC-L items 1(b)(1) and 1(b)(2).
- **Adjustment 4** – **Add all other off-balance sheet exposure** – This is mostly all unused commitments and letters of credit excluding unconditionally cancellable commitments. This can be found in schedule HC-L items 1 through 4 of the Y-9C and excludes items 1(b)(1) and 1(b)(2) which are the unconditionally cancellable commitments.
  - **Uncertainty on definition of off-balance sheet exposure remains** – We note that there is currently uncertainty on what will be included in other off-balance sheet exposures, which may put some additional slight pressure on our estimated leverage ratios as these definitions are more clearly defined.

Companies mentioned

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Appendix A-1

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