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Global Banks and Brokers

Sizing Up “The Elephant in the Room” – Regulatory Paradigm Shift and the Impact on Fixed Income Trading

■ Industry Overview

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■ **What does the business model look like longer term?** — Fixed income trading remains a significant part of the revenue mix for the largest global banks, accounting for 16% of 2011 revenues, down from 27% at the peak in 2009. Two years ago, we published a report ([Global Banks: Breaking Down the Fixed Income Trading Black Box](#)) to help investors better understand the drivers of the fixed income trading businesses and coming regulatory changes. Since then, a weak economic backdrop combined with looming impact from OTC derivatives reform, Volcker prop-trading restrictions and higher capital requirements under Basel 2.5 and 3 have led investors to question the return profile of the fixed income trading business. In this report we offer a refreshed and deeper analysis on the key regulatory changes, and how we expect them to impact market structures, competitive dynamics and ultimately business returns.

■ **We estimate normalized returns of 10-12%...** — While there are many factors to consider, the largest regulatory headwinds will be OTC derivatives reform, Volcker and Basel 3, which in our base-case we estimate will negatively impact global fixed income trading revenues by 15-20%. Our analysis starts with the assumption that fixed income trading revenues are cyclically depressed, and that revenues are currently 20-25% below normal levels. Then we provide a business level analysis on the impact of regulatory reform. Given rules are not yet final, we lay out what we believe are the 10 key swing factors to monitor. Many of these swing factors are onerous proposed rules that if not fixed, could negatively impact market liquidity and dealer revenues, and could lead us to raise our 15-20% impact estimate. When we factor in likely regulatory drags and a cyclical upturn, we estimate on average FICC franchises can drive 10-12% ROEs, and we see scale players with large captive flow businesses like JPM, DB and BARC as best-positioned and ultimately capable of 15% returns.

■ **...But it will take a while to get there and we see mid-to-high single-digit returns over the next couple years** — We estimate the 2011 fixed income ROEs for the eight largest players averaged 7% on a fully loaded Basel 3 basis (including some benefit from RWA mitigation). Barring a major cyclical upturn, we believe the most likely outcome will be a multi-year period of 5-9% average returns in FICC, which should gradually converge to 10-12%. Reduced capacity could go a long way in helping returns, but we do not expect any large exits in near term...and think it will more likely be a slow bleed. Another lever is better pricing, but we believe the more likely outcome is banks fighting aggressively for market share in “flow” businesses such as FX and Rates. In the near term, we expect banks to reduce costs in order to improve returns, but there is significantly more leverage from boosting revenue and reducing capital requirements via RWA mitigation. Based on our math, banks cannot simply get to decent returns on cost-cutting alone.

■ **Despite challenges in the near term, we believe FICC can still be an attractive business** — We view a 10-12% fixed income trading ROE as roughly in line with banks’ cost of capital, and FICC clearly has synergies with other business lines. Plus, the business has an attractive secular growth profile given the capital needs of growing global markets will not likely be met by on balance sheet lending. Over the longer term, we expect the industry will recalibrate their business models (including some eventual business exits) to generate better returns.

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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Executive Summary

Figure 1. Fixed Income trading accounts for ~20% of revenue at large investment banks

	2009	2010	2011
Goldman Sachs	57%	34%	30%
Deutsche Bank	41%	37%	25%
Barclays	42%	27%	24%
RBS	35%	18%	18%
Morgan Stanley	38%	23%	16%
JP Morgan	18%	15%	15%
Credit Suisse	32%	22%	15%
UBS	13%	15%	15%
BNP	20%	12%	12%
Soc Gen	18%	9%	9%
BofA/ML	13%	11%	9%
Credit Agricole	14%	8%	8%
HSBC	13%	8%	7%
Average	27%	19%	16%

Source: Citi Investment Research and Analysis.

Fixed income trading remains a very significant part of the revenue mix for the largest global banks, accounting for 16% of 2011 revenues, down from 27% at the peak in 2009. Two years ago, we published a report ([Global Banks: Breaking Down the Fixed Income Trading Black Box](#)) to help investors better understand the drivers of the individual fixed income trading businesses and coming regulatory changes. Since then, a weak economic backdrop combined with looming impact from OTC derivatives reform, Volcker prop-trading restrictions and higher capital requirements under Basel 2.5 and 3 has led investors to question the return profile of the fixed income trading business. In this report we offer a refreshed and deeper analysis on the key regulatory changes, and how we expect them to impact market structures, competitive dynamics and ultimately business returns.

We estimate FICC trading returns are likely to remain in the 10-12% range, even after cyclical rebounds – After reviewing a long list of global regulations, taking a close look at current and expected RWA levels, mitigation and anticipated Basel 3 required common equity – and the overall FICC revenue pool prospects by product and by player market share – we estimate that overall industry FICC returns on equity including regulatory drags will end up in the 10-12% range. With these somewhat below-average returns and given trading risk levels, we believe firms will need to take more aggressive action to reduce costs (primarily via personnel), and improve capital optimization.

Below are some of the key findings in our report:

1) We estimate that fixed income trading revenues are running 20-25% below “normal” levels.

Performance in 2011 was marred by sharp losses in credit trading on wider cash credit spreads amid fears of a European sovereign meltdown and compounded by low volumes. In credit trading, bid/ask still remains relatively wide – at 2-3x pre-crisis levels, and various fixed income trading volumes remain generally thin – which we see as further evidence of cyclical rather than structural weakness. Assuming a stronger macro-economic backdrop, we forecast “normal” fixed income trading revenues before regulatory impacts of ~\$135 billion vs 2011 revenue pool of \$105 billion. Our normal revenue pool estimate is roughly equal to the global revenue pool in 2006, 2007 and 2010, but well below post-crisis peak revenues of ~\$190 billion seen in 2009.

2) We see 15-20% impact to revenues related to large structural headwinds from regulatory and capital changes.

While there are many regulatory issues facing the banks, we believe the key issues are: 1) OTC derivative reform including new rules on swap clearing, margin and exchange trading, 2) Basel 2.5/3.0 which require significantly more capital to be held for market and counterparty risk exposures, and 3) the Volcker rule which limits proprietary trading of US firms globally and global firms interacting with US clients. A complicating element is potential uneven global application of rules – either via different rules, strictness of implementation, or the extraterritorial application of a given jurisdiction’s rules abroad.

■ **Our 15-20% impact to FICC revenues from regulatory impact focuses primarily on OTC Derivative reform, Volcker, and Basel 2.5 and 3.0...** On page 7 of our report, we run through our thought process on how we arrive at our estimate by looking at three major reforms (OTC, Basel and Volcker) and drill down into each FICC business – Rates, FX, Credit, Mortgage and Commodities

“Regulation will undoubtedly bring about new ways in which the industry must manage its operations and deliver its services to clients. However, the current return profile of our industry is principally driven by cyclical factors as opposed to regulations that haven’t been finalized or implemented”

- GS CFO David Viniar
2/8/12

– to assess what percent of each fixed income trading revenue pool is impacted on a product-by-product bottom-up basis. We estimate OTC derivative reform affects roughly 45% of fixed income trading revenues, Basel 2.5 and 3.0 impacts roughly 20%, and the Volcker rule could affect up to ~75% of overall FICC revenues (see Figure 6). Once we identified the associated revenue pools, we estimated the relevant impact on each business to arrive at our 15-20% estimate, all of which we see as *incremental* relative to our estimated core run rate.

– **Regulatory impacts to FICC revenues will vary significantly by business.**

We first summarize “affected” revenue pools from each regulation in Figure 2 below based on our detailed product-by-product “normal” revenue pool estimates (Figure 6). In Figure 3 we walk through our estimated impacts from each various rule. While our estimated revenue “hits” are necessarily subjective – we believe the affected revenue pools give a clear view on “what’s at stake” for each business. Note inside the report we review each of the five FICC business lines and discuss the unique implications of each rule (starts on page 78).

- **....But implementation of rules is a slow moving process – and therefore we see little regulatory impact in 2012, with full impact not until late-2014 / early-2015.** We estimate roughly 50% of the regulations will be in place by the end of 2013 including OTC derivative reforms and Basel 3 and the remaining 50% will phase-in by year-end 2014 (Volcker) assuming no major delays. By January 2015, we expect virtually all of the major regulatory impacts to be in the run-rate – with the only remaining impacts from any Volcker-related private equity/hedge fund divestitures that get extensions. (See Figure 19 for summary of regulatory timing).

– **We would not be surprised to see the timeline extended as regulators wrestle with complexity and global coordination.** Given need to create a global clearing of derivatives regime and the problems un-even global regulations present, plus the numerous precedents of multiple delays across a variety of rules and jurisdictions – further modest delays are certainly possible. That said, we do not believe rules scheduled for enactment in 2012 (e.g. US OTC clearing and exchange trading) will see more than 6 months of further delays. Global Basel 3 rules, originally slated for 1Q12 – still seem on track for 2013 adoption – though further delays are clearly possible.

- **While we are using 15-20% impact as our base case, there are 10 significant issues that remain that could significantly swing our estimate.** On page 45 of our report, we run through the key unknowns that need to be resolved including: 1) Clarity on the Volcker rule, 2) Final Basel 2.5 and 3.0 rules dictating risk weighted assets and potential uneven treatment of counterparty risk (CVA) charges, 3) Un-cleared margin levels, 4) Derivative netting rules that could help reduce high margin collateral demands from clearing, 5) Global clearing harmonization, 6) Extraterritoriality (how US rules are applied abroad), 7) Final definition for Swap Execution Facilities (SEFs), 8) SEF Block Trade exemptions, 9) Single-Counterparty limits and 10) Outcome of the fundamental review of the Basel 2.5 trading book rules. In nearly all cases, these swing factors are onerous proposed rules that if not fixed are likely to negatively impact market liquidity and dealer revenues.

Figure 2. To estimate the regulatory hit, we first identify revenue pools impacted by OTC reforms, Volcker and Basel 2.5/3.0...

	% of FICC Revenues	% Revenue Affected by Various Regulations				
		OTC Affected		Total OTC	Volcker	Basel 2.5
		Cleared Derivative	Uncleared Derivative			
FX	22%	3%	37%	40%	40%	0%
Interest Rates	36%	23%	38%	60%	82%	0%
Credit	26%	17%	11%	28%	95%	25%
Commod.	8%	23%	58%	80%	90%	0%
Mortgages	8%	4%	1%	5%	82%	55%
Total	100%	15%	29%	45%	77%	11%

Source: Citi Investment Research and Analysis.

Note: Please see Figure 6 on page 12 for detailed breakdown on how we arrive at our estimates for impacted revenues by business line.

Figure 3. ...Then we lay out our estimates on a product level on the incremental revenue impact for each regulatory reform...

	Assumed Revenue Hits % to Affected Revenues					Total Regulatory Hit %
	Cleared OTC	Uncleared Derivative	Total OTC	Volcker	Basel 2.5	
FX	-15%	-9%	-9%	-8%	0%	-7%
Interest Rates	-15%	-20%	-18%	-8%	0%	-17%
Credit	-15%	-17%	-16%	-15%	-3%	-19%
Commod.	-15%	-16%	-15%	-8%	0%	-20%
Mortgages	-15%	-5%	-13%	-15%	-3%	-15%

Source: Citi Investment Research and Analysis

Figure 4. ...And we arrive at our estimate of a ~16% cumulative hit to FICC revs

	Weighted Hit By Category					Weighted Total
	Cleared OTC	Uncleared Derivative	Total OTC	Volcker	Basel 2.5	
FX	-0.1%	-0.7%	-0.8%	-0.7%	0.0%	-2%
Interest Rates	-1.2%	-2.7%	-4.0%	-2.4%	0.0%	-6%
Credit	-0.7%	-0.5%	-1.1%	-3.6%	-0.2%	-5%
Commodities	-0.3%	-0.7%	-1.0%	-0.6%	0.0%	-2%
Mortgages	0.0%	0.0%	-0.1%	-1.0%	-0.1%	-1%
Total	-2.3%	-4.6%	-7.0%	-8.3%	-0.3%	-16%

Note: The estimated hits above leverage the prior to tables. So estimated hit from impact of Volcker on Rates of 2.4% is a function of: 1) rates represent 36% of revenue pool, 2) an estimated 82% of revenues in rates pool is impacted by Volcker, and 3) we estimate a 8% hit from Volcker on affected rates revenues.

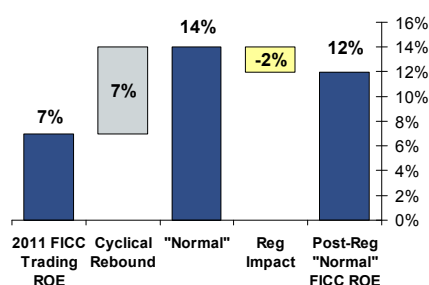
Source: Citi Investment Research and Analysis

3) We see 10-12% normalized ROE for FICC after factoring in cyclical improvement and secular regulatory headwinds.

Combining investment bank line of business disclosures with our estimates of the capital intensity of fixed income trading, expectations of market share changes and the size of the normal global revenue pool, we estimated fixed income trading returns for the largest investment banks.

- **Assuming a full capital allocation on Basel 3, we estimate fixed income trading ROEs in 2011 were in the mid-single digits ...** We estimate 2011 fixed income trading returns for the top 8 global I-banks on a Basel 3 basis was in the mid-single digit range (See Figure 29 on page 57) reflecting mostly cyclical factors including sharp trading losses in mortgage and credit trading.
- **...Which would correspond to 13-14% ROE in a “normal” macro environment and no impact from regulatory headwinds...** While we don't expect the major banks to reach normal fixed income trading revenue levels for several years, we ran an illustrative example of what the returns would look like for the banks if they got the full benefit of the cyclical uplift and no impact from regulatory headwinds...while clearly not a very likely scenario, it was helpful for us to calibrate our models. If we assume a more “normalized” revenue and some assumed market share gains (top 8 players shifts from ~67% of the 2011 revenue pool to ~71% of our estimated \$135 billion “normal” revenue pool), we found the returns on a fully loaded Basel 3 basis rise to 13-14%, before regulatory reform impact.
- **...But falls to 10-12% when we factor in our estimated impact to revenue pool from regulatory reform, although there will be a wide disparity.** Using our base regulatory reform impact, we estimate average fixed income trading ROEs fall to 10-12% with a bifurcation of results as the best-in-class earning 13-15% while subscale players earn 6-10% (see Figure 33 on page 62).

Figure 5. We see industry Fixed Income Trading ROEs approaching 12% post regulation.



Source: CIRA estimates. RoEs based on post-mitigation RWA with 9-10% capital allocation for the top 8 global banks. See p 57 for details.

- **We believe this points to sub-par ROEs in fixed income trading for the next several years.** Given we expect the overall revenue pool to remain below normal levels due to the macro environment plus our expectation that regulatory headwinds will stiffen from 2013 through 2015, our analysis of top global investment banks shows fixed income trading ROEs are likely to remain in the mid to high single digits for sometime.
- **Returns will vary by businesses.** While we don't have enough data to explicitly calculate ROEs for each business individually, based on expected capital charges and regulatory impacts – it appears that FX will be among the highest ROE businesses in the new world, while Credit and Mortgage appear likely to have tougher hurdles.

4) Despite regulatory headwinds, we still believe fixed income trading can be an attractive business.

We believe fixed income trading has an attractive growth outlook and substantially reduced risk profile, but the downside is that the returns will likely fall from the 20% range to closer to 10-12% inline with its cost of capital. Given the synergies this business has with other higher return businesses (such as investment banking), we would still view this as an attractive business for the scale players.

■ **Fixed income trading has attractive growth potential...** In addition to our view that fixed income trading revenues are 15-20% below normalized levels, we see both near-term opportunities – which appear relatively modest – and long-term opportunities which will be helped by bigger secular growth factors.

– **Biggest near term growth opportunity seems to be in Europe...** In Europe we expect capital markets and fixed income trading businesses can benefit from reduced leverage capacity on bank balance sheets, which may force greater activity into the capital markets. Geographically, we believe opportunities with Central and Eastern Europe corporate clients are likely as core European banks scale back their activities and focus more closely on domestic markets (e.g. Italian banks focusing on Italian clients). We also expect to see greater proliferation of investor clients in Europe as hedge funds dedicated to European opportunities have been increasing.

– **...Long-term secular growth from larger and deeper capital markets, especially in emerging markets will be an important positive force.** As economic growth expands into new emerging markets – capital formation and liquid secondary markets naturally follow growing banks' opportunity. The capacity for banks to fully finance growing economies via on-balance sheet lending – on a long-term basis – is far exceeded by the abilities of the debt capital markets. Additionally a return to a more robust economy in developed markets with greater capital markets activity should continue to drive growth.

■ **...But we expect the industry will struggle to generate returns above our 10-12% estimate near-term.** In order for the industry as a whole to generate more acceptable returns of 15%+ long-term, many banks will need to adjust business models. While we lay out some potential levers that can drive higher returns, we do not view most of these as likely to occur in the near term.

"One of the many, potential unintended consequences of regulation will be large consolidation in the industry...It's hard to see how the regulations that we have seen unfold in the last 18 months will do other than consolidate our industry even further."

– Deutsche Bank Anshu Jain

– **Reduced industry capacity could go a long way to helping returns, but we do not expect any large exits in near term...more likely to be slow bleed** – Due to low barriers to entry from relatively low capital requirements, fixed income trading has significant excess capacity. The silver lining of regulatory and capital changes has been some of the first reductions in capacity (see Figure 85 and Figure 86 on page 150). One of the key issues is how quickly further capacity comes out, but we are not convinced it happens quickly given entrenched competitors and the ability to cross-subsidize businesses.

• **Exits have not been out of major business lines so far** – While many executives point to reductions in capacity coming out of Europe as a key positive, so far we believe exits have been mostly in marginal businesses and we have yet to see major wholesale exits from trading operations. Additionally industry consolidation may be hindered by new entrants in OTC derivatives trading.

– **Another argument for higher returns is banks gain greater pricing power, but we do not see this as likely in the near term.** In a theoretical world, expensive capital forces banks to ration balance sheet resources and potentially charge higher prices. But a more likely near term result is that banks collectively fight aggressively for market share in new capital-light "flow" businesses like FX and rates

– **So lower costs will be an important ... but not easy lever to pull to drive higher returns.** We are sure that banks will look to reduce costs in order to

improve returns, but there is significantly more leverage from boosting revenue and reducing capital requirements. Based on our math, banks can simply not get to there on cost cutting alone.

- **Compensations payouts and headcounts will likely continue to need to come down** – In our baseline view for the industry, we already expect to see structurally lower compensation ratios from 45% to the 35-40% range in “good times.” In Figure 86 we summarize the currently announced head count reduction and cost cutting plans in our global coverage.
 - **Lower non-comp costs are also a lever, but are unlikely to be available for several years given new regulatory and technology investment costs** – Technology and systems are expensive and compliance with myriad rules adds demands for record-keeping and reporting systems. Long-term we believe incremental investment may decline as businesses ramp infrastructure and become more electronic, but we do not expect lower costs to be an easy lever for most banks to pull in the current environment or for the next 2-3 years.
- **This leaves RWA mitigation as one of the most important tools banks have to improve returns.**
- **RWA reductions so far have appear to be “easier decisions”** – We view recent RWA reductions as primarily focused on the unwind of legacy assets (aka the back-book) rather than the customer-facing business (aka the front-book). At the end of this report we tally recent efforts to pare down low return businesses, mostly by the European banks.
 - **RWA modeling is a major investment area** – Sophisticated internal RWA models refine risk measurements via historical VAR, correlations and default probabilities - can significantly lower capital demands versus more onerous standard approaches. The process has resulted in an “arms race” to build internal RWA models – where we believe some players like JPM in the US have had greater success vs peers as they have been working with the Fed to get advanced trading models approved longer than peers like GS and even BAC. Note we estimate current FICC Basel 3 RWA for JPM is about \$350 billion, vs \$450 billion for BAC, and \$465 billion for GS, despite similar sized franchises (see Figure 30 on page 59).
- **While industry returns will be under pressure, we would expect to see a fairly wide range.**
- **Global fixed income trading leaders are likely to remain JPM, DB and BARC** – Based on our fixed income trading ROE analysis, we see existing scale players with large captive corporate flow businesses like JP Morgan, Deutsche Bank and Barclays with strong positions in FX, Rates and Credit across both corporate and investor clients as best positioned for the new regulatory environment and ultimately in a position to generate 15% returns.
 - **Goldman’s business model clearly most impacted.** Goldman is the most at risk to regulatory reform of all the global investment banks, given its high concentration of overall firm revenues in fixed income trading, above average dependence on soon to be more tightly regulated derivatives, and more complex structured products. Additionally, Goldman’s core institutional investor client-base is more likely to be impacted by new rules, vs traditional corporates, which enjoy greater exemptions. Lastly, for better or worse, historically Goldman has reaped a greater proportion of profits from

opportunistic trading and investing of its own capital, which will be more tightly restricted under the Volcker rule.

Despite these challenges, we see GS as having an above-average chance of earning mid-double-digit returns given its strengths in technology and electronic trading, and proven ability to recalibrate its business model. In the event regulations do produce a severe decline in industry revenues, we see Goldman as likely to be among the first to right-size the business, and re-focus on new opportunities that can generate more adequate returns, or return capital to shareholders.

- **BAC will remain a major force, but we see slightly lower returns than the top 3 or 4 players.** Bank of America will clearly be one of the top fixed income trading players in the new world, and should be able to continue to leverage its very strong debt underwriting and corporate treasury businesses into flow trading volumes particularly in rates and FX. While the company appeared to be ceding share largely due to capital constraints, we believe BAC has gotten on much stronger footing with its capital position and is now in the process of regaining share. And while the expense benefits from its “New BAC” cost-cuts still remain to be seen, structurally it appears BAC will have lower returns than the top players, based on expected capital employed and our FICC market share expectations.
- **MS, CS and UBS are likely to see large challenges to achieving mid-double digit returns** – While we expect MS, CS and UBS to continue to dedicate significant resources to compete, these firms suffer from a variety of challenges many unique to each firm. MS appears sub-scale despite attempts to grow its macro franchise with corporate investors. The major Swiss banks lack scale across the breadth of flow businesses and are likely to need to take tougher decisions in the future.

Revenue Pools Impacted by Regulatory Reforms

Figure 6. Detailed summary of revenue pools impacted by OTC reforms (45%) Volcker (~75%) and Basel 2.5/3.0 (20%)

FICC Pool	Currencies	22%	Rates	36%	Credit	26%	Commodities	8%	Mortgage	8%	100%
OTC Derivatives CLEARED		3%		23%		17%		23%		4%	15%
	Non-Deliverable Fwds	3%	Linear Swaps Clearable	23%	IG CDS clearable (est 90%)	14%	Trading w/ Investors (cleared)	11%	ABX & Derivatives	4%	
					HY CDS clearable (est 75%)	4%	Investor Prods / Index (cleared)	11%			
OTC Derivatives UNCLEARED		37%		38%		11%		58%		1%	29%
	Options	15%	Cross FX Swaps	10%	CDS IG uncleared	2%	Trading w/ Investors (uncleared)	4%	CDS on RMBS	1%	
	Plain Vanilla Swaps	11%	Interest Rate Options	10%	CDS HY uncleared	1%	Investor Products / Idx (uncleared)	4%			
	Deliverable Forwards	11%	Exotic /EM Rates Derivs	10%	Structured - Total Return Swaps	3%	Short-dated Corporate Flow	15%			
			Linear Swaps Unclearable	8%	Structured Credit Correlation	5%	Long-dated Corporate Flow	5%			
							Structured w/ End Users	30%			
Total OTC		40%		60%		28%		80%		5%	45%
HIGH CVA BASEL 3.0		9%		9%		9%		22%		0%	9%
Portion of Uncleared Derivatives	Long-Dated Forwards/Swap	6%	Long-dated Cross-FX	3%	Long-dated CDS uncleared	1%	Long-dated Trading w/ Investors	1%			
	Long-Dated Options	4%	Long-dated Options	3%	Structured - Total Return Swaps	3%	Long-dated Inv Prod / Index	1%			
			Long-dated Exotic/EM Rates	3%	Structured Credit Correlation	5%	Long-dated Corporate Flow	5%			
			Long Linear Swaps (uncleared)	2%			Structured w/ End Users Long-dated	15%			
Basel 2.5 Significant impact		0%		0%		25%		0%		55%	11%
					HY Cash bonds	15%			Non-Agency RMBS	30%	
					Secondary CDO Trading	10%			RMBS CDO	14%	
									CMBS /Cons. ABS	2%	
									Non-US Mortgage	9%	
Basel 2.5 & 3.0		9%		9%		34%		22%		55%	20%
Volcker Rule		40%		82%		95%		90%		82%	77%
	G10 Forward/Swap	15%	Interest rate derivs	47%	IG Cash bonds	20%	OTC w/ Non-Exempt Clients	30%	Non-Agency RMBS	30%	
	G10 Options	10%	EM Derivatives	13%	IG CDS	15%	OTC w/ Corporate Clients	50%	CMO's	15%	
	EM Forward/Swap	10%	Sovereigns	10%	HY Cash bonds	15%	Futures	10%	RMBS CDO	14%	
	EM Options	5%	EM Cash Bonds	10%	HY CDS	5%			CMBS/Cons. ABS	9%	
			Municipal Bonds	2%	Distressed	10%			Non-US Mortgage	9%	
					Structured Credit	20%			ABX & Derivatives	5%	
					Emerging Markets	10%					

How to read this table: FX as an example: Currencies are 22% of global FICC revenues. 3% of FX revenues are affected by OTC derivative clearing, 37% of FX revenues are impacted by un-cleared derivatives (comprised of Options, Swaps and Forwards) and a total of 40% of FX revenues come from derivatives. We estimate 9% of FX revenues see a High Basel 3.0 charge, and none are significantly impacted by Basel 2.5. 40% of FX revenues are affected by Volcker, while 60% are exempt (spot trading). Note Volcker impact reflects revenue pools from products not explicitly exempt from the rules.

Source: Citi Investment Research and Analysis.

Fixed Income Trading Regulatory Impact by Product

Figure 7. Summary of Regulatory Reform Impact by Product

	Global fees "Normal" Pre-Reg	% of Rev	Reg Impact	Est Reg Hit	Global fees "Normal" Post-Reg	Regulatory Impacts
FX	~\$33 bil	22%	LOW	-7%	~\$30 bil	<ul style="list-style-type: none"> ■ OTC - Impact small. Swaps, deliverable fwds and options appear exempt/unable to clear. Only non-deliverable fwds (~3% revs) will clear. Options will require margin, but will not clear ■ Basel 3 - Uncleared options and long-dated swaps get higher capital & CVA charges ■ Volcker - Spot FX is exempt. Some revenue impact possible but few inventory exposures
Interest Rates	~\$55 bil	36%	MED	-17%	~\$45 bil	<ul style="list-style-type: none"> ■ OTC - Some impact as many trades will be standardized, cleared & exchange/SEF traded with increased transparency hurting spreads - though plain vanilla is a smaller revenue source ■ Basel 3 - Capital treatment of long-dated un-cleared trades hits Rates most heavily, with higher revenue trades like cross-currency swaps with clearing-exempt corporates affected ■ Volcker - Only Treasuries, Agencies and some Municipals exempt. Sovereigns could be added. Given few non-exempt inventories, we see Rates at lower risk vs other products from Volcker
Credit	~\$38 bil	26%	HIGH	-19%	~\$30 bil	<ul style="list-style-type: none"> ■ Volcker - Harsh Volcker is biggest risk to Credit given business is based on holding inventories and principal market making ■ OTC - Exchange trading will impact CDS Index & index constituent single-names first. SEF's likely to result in bid/ask compression but may be ill-suited for trading illiquid single-name CDS ■ Basel 2.5 - RWA inflation for securitizations and correlation trading significantly lowers returns on capital and most players will exit or significantly reduce foot-prints
Commod.	~\$12 bil	8%	HIGH	-20%	~\$9 bil	<ul style="list-style-type: none"> ■ Strict Volcker rule could hurt revenues given principal position taking & liquidity limitations to hedging ■ Commodity Position limits may crimp trading volumes & growth of "Investor products" (index funds) ■ Basel 3 - CVA charges may hurt revenues from more valuable, long-dated hedges for corporate end-users who will be exempt from posting margin
Mortgages	~\$12 bil	8%	MED	-15%	~\$10 bil	<ul style="list-style-type: none"> ■ Basel 2.5 - High capital charges for low-rated securitizations will keep inventories very lean, but business is already operating at significantly reduced volumes ■ Volcker - Strict interpretation will impact inventory-based trading model ■ QRM / Risk Retention - rules will shape the size of the future non-agency mortgage pool ■ OTC reform impact small - Only ~5% of revenues from Index trading (ABX, CMBX etc.)
Total	\$150 bil	100%		-15 to 20%	\$120-130 bil	

Source: Citi Investment Research and Analysis

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Regulatory Headwinds

We expect a 15-20% Secular Headwind

We see regulation driving a 15-20% impact on “normal” FICC revenues – as shown in Figure 6 which highlights all of the affected revenue pools by regulation and Figure 7 which summarizes regulatory impacts by FICC business line. Below we take each regulatory impact in turn.

1) Clearing and Exchange Trading of Derivatives

In Sept 2009, the G-20 (including the US, EU, and 18 other countries) agreed that all standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, *where appropriate*, and cleared through CCPs by the end of 2012. Non-cleared trades should be subject to higher capital requirements. The G-20 charged the FSB to monitor the progress on this initiative. Outside of the legislation passed in the US and Europe which is moving to rulemaking stages, Japan has passed reform legislation and Canada, Hong Kong and Singapore have published consultative documents soliciting comments.

Historically, the derivatives business has been conducted on a bilateral basis, based on mutually agreed terms that did not provide a lot of price transparency. Bilateral trading led to counterparty risk, and given extensive relationships among dealers and the large size of the OTC market, creates potential systemic risks. To reduce systemic risk and increase price transparency, the Dodd Frank Act laid out significant new regulations in Title VII – Regulation of Swap Markets which will lead to the majority of the derivative trades being cleared, and requires clearable trades to trade on an exchange or a “swap execution facility” (SEF).

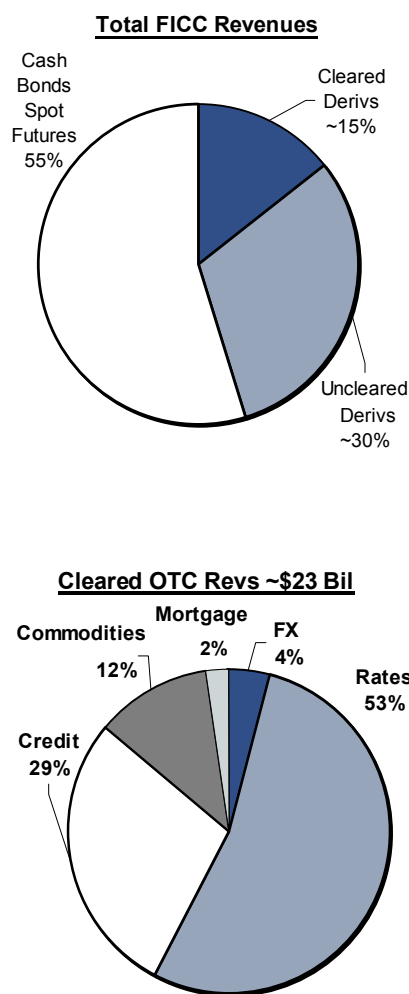
We see revenues from clearable and exchange traded derivatives as equal to about 15% of total FICC revenues. As we show in Figure 8, revenue from what we expect will be clearable derivatives represents just 15% of total FICC revenues, vs 30% from un-clearable derivatives, and 55% from cash, spot, futures and physical. Our estimates are based on our detailed product-level revenue estimates as shown in Figure 6, this estimate is supported by FICC derivative revenue pool data provided by industry consultant Coalition (see Figure 14).

We expect bid/ask spreads on standardized derivatives to compress... We analyzed five different historical market examples as they moved from voice-brokered markets to electronic or more transparent trading, and found bid/ask spreads decreased by 60-85% with much of the margin compression within the first five years (see Figure 9).

- **Forces likely to drive compression from here include:** 1) entry of new bank and non-bank competitors due to the removal of counterparty strength concerns from central clearing, 2) the introduction of new multiple request-for-quote and central limit order book style trading venues, and 3) greater price competition among existing dealers on new electronic multi-dealer request-for-quote systems creating more information leakage and price transparency.

...And revenue impact will depend on how much of the spread compression can be offset by higher volumes. In those same five examples, we found that volumes increased by 375% over time, broadly offsetting the margin compression long-term which is an argument the banks often make. However, there are several important differences with derivatives we believe may impede near-term volume growth, with the most important one being liquidity demands due to higher initial margin requirements.

Figure 8. We estimate 45% of FICC revenues come from derivatives, but only 15% from clearable products



Source: CIRA estimates based on product by product revenue decomposition. Assumes “normal” revenue allocation between FX, Rates, Credit, Commodities and Mortgage. Cleared excludes estimated revenue from clients exempt from clearing as well as un-clearable products.

Under new regulations margin will be applied more broadly and netting may be less available – raising liquidity costs to clients and hurting volumes – all else equal. As we show in Figure 67, clearing will move initial margin requirements for top-quality buy-side counterparties to about 5% of notional for a cleared OTC derivative trade (based on the CFTC's 5-day 99% VaR rule proposed). So, a top investor client (non-exempt) putting on a \$10 mil interest rate swap would now post \$540k vs nothing previously as dealers typically did not require initial margin for their largest clients.

For US banks, we estimate the revenue impact from cleared and exchange traded derivatives could impair affected revenues by ~15-20%. Overall we estimate only about 15% of total FICC revenues come from what will become clearable derivatives. Of this pool we estimate approximately 15-20% of *affected* revenue could be lost, driven by: 1) there will not be an immediate and sharp bid/ask compression given anticipated client reticence to shift to new platforms, 2) spreads on many products like Index CDS or IRS are already at relatively thin levels so may have less room to compress, and 3) Volumes are likely to be impacted negatively – especially at first – but should rise longer term if friction costs and counterparty risks are reduced.

- **Rates, Commodities and Credit seem most impacted** — We estimate all 3 asset classes have a high-teens to mid-20's percent of revenues that will be impacted by clearing and potentially exchange/SEF trading. Overall we assume similar 15% negative impacts to each asset class, primarily from volume disruptions during clearing implementation, higher margin liquidity demands, and bid-ask compression to the extent cleared products are liquid enough to be forced onto new exchange/SEF/OTF platforms.
- **Mortgage and FX** — Mortgage will be among the least impacted due to lack of significant OTC derivative trading with only index trading (ABX, CMBX, etc.) likely most affected. Separately, FX has significant OTC revenues, but only non-deliverable forwards are likely to clear due to exemptions and operational issues with FX settlement that creates significant risk if cleared.

European impact is expected to be lower at 5-10%, but hinges on how exchange trading in Europe is treated. US rules seem likely to drive lower dealer profitability for standard derivative trading than in Europe, due to more highly prescriptive rules on trading protocols (e.g. minimum request for quotes), US requirements for exchanges to be multi-dealer, which may not arise in Europe, and US restrictions on bi-lateral voice trading for non-block trades, which appear likely to be less restricted in Europe. Nevertheless, given European rules are still in progress, it is impossible to tell if big regulatory differences will actually occur.

Despite an imperfect rule-set we see clearing rules in the US in place by end-2012 at the earliest and see operational implementation in 1Q13-3Q13. We see OTC derivative reforms as likely to be one of the first major regulatory changes to take hold, given global commitments among G20 nations and lack of a multi-year transition period (unlike the Volcker rule). We expect US adoption of new clearing and exchange trading rules to begin by late 2012 or early 2013 even with delays.

- The specific list of rules remaining from the CFTC before clearing is a lengthy one including: clearing member risk management/straight through processing and documentation, product definitions, and end-user exemptions. The SEC also has its work cut out for security-based swaps with similar rule-makings required.

We note that CCPs have already submitted proposed lists of products they are seeking to clear, which are being reviewed by regulators.

- Once US rules are final buy-side firms will have up to 270 days to begin mandatory clearing once the rule is put in place and adoption deadlines come in phases depending on the entity (swap dealers and major swap market participants go first, followed by hedge funds and asset managers), which stretch over 30-90 days depending on the client type.

Whether Europe will be on board with to meet the year-end 2012 G-20 global clearing mandate remains an open question. In Europe, the regulations affecting clearing have shifted to the technical rule-making stage, with responsibility lying with the European Securities and Markets Authority (ESMA) and other supervisory authorities, but final standards must then be ratified by the European Commission.

- In late May ESMA Executive Director Verena Ross noted the intention to publish a consultation paper in June, hold a public hearing in July, and issue finalized technical rules by September 30, 2012 – to be presented to the European Commission for ratification into law by year-end. This exceptionally tight timeframe – if met – could put Europe in position to have clearing effective by January 2013. Even so, European Commission officials have publicly doubted this timeline, with the EC Head of Financial Market Infrastructure, Patrick Pearson noting he does not expect Europe to be subject to mandatory clearing in January 2013.
- In our view, even if the Jan 1, 2013 deadline is missed in some jurisdictions, we would expect delays are more likely to be in the range of several months, not a year or longer.

There is already significant clearing activity going on... Most clearing activity today is still dealer-to-dealer, but there has been some new client-to-dealer activity starting with the largest buy-side firms. In May 2012, LCH.Clearnet's SwapClear service said the volume of interest rate swaps cleared by its customers nearly tripled in the first four months of 2012 vs the prior year. While all the rules or legal paperwork between dealers and clients may not yet be finalized, the broader clearing infrastructure has been in place for years.

- ...But outside of the larger firms, the rest of the buy side has been taking a "wait and see" approach which may leave them rushing to prepare – According to comments from ICE Clear Credit president Chris Edmonds and panelists at the May 2012 ISDA conference, only 50 of the largest buy-side firms are ready for clearing, with most small clients having not started the process.

After mandatory clearing starts, mandatory SEF/exchange trading is supposed to begin 3 months after – implying a 2Q13 start, assuming no delay. During 2012 we expect to get final block trade threshold rules, clarity on the process for making trades available for SEF trading, and detailed SEF rules – which are likely to be among the last rules finalized.

- **SEF infrastructure is largely in place.** While some investors we have talked with have expressed the view that none of the SEF/OTC exchange trading infrastructure has been set up by dealers – prolonging the impact, we believe much of this trading will occur on third-party run platforms – which are already up and running. Given the platforms are existing – we believe this argues for timetable that should begin soon, and not require a multi-year infrastructure build.

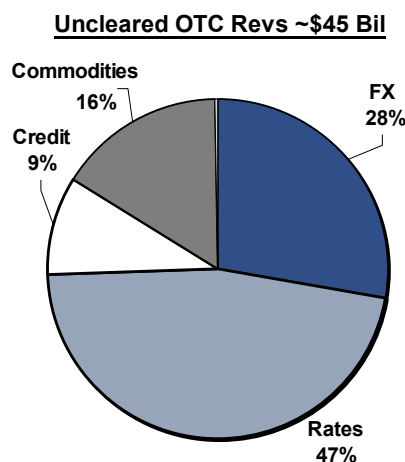
Historic Examples of Market Disruptions – Impacts on Bid/Asks and Volumes

Figure 9. History shows electronic trading cuts bid/ask by ~75%, but results in much higher volumes.

	Round Trip Cost		%	Volumes / Turnover		%	Change Period
	Pre-Electronic	Electronic		Pre-Electronic	Electronic		
Corporate Bonds*	~0.25%	~0.09%	-64%	98 bil/day	184 bil/day	88%	2001-2005
Treasuries	2.4 bps	0.5 bps	-79%	187 bil/day	498 bil/day	167%	1999-2004
Equities (long-term linked series)			-87%			526%	1980-2012
Equities (Exch. Listed) (1)	1.17%	0.21%	-82%	0.35 turns/yr	1.0 turns/yr	186%	1980-2001
Equities (S&P500 stocks) (2)	11 bps	8 bps	-26%	\$45 bil/day	\$99 bil/day	119%	2003-2012
Equity Options	2.5 vol pts	0.5 vol pts	-80%	508 mil contracts	4.6 bil contracts	806%	1999-2011
Spot FX	3-5 pips	1 pip	-75%	394 bil/day	1,490 bil/day	278%	1992-2010
Average			-77%			373%	

Source: CIRA. Corp Bonds – *This example shows impact of greater price transparency on the market from introduction of TRACE, and not the impact of electronic trading, Corp Bond Spreads: Edwards, Harris, Piwowar "Corporate Bond Market Transaction Costs and Transparency" (2007) and Bessembinder, Maxwell and Venkataraman "Transparency and the Corporate Bond Market" (2006), Volumes: Federal Reserve. Treasuries - Spreads: St Louis Federal Reserve Review "The Transition to Electronic Communications Networks in the Secondary Treasury Market" (2006), Volumes: Federal Reserve. Equities – (1) Source: Stoll, Hans R. "Electronic Trading in Stock Markets" (2006). Volume Growth based on annual turnover (annual share vol / shrs outstanding) and does not reflect increased shares from stock issuance. (2) Avg daily cap-weighted Bid/Ask per Citi Equities for SandP 500 stocks from 2003-2011. Volume reflects average daily dollar volume for SandP 500 stocks per Citi Equities. Note, for equity volume growth, results are time and source dependent. According to SIFMA from 1996 (before ECN trading began) through 2011, average daily share-count volume on US exchanges (including NYSE, AMEX/ARCA, NASDAQ, BATS, DirectEdge and pink sheets) grew 10-fold, driven by the impact of decimalization in 2001 and electronic trading thereafter; Excluding pink sheets volumes, share-count volume grew 6x over the same period. On a dollar volume basis, over the same 1996-2011 period total US volumes rose 4.5x. Equity Options – Spreads: Citi Equity Derivatives, spread change in volatility points shown from 2004 to 2011 due to data availability, though we believe spreads prior were similar to the 2.5 vol point start shown, Volumes: OCC annual contracts, note electronic options trading began May 2000 on the ISE. Spot FX – Spot Volume: BIS 2007 and 2010 Triennial Surveys (US \$ bil daily); Spreads – Citi FX based on avg \$10 mil inter-bank trade USD-DEM in 1992 vs typical \$10 mil G-10 pair today.

Figure 10. Estimated revenues from un-clearable derivatives: FX and Rates account for 75% of the pie



Source: Citi Investment Research and Analysis. Based on normal revenue pool, chart shows percent of un-cleared OTC revenues coming from various products. In total we estimate roughly 30% of the total FICC revenue pool comes from un-clearable derivatives, or \$45 billion, equal to roughly 65% of the FICC OTC derivative revenue pool.

Figure 11. Hypothetical capital required for a Interest Rate Swap from Basel 1 to Basel 3

	Basel 1	Basel 2	Basel 3
Unsecured	1.0	6.3	78.0
Hedged			6.3
Cleared w/ Margin		0.1 to 0.2	

Source: Citi, Single-A rated client, 10-year duration. EUR received fixed.

2) Un-clearable / Structured Derivatives

Un-clearable derivatives are a smaller portion of overall trading volume, but we believe represent a majority of FICC derivative revenues. While 50-60% of OTC derivative *volumes* are likely to be cleared, 40-50% of the remaining volume will be un-cleared either due to exemptions with corporate end-users, or because the products are bespoke, structured, or are common but un-clearable due to operational challenges (such as interest rate options and FX options). Historically, un-cleared derivatives produced higher spreads for the dealers – and in dollar terms, we estimate this revenue pool is about \$45 billion on a normal basis before regulatory impacts, or roughly 30% of the total FICC revenue pool including cash and derivative products.

Going forward we expect to see some reduced volumes in more “complex” products in favor of lower spread standard and centrally cleared products that are more capital efficient. This is especially likely for longer duration trades given new Basel 3 charges for counterparty credit risk increase significantly as duration increases for trades that are not collateralized or actively margined.

Proposed margin requirements for un-cleared derivatives will be a new and important challenge to the business... In April 2011, US regulators proposed draft margin rules requiring ~40% more initial margin for un-cleared derivatives versus cleared derivatives (we calculate this based on rough differences between the proposed 10-day VaR 99% confidence interval vs 5-day 99% VaR). In March 2012 we saw draft proposal from EU regulators regarding standards for un-cleared OTC derivatives, but no quantitative margin recommendations have yet been made.

...And if initial margin is not collected on un-cleared derivatives, banks will face significantly higher capital requirements under Basel 3.0... Under Basel 3, banks will face very high capital requirements for counterparty credit risk (called CVA) for un-cleared derivatives, unless the customer posts initial and variation margin. The reason is because when a customer does not post margin the trade creates an unsecured exposure for the bank. CVA charges on longer duration trades also increase significantly.

■ **A quick example of how capital requirements under Basel 2.5 and 3.0 dramatically increase the capital costs for a bank...** In Figure 11 we show the hypothetical “indexed” capital requirement of 1.0 under today’s Basel 1 rules for a 10-year interest rate swap – which rises by more than 6x under Basel 2 (reflecting the market risk component to the trade) and by up to 78x under Basel 3 (reflecting higher CVA charges). This very high 78x assumes no hedging of counterparty risk and no initial or variation margin is posted – which would only apply to clients like a sovereign which historically has not posted any initial or variation margin. If the bank reduces counterparty risk via hedging its client counterparty exposure (via purchasing single-name CDS contracts), this charge could fall from 78x to 6x, and if the client were willing to post initial margin and clear via a central clearing house, capital requirements falls to a fraction of the typical unsecured arrangement today. Note, given capital levels held against derivatives under Basel 1 are already relatively low on an absolute basis, that the capital “free-up” from moving from Basel 1 to clearing under Basel 3 is not expected to be that significant, and this illustration does not include every clearing impact (e.g. contributions to CCP default funds or trade exposures to the CCP).

Figure 12. Long-dated trades with lower-rated client counterparties will cost more due to Basel 3 rules

Cross-Currency Swap pricing under Basel 3.0 (bps)

Tenor	Client Credit Rating	
	A	BBB
5-Year	28	43
10-Year	53	74
30-Year	113	130

Source: Citi, Cross-Currency Swap pricing in basis points. Client: Receive USD/Pay EUR assuming no hedging, or margin. Prices assume banks retain required 10% return on capital, estimates.

■ **...And how the longer-dated un-cleared trades also get disproportionately larger capital charges...** As shown in Figure 12, swap pricing for long-dated un-cleared trades like cross-currency swaps must rise materially to between roughly 30-130 basis points under Basel 3 for banks to make just 10% returns – with the highest prices required at longer durations. This compares to historical pricing between roughly 2-10 bps under old capital regimes depending on maturity – representing a very substantial increase.

■ **...And while certain corporates may be exempt from posting margin, the banks will still face higher capital charges which will get reflected in higher pricing (assuming capital rules are not fixed).** While corporate-end users will be exempt from posting margin given the exemption as part of the planned G-20 derivatives agreement – these customers will still see higher prices as banks try to compensate for significantly higher capital charges – unless capital rules are changed to give corporates exemption from CVA charges.

One of the key questions is whether users will pay higher costs for un-clearable derivatives – Interest rate swaptions, FX options and exotic, bespoke or structured derivatives will not be cleared, but will likely see higher costs depending on margin and capital requirements. Whether clients will choose to pay higher prices for trades will depend on actions in two distinct groups, institutional investors and corporates.

■ **Institutional financial investors** — Includes bond portfolio managers, hedge funds, GSEs, central banks/governments, banks, and insurance companies. Investor clients – particularly hedge funds – are often the biggest users of un-clearable derivatives.

– **Some un-cleared business will remain even under higher prices** — In the rates and FX spaces, clients tend to be sophisticated investors seeking to hedge large economic risks via specific solutions. For example, interest rate options are a critical tool for major banks hedging mortgage servicing rights – and could likely withstand some capital driven price impact.

– **While other business may be more less sticky** — Other un-clearable exotic derivatives however, that might be at greater risk include exotics like barrier options that “knock-in” at a certain level or get cancelled at pre-determined trigger points, or those that use less liquid underlyings (such as certain EM market currencies or rates).

■ **Corporates** — Typical corporate clients include treasurers and risk managers seeking to hedge interest rate, currency, or commodity risks, and we expect the costs of risk management will likely increase materially as a result of the CVA capital charge. Versus other un-clearable products, corporates tend to be greater users of cross-currency swaps – which as shown above will see very high pricing – to the point we expect it will impact client demand. The stereotypical example is a Canadian corporate seeking to access the deeper US bond market and then hedge its currency risk. Depending on the corporate’s credit rating and maturity of swap desired, and if the bank can hedge its CVA risk to the corporate by buying CDS protection, an extra 25 bps of financing costs to the client (vs fractions to a few bps before) may still make sense in order to access a broader investor base. But if it’s a 15 year deal, the client has lower credit rating, and CVA hedging is not possible, costs could add 50-80 bps to the price of the issuance, which could kill the deal.

“The information we are getting from banks ... indicates uncollateralized trades could be at least 3x more expensive. That kind of figure concerns us. We couldn’t sustain our current derivatives business if banks choose to pass on that kind of cost,”

- Assistant Treasurer
Large UK-based Utility Company
Source: Risk.net

- **US corporates likely affected by changing OTC derivatives rules due to interaction of capital and margin rules, though most do not expect any impact.** We met recently with Ed Heiten Head of the Treasury Service Practice at PricewaterhouseCoopers who has extensive experience working with corporate clients to address regulatory and market developments, including Dodd-Frank and Basel 3. Heiten has met with ~200 treasurers of US corporations over the past year and noted that most do not anticipate being significantly affected by new derivative rules. This is a stark contrast vs European corporates that have been lobbying aggressively against Basel 3 capital rules that could raise derivative prices. While globally corporate derivatives customers will be exempt from clearing and exchange trading requirements for OTC derivatives, higher Basel 3 capital charges are likely to still drive significant pricing changes affecting corporate customers that elect not to clear or post margin.
- **Based on expected US implementation of Basel 3 rules for un-cleared trades, US banks may be at a disadvantage...** US corporates are likely to see higher prices for OTC derivatives if they elect not to post initial or variation margin, have a weak credit rating, or want a very long-duration derivative. The main reason is US implementation of Basel 3 seems unlikely to include corporate counterparty credit risk charges (CVA) exemptions. Conversely, European regulators have proposed exempting bank trades with corporates from CVA – potentially giving EU banks a significant pricing advantage.
- **...But for corporates to get cheaper pricing, trades may need to be related to international risks, and booked via foreign subs w/ non-US banks.** While rules and dealer pricing remain uncertain, Heiten believed that US corporates would not simply be able to hedge any US-based risk (e.g. US fixed/floating IRS) with a foreign bank to avoid potentially higher prices, and may need to justify to US regulators their hedging practices include: 1) some foreign component (e.g. a FX forward or cross-currency swap), and 2) execute the trade via the corporation's foreign subsidiary. This – if ultimately correct – could dilute some of the potential competitive disadvantages to US firms as less activity might migrate to European rivals due to CVA rule differences
- **Very little evidence so far on how corporates will react...** According to Heiten, many banks have yet to have the tough “prices are going up” conversations explaining to treasurers that derivative prices may need to rise from 5 bps today to 50 bps or more for an interest rate swap in the new world to fully offset higher CVA charges for un-cleared and uncollateralized trades that corporate clients prefer. Additionally, according to Heiten, corporates have not taken any action to move toward clearing – with none of his clients yet beginning optional clearing in order to access cheaper prices.
- **...And a key question will be how much higher costs will be “eaten” by banks...** – In our view the entire 50 bps may not be able to be fully passed along to clients – as in some instances it would scuttle the trade altogether – but it remains to be seen where overall industry pricing will settle out.
- **...And another question is how price inelastic is customer demand.** Despite expected higher prices and greater operational burdens, Heiten does not expect overall hedging activity by corporates to shrink. Corporates and their boards have decided to actively hedge key business risks – especially FX, interest rates and commodities – which will continue to drive demand for

derivatives, despite the potential for higher costs or collateral demands. That said the mix of hedges employed could change, with some (likely smaller) clients electing to continue to do un-cleared trades, while others may voluntarily clear and utilize SEFs or shift to greater use of listed exchange traded futures.

- The typical example of a price inelastic bespoke derivative client is a mining company who needs to hedge its output in order to satisfy debt lenders' demands will pay higher prices for that hedge given its integral to getting the financing to get the project off the ground.
- **Smaller corporates could be impacted more than larger firms** – The largest corporates have significant excess liquidity available to post margin, and Heiten estimated the biggest firms likely account for roughly half of corporate derivatives volume, though potentially a lower revenue share since they get best pricing. Small and mid-sized firms tend to more heavily rely on their primary banking relationship for derivatives – and are likely to be more impacted, due to lack of liquid resources (which takes options of posting margin and lowering prices off the table) and lack of technology or systems to manage derivatives recordkeeping (that may reduce their use of more standardized products). Smaller firms however could outsource some of this work, though depending on usage this may still be more expensive.
- **Hedge accounting with standard swaps is still achievable even if date and cash-flow matching is not exact** – Under GAAP rules, firms can achieve hedge accounting via a simple “short-cut” method (preferred and most commonly used with custom OTC trades today) where firms simply match the maturity and cash flows of the exposure precisely – deeming the hedge effective. While less popular due to administrative costs and record keeping requirements, firms can also justify hedge accounting for in-exact hedges if corporates chose to use futures or standard clearable swaps that do not have exact matching dates. To achieve hedge accounting treatment corporates must prove “hedge effectiveness” via regression and other ongoing analysis and reporting – which can be a complex operation for a corporate with a large derivatives portfolio, though firms can outsource this work to consultants/custodians. As long as correlations run between 80-125% hedges should generally meet accounting standards for effectiveness – which would seem to support an argument that some mix shift from bespoke OTC products is possible.

We estimate ~16% of hit to revenues from un-cleared derivatives, equating to about ~500 bps of our 15-20% industry hit – Given the combined effects of lower volumes and higher pricing due to high CVA charges we expect regulatory reforms could reduce the un-cleared revenue pool by up to 16%.

- **Rates and Commodities will likely see bigger impacts...** Given greater proportions of un-cleared revenues and longer trade durations we see un-cleared derivative revenue losses in rates and commodities in the 15-20% range. In rates, prices for long-dated rates trades like cross-currency swaps will need to rise 5-10x to keep returns stable (see Figure 12). In commodities, long-duration swaps with lower-rated corporate counterparties that do not post margin will be among the products seeing the greatest impact.
- **...Conversely, we see smaller impacts from losses of un-cleared volumes in FX, Credit and Mortgage.** FX benefits due to its greater proportion of shorter duration trades, while mortgage again has relatively small derivative activity. On

the credit side, we expect un-cleared trades to have similar magnitude losses as Rates and Commodities, but given we expect a greater proportion of CDS volumes to end-up cleared and on exchanges, this appears likely to be a smaller dollar impact.

Timing on final rules impacting un-cleared trades will come over the course of the next 6 months... Key items we are waiting on include:

- **1) Margin requirements for un-cleared trades which could be finalized by this summer.** Un-cleared margin levels technically will be set by local regulators, but are expected to be constructed in a globally coordinated way – based on ongoing collaboration between Basel and the IOSCO working group – with a potential draft proposal out in June 2012.
- **2) Finalization of Basel 3 in the US.** We still have not seen the official proposed US implementation of Basel 3 in the US via an official US notice of proposed rule-making. This would promulgate the US version of international Basel 3 principles (first issued in Dec 2010). The US Basel 3 NPR, which should come very soon will be followed by an industry comment period, and then final rules in the US – likely putting enactment near the beginning of 2013, but possibly missing Jan 1, 2013.
- **3) Finalization of Basel 3 in Europe (called CRD IV).** This should occur over the next few months putting EU on schedule for a Jan 1, 2013 Basel 3 launch.
- **4) Clarity on CVA exemptions for sovereigns, pensions and corporates –** Final CVA exemptions may become clearer in the lead up to Basel 3 implementation. So far Europe is moving to exempt sovereigns, pensions and potentially corporates from CVA charges, but the US may not offer any similar exemptions.

...But timing of impact seems likely to bleed in sooner as banks prep for Basel 3 adoption – Given capital impact of derivatives trades stays on the books as long as the contract is outstanding, and there is no grandfathering for capital purposes, some banks are already beginning to price for higher CVA charges – which is likely impacting volumes to some extent already. Uncertainties on CVA exemptions for corporates, however, is likely keeping banks from fully pricing in the entire Basel 3 charges for all clients before rules are final.

Figure 13. We estimate un-cleared OTC derivative revenues could be negatively impacted by 16%

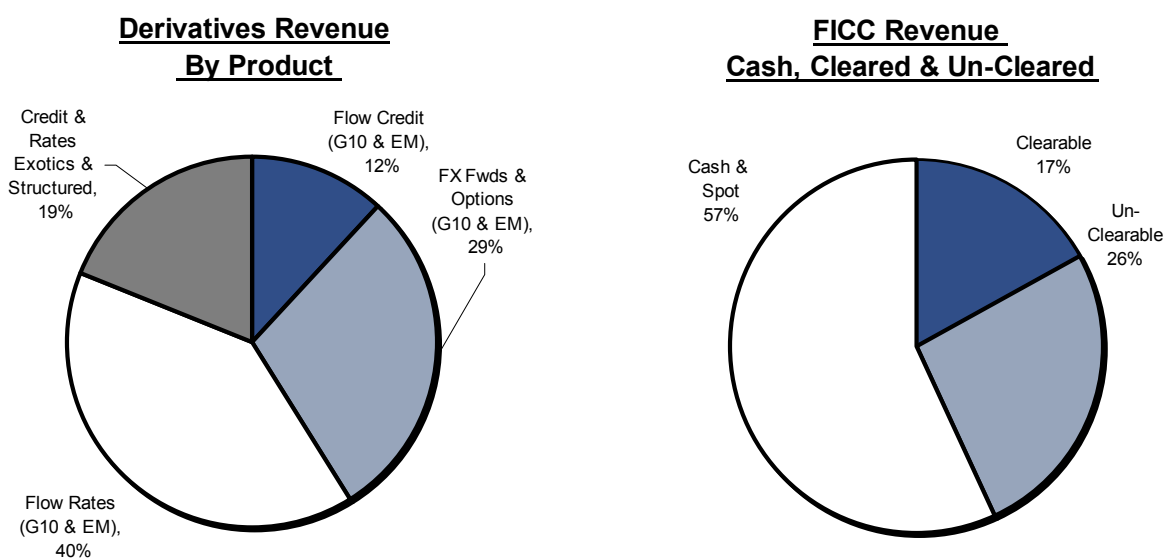
Uncleared OTC Derivative - Regulatory Impact						
	2015 Pre-Reg Est Normal Revenue	% of Rev Uncleared	Est Revs from Uncleared OTC	Uncleared & CVA Hit	Est \$ Rev Lost	Lost Rev from Uncleared as % Total
FX	33	37%	12	-9%	(1.1)	-3%
Interest Rates	55	38%	21	-20%	(4.1)	-8%
Credit	38	11%	4	-17%	(0.7)	-2%
Commodities	12	58%	7	-16%	(1.1)	-9%
Mortgages	12	1%	0	-5%	(0.0)	0%
Total	150	29%	44	-16%	(7.0)	-5%

Source: Citi Investment Research and Analysis

Below we present derivatives revenue data for 2010 as estimated by industry consultant Coalition, upon which we add our expectations of clearing and un-clearable pools based on product-level expectations. By and large we believe this third party data supports our revenue pie estimates in the preceding section– where we estimated 45% of FICC revenues come from OTC derivatives, and of that 45% only 15% from clearable products, vs 30% comes from un-clearable products – vs 43%, 17% and 26%, respectively shown below.

Figure 14. Coalition Data points to a greater proportion of OTC derivatives revenues coming from un-cleared trades

DERIVATIVE REVENUE BREAKDOWN			
	% Derivs Revs	CIRA Est Clearing Status	% of Total FICC Revs
Flow Credit (G10 & EM)	12%	Clearable	5%
FX Fwds & Options (G10 & EM)	29%	Unclearable	12%
Flow Rates (G10 & EM)	40%	Mixed	17%
Clearable Flow rates (est)	27%	Clearable	12%
Interest Rate Options (est)	7%	Unclearable	3%
Cross-Currency Swaps (est)	6%	Unclearable	3%
Credit & Rates Exotics & Structured	19%	Unclearable	8%
Total Derivatives	100%	Derivatives %	43%
Clearable	39%	Clearable	17%
Unclearable	61%	Unclearable	26%
Spot, Cash & Physical		Cash, Spot, Phys. %	57%
Total FICC		Total FICC	100%



Source: Coalition and Citi Investment Research and Analysis. Derivative product level and Cash revenue estimates for 2010 by category per Coalition. Split between cash and derivatives revenues per Coalition. Note component split of Flow rates and assignment of clearable vs un-clearable status are CIRA estimates.

3) Basel 2.5 and New Market Risk Rules

“Basel 2.5” in simple terms is a new capital framework for banks’ trading portfolios. It was first proposed on July 13, 2009 via the “Market Risk Framework” which adds new methods to calculate risk capital including Stressed VaR, Incremental Risk Charges and re-securitization charges, which disproportionately impact fixed income trading businesses. Many previously very high return businesses such as structured rates, parts of structured credit and mortgage securitization trading businesses, which pre-Basel 2.5 boasted ROEs of 15-20% plus, now under the new capital rules appear to offer no greater than mid-to-high-single digit returns.

Basel 2.5 significantly boosts the required capital for all types of trading assets... The new Basel 2.5 rules divide the trading book into three categories for the purpose of calculating Risk Weighted Assets:

- **Non-securitization positions (e.g. Cash bonds) will see a very material increase in RWA of 3-4x compared to prior approach using scaled VAR.** Basel 2.5 says “non-securitization” trading assets will be assigned RWA based on 3 main factors: 1) asset specific volatility (i.e. VAR), 2) Volatility in times of crisis (i.e. Stressed VAR), and 3) potential losses from downgrade or default for credit dependent instruments like bonds or CDS via an Incremental Risk Charge.
 - Impact of Basel 2.5 on non-securitization positions will clearly reduce returns, but should not lead to any products no longer being economically viable.
- **“Correlation trading” RWA will increase even more driving banks to exit parts of the business.** Correlation trading portfolios under Basel apply to first-level securitizations on corporate debt (e.g. CLOs, synthetic CLOs and credit derivatives basket trading). The calculation (under the internal model approach used by most large banks) uses the same methods (based on volatility, stressed volatility and extra capital charge for downgrades and defaults) that are applied to all trading assets – but also adds on impact from changes in the correlations of assets and the basis risk from hedging strategies. This is called a comprehensive risk model (CRM) charge. Additionally, the CRM charge is subject to a minimum floor of 8% based on the more onerous standard method – which tends to considerably limit the benefits of models. Experts have estimated vs Basel 1 correlation book charges would risk by even more than the 3-4x seen for non-securitization positions. Many banks have noted the intention of slowly exiting many correlation trading activities due to higher capital charges.
 - **Several structured credit businesses (such as CLOs) will be less impacted...** We expect 1) CLO structuring, 2) Total Return Swaps, and 3) client-focused structured credit “solutions” businesses will continue to grow even under new rules. Total return swaps are leveraged credit derivative products where clients (e.g. hedge fund buyers) gain economic exposure to a bond or loan via a swap that transfers the economic exposure but only requires a smaller (leveraged) investment. Structured solutions take many forms depending on client needs – but one example is structured portfolio financing trades as European banks suffering dollar funding challenges are striking collateralized deals to borrow against a large portfolio of (hair-cutted) corporate bonds and loans.
 - **...While correlation trading/secondary CDO trading are heavily impacted by higher RWA...** Within structured credit – 1) Correlation trading and 2) secondary CDO trading will be heavily impacted by increased RWA requirements from Basel 2.5. In the future these businesses will have much smaller inventories/portfolios as banks passively run down exposures over

time. Given much of the revenues from correlation trading are booked at deal inception, we estimate the wind-down portion of the business from CLO and CDO correlation trading contributed only ~5% of Credit trading revenues currently, or 1% of total FICC revenues.

■ **Securitization rules are very punitive especially for low-rated bonds.**

Securitized and re-securitized (ex correlation trading) were direct contributors to the crisis, and thus became direct targets for higher capital charges under the new Basel regime. Securitizations under Basel are credit-tranched securitizations (e.g. non-agency RMBS, Consumer ABS and CMBS) and are NOT eligible for RWA calculations using advanced internal modeling. Note that GSE mortgage pass throughs don't count as securitizations. Securitizations and re-securitized are the only two product classes under Basel that must be subjected to the more onerous "standard" or external ratings-based approach (RBA) abroad, and the potentially even more onerous "simplified supervisory formula approach (SSFA) method" in the US which attempts to produce similar results to the RBA method, without the use of ratings.

- **While CMBS and Consumer ABS are also treated as securitizations under Basel 2.5, there will not be a significant impact...** These assets' tendency to have higher credit ratings and lower historical loss content, which will keep these businesses from being as severely impacted vs subprime/Alt-A RMBS.
- **...While we would expect to see an impact on low-rated or non-IG non-agency (e.g. Alt-A and subprime) mortgage bond trading** – both due to high capital requirements and a shrinking pool of assets given virtually zero new issuance. While we do not believe the proposed rules will make trading securitization positions like non-agency RMBS totally non-viable (as the question remains at what price, what is the bid-ask, and how quickly can a market-making position be exited), the strictness of the rules is likely to make returns in this business even worse than previously expected, causing many firms to re-direct resources elsewhere.

The Fed's "Notice of Proposed Rule-Making" implementing B2.5 in the US may put US firms at a disadvantage with mortgage securitizations – Under section 939 of Dodd-Frank US banks must move away from using capital calculation methodologies that rely on external rating agencies such as S&P or Moody's. This provision conflicted with BIS methods under Basel 2 and Basel 2.5 that require greater capital allocation for credit securitization exposures that have lower ratings. Last December US regulators published a Notice of Proposed Rulemaking (NPR) that provides guidelines for estimating the capital charges for market risk in the US via what is called the simplified supervisory formula approach (SSFA). Public comments closed on Feb 2, 2012 and it will likely take 6 months or more before it is finalized.

- Higher quality securitizations under the SSFA get new higher minimum capital requirements of 20% vs 7% prior, while low quality securitizations still receive punitive 1250% weights. Similarly, corporate positions get more punitive treatment due to more securities being treated in a similar fashion to below-investment grade rated positions due to tough debt-to-asset tests. Overall, we believe the NPR will make it even harder for US banks to be as active market makers in corporate and mortgage securitization products due to high capital charges – potentially forcing smaller inventories than non-US competitors.

- This most impacts non-agency RMBS securitizations (and other low-rated, or high loss-making securitized products) and correlation trading (portfolio trading of tranching credit via cash and derivative positions).

Advanced modeling becomes critical... With approval from local regulators, banks can calculate market-risk capital charges using internal models – which allow banks to more accurately reflect economic risks and thus justify lower capital charges than cruder and formulaic standard approaches. The advantage of having better modeling is not only lower RWA, but having better measures of risk, which in the long-run should drive better decisions on risk-adjusted returns. The obvious example is the severe losses suffered in the crisis from securitization portfolios as senior management did not understand the real risks. Models operate on a product/trade-type level basis – so a firm with 50 different trading desks could have some desks/products calculating capital charges by models while many others would be under standard rule-based methods.

- **Integrating RWA/capital modeling with pricing could help firms generate better risk-adjusted returns by more appropriately pricing trades.** For banks using internal RWA modeling, capital needed will be based on a bank's overall portfolio risk level. As banks get more sophisticated in their modeling, each trade could be viewed based on its contribution to that overall level, rather than on a stand alone basis. In the future banks that can monitor capital costs at a portfolio level in real-time can also augment pricing to better reflect overall returns on capital.

For example, if a trade adds offsetting risks that significantly reduces overall portfolio exposures, then this should be a trade a bank prices more aggressively than a trade that is additive to risk and capital. Banks that can dynamically price products like un-cleared derivatives adjusting for the level of collateral posted, the credit-risk of the counterparty, and the incremental capital required against the trade – will be better positioned to make market making decisions that are additive to risk-adjusted returns on capital.

...But international differences in RWA calculation models (as local regulators approve models) are a potential competitive advantage for some, we do not anticipate this to be a significant driver of market share. In our view, US and UK regulators have a reputation for setting comparatively high standards for internal models vs other countries. As implementation and supervision of the Basel rules is delegated to local authorities; there is a fear that different countries may implement the rules with different standards.

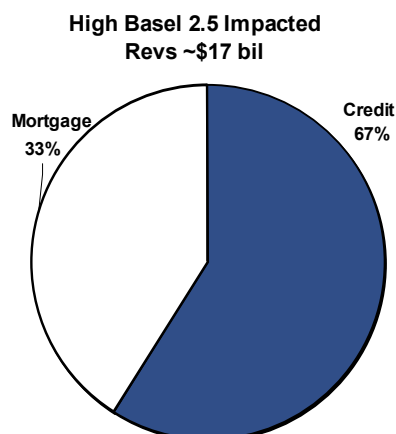
On differences in RWA calculation methods:

“I do think its highly likely we will find areas where we want to reduce the range of options open to banks when they calculate their regulatory capital ... complete consistency is not the objective ... but we need to keep [flexibility] within reasonable bounds.”

–Basel Committee Banking Supervision
Secretary General Wayne Byres

- **To allay concerns, Basel's Banking Supervision Committee is conducting an investigation into RWA calculation consistency** – In response to US complaints that RWA modeling in Europe is too lax, the Basel Committee on Banking Supervision headed by Secretary General Wayne Byres is investigating calculation methods. One area of focus will be calculations for bank loan portfolios under an advanced approach that allows firms to select individual portfolios and use a probability and loss given default model – with BIS seeking to limit instances of portfolio “cherry-picking.”

Figure 15. We estimate Mortgage and Credit trading revenues will be most impacted by Basel 2.5.



Source: Citi Investment Research and Analysis

Basel Impact – We estimate modest incremental revenue loss from Basel 2.5's application to the most affected revenue pools.

- **We estimate Basel 2.5 will have a roughly 3% impact on affected revenues, mostly in Credit and Mortgage....** RWA for virtually all trading assets increases for US firms moving from Basel 1 to Basel 2.5, but the two FICC businesses most impacted will be Credit and Mortgage given the more punitive treatment for correlation trading and securitization exposures. We estimate that credit trading revenues derived from "high RWA" businesses equate to ~25% of the global credit trading revenue pool, or \$10 billion, and similarly Mortgage revenues from highly impacted products are about ~55% of the global "normal" Mortgage revenue pool or \$7 billion, by our estimates.
- **...And given these affected areas have been significantly downsized post the credit crisis – we only see minor incremental impact.** The industry has significantly refocused trading businesses away from securitizations, correlation trading and structured credit in the 5 years since the credit crisis erupted in 2007. While Basel 2.5 will have a major impact on trading *capital* employed, particularly against legacy positions, we believe the incremental *revenue* impacts will be largely minimal – and assume a modest 3% hit to revenues.

Timing – Basel 2.5 implementation for US seems most likely early 2013 – Basel 2.5 market risk rules went live for most of Europe Jan 1, 2012, but US rules have been delayed due to required removal of references to third-party ratings. US regulators' proposed version of Basel 2.5 rules came out in Dec 2011 and given comment period and finalization time frames, and Jan 2013 implementation seems most likely, if not slightly after that.

In the Volcker Rule... the questions that were left open are highly consequential ... I was relieved to see the questions, and of course I remain nervous ... about how they'll be answered ...

... I'm also quite pleased to see that the regulators want to engage with the market to come out with a solution that works.

Volcker Rule impact is very tough to quantify at this stage, but we see little direct impact in 2012"

-GS CEO Lloyd Blankfein
11/15/ 2011

Figure 16. Proportion of revenue by business and product affected by Volcker.

% Revs Covered by Volcker	
FX	40%
Rates	82%
Credit	95%
Commod.	90%
Mortgages	82%
Total	77%

Products with an Above-Avg Volcker Impact	
	% FICC Revs
IG Cash & CDS	9%
Some Rates Deriv.	7%
HY Cash & CDS	5%
RMBS/Securitized Prod.	5%
Commod w/ Inv & Inv Prod.	4%
Sovereigns	4%
Distressed Credit	3%
Some FX Swap	2%
Above Avg Volcker Risk	39%

Source: CIRA estimates. Top box Reflects portion of the revenue pool that is not exempt, Bottom Box represents businesses with estimated largest revenue impacts. Assumes only

4) Volcker Rule

The Volcker rule remains a major wildcard. Fixed income trading is naturally more of a principal than an agency business. In cash products banks provide liquidity by buying positions from clients using balance sheet to satisfy customer demand, or selling positions from inventories. In derivative products, risks are simply created by contract, but the principal risk retention on bank balance sheets, (net of offsetting hedges) is the same. While the banks have already exited off-floor proprietary trading businesses, the biggest wildcard is whether the Volcker rule will usher in a new tightly monitored compliance regime over bank market making activities – significantly reducing allowable principal risk taking by potentially setting limits on inventory or derivative risk retention.

■ **Heavily principal/inventory businesses like Credit and Commodities appear most impacted.** Based exclusively on product-level exemptions and not taking into account any impact from the proportion of P&L that comes from customer flow vs principal gains, in Figure 16 we estimate 90-95% of Commodities and Credit revenues will be subject to market making restrictions (e.g. only loans and spot commodities are exempt), while 82% of Mortgage and 82% of Rates revenues come from products subject to the rules. Only FX is minimally affected, as we estimate 60% of revenues come from spot trading (which is exempt).

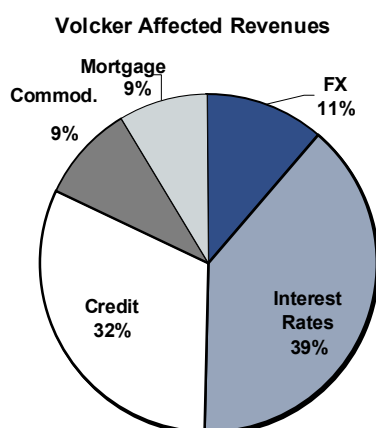
– **Specific products impacted by a harsh Volcker rule.** At a product level the businesses potentially most impacted by a harsh Volcker rule appear likely to be credit broadly (including IG and HY cash and CDS, with less liquid names hurt more), some rates derivatives (especially any that leave residual exposure on dealer balance sheets), non-agency RMBS and securitized products (given dealers typically maintain some ongoing inventories), sovereign bonds (though an exemption could be extended), distressed credit (given the typical long holding periods), commodities trading (especially with non-corporate end-user clients) and some longer-dated FX swaps (to the extent residual risk is maintained on the balance sheet). All combined we see about 40% of FICC revenues as having some *above-average* risk to Volcker.

■ **US banks also appear to be at disadvantage vs peers given global application of Volcker rule...** The proposed draft of the Volcker rule applies to all US bank activities within US borders and US activities abroad, irrespective of branch/subsidiary structure. While foreign banks' business is impacted to the extent it overlaps with US clients/US operations, we see Volcker potentially disadvantaging US firms versus international competitors. For example, there is nothing prohibiting Asian banks from operating prop trading desks in Asia as long as those desks do not interact with US residents.

■ **...But Volcker applies to foreign firms to the extent they do business in the US or with US based clients, and avoidance even abroad will be difficult –** Volcker will significantly impact foreign banks to the extent they interact with US clients, or execute trades via a US-based trading desk. Even for trades booked through a foreign entity with a foreign client, if personnel handling the trades are based in the US, the Volcker rule appears to apply. In instances where a foreign firm has branches outside – to avoid the rule – all contact with US "persons" would need to be ceased. The bottom line is any activity via non-US entities with US clients could push the entire foreign organization into required Volcker compliance. This is likely to create significant operational and legal challenges, and require close scrutiny of client account transactions for foreign banks to avoid Volcker compliance even with their non-US entities.

- **Prior to JPM-loss, there had been bipartisan support for getting Volcker “right”** – We note there were a massive number of comment letters from buy-side investors and foreign governments – as well as calls from Congressional leaders prior to the JPM CIO loss issue for regulators to avoid creating a rule that harms market liquidity. In our best judgment a worst-case Volcker rule is still a relatively unlikely outcome. On Feb 17, 2012, twenty-six members of the New Democrat Coalition wrote to the major bank regulators urging a “flexible, principles-based final rule” that preserves continued market liquidity for institutional and individual investors. The letter emphasized Congressional intent was not to hurt access to liquid capital markets, or damage small companies and municipalities – and was an important sign of bipartisan support for ensuring Volcker doesn’t have negative unintended consequences. (See page 35 describing Volcker as a “swing factor” and 92 for detailed Volcker review).

Figure 17. Based on affected revenue pools* Rates and Credit have the most dollars affected by Volcker.



Source: Citi Investment Research and Analysis.

*Only excludes explicitly exempt revenues, not client-facing revenues allowed under market making rules.

Volcker Impact – In our base case we see ~10% impact to affected revenues from new business practices. We anticipate the Volcker rule is likely to have some revenue impact – even beyond what has already been lost from off-floor pure-prop trading desk exits. Market making restrictions are likely to curtail the amount of risk capital employed by banks relative to the current practice. While it’s very difficult to say with great accuracy how much – we believe the impact is likely to be a modest negative headwind to trading revenues as some profitable risk-taking activity is disallowed under the final rules.

- **We see about 10% impact on affected revenues with greater impacts on inventory driven businesses like credit and mortgage.** In Figure 17 we combine our estimates of normal FICC business by business revenue pools (Figure 6) with our expectation of which piece of each business will be subject to Volcker – i.e. not explicitly exempt.

We assume 8% revenue losses for FX, Rates, and Commodities, which tend to be more flow and lighter on inventory-intensity. We assume 15% revenue losses for affected Credit and Mortgage revenues – given assumed greater potential impact on more principal inventory-intensive business. Overall, on a dollar basis, the biggest impacts come from Credit (bigger est % hit + few exemptions), and Rates (the biggest revenue pool), with smaller impacts in FX (explained by the fact that 60% of the revenues is from spot trading that is exempt), Mortgage (big hit but smaller pool), and Commodities. In the end, the goal of this exercise is not to say definitively the impact of Volcker will be “X%” but to help investors recognize not all revenue pools are likely equally impacted, or equally sized.

Volcker Timing – Compliance will begin with “good-faith” efforts during the conformance period and monitoring - For Volcker, firms statutorily have a minimum 2-year phase-in to comply beginning July 2012 (though compliance reporting begins immediately). In addition firms may be able to get up to 3 one-year extensions – which would push the deadline at the latest to 2017. There is also an illiquid fund provision allowing up to one 5-year extension for divestiture of illiquid hedge fund or private equity fund investments – putting last possible adoption at 2019 for the “covered funds” part of the rule.

- **The Volcker conformance period begins July 2012 with banks supposed to comply “as soon as practicable” – but not legally bound until 2014** – The Fed’s recent clarification statement issued April 19 noted banks must make “good-faith planning efforts” toward compliance during the 2-year conformance period – which may include reporting new risk and P&L measurement to the extent these are included in the final rules. Assuming no delay in the implementation time-table, the statutorily-required conformance to actual trading restrictions for market making activity will not begin until July 2014. Additionally, according to a recent NY Times report, regulators are targeting releasing a final Volcker rule by Aug or Sept of this year, via a revised final draft, and are not targeting a full re-proposal that would include a second industry comment period.
- **We suspect greater scrutiny and macro worries may keep a lid on industry risk-taking in the 24 months preceding Volcker effectiveness...** With heightened compliance regimes getting constructed across the Street in 2012, as well as macro uncertainties, we would not be surprised to see a continued low-risk appetite among banks over the course of this year, and possibly longer.
- **...Which in some ways may mean some of the impact of Volcker is already in the current run-rate...** US dealers have significantly reduced risk inventories and are running smaller and more on-the-run liquid securities – driven by the uncertain macro environment. Given lower risk taking, in a way, some of the impact on revenues from Volcker may have already begun. Note that because our impact analysis assesses revenue losses from a higher-than-current “normal” revenue base, we do not adjust for any level of below-normal risk tolerance that may be occurring right now. Additionally, US firms have already eliminated virtually all of their “pure” proprietary trading desks in 2011, with the main exception being Morgan Stanley’s statistical arbitrage operation called Process Driven Trading which it plans to shift into an asset management unit running client money.

5) Other US Regulations

There are several other regulatory issues we analyze in this report that could potentially negatively impact fixed income trading revenues – but we expect these issues as either unlikely to have big near-term impacts, or to be resolved.

Figure 18. Swaps Push-out Impact Summary

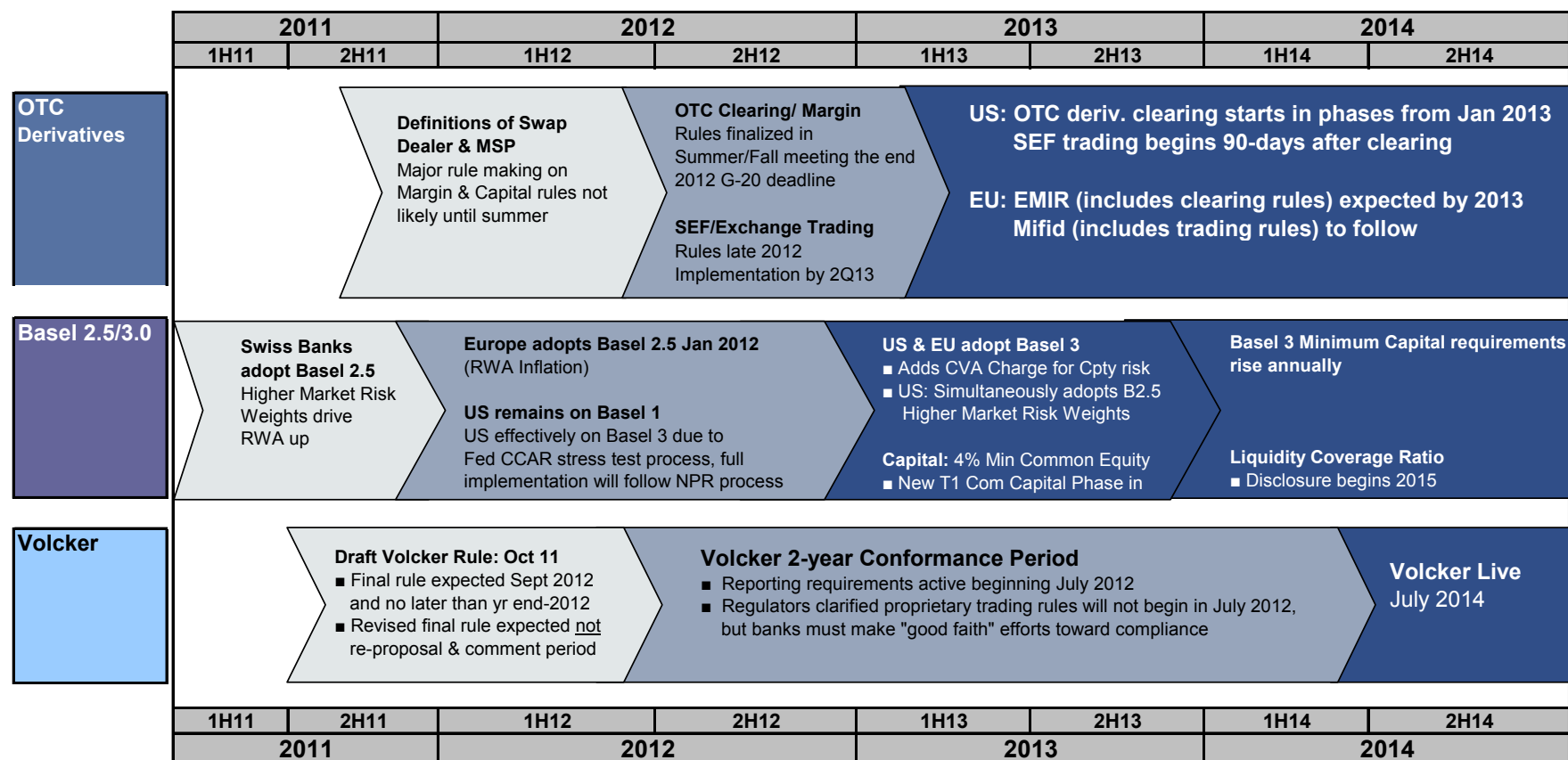
% Derivs impacted by Pushout	
JPM	Virtually all derivatives in bank Only some must move
BAC	~75% of derivatives in bank Only some must move
GS	1/3 of derivatives in bank Comprised mostly of vanilla IRS swaps
MS	Relatively small amt derivs in bank primarily FX derivatives that are allowed

Source: CIRA, OCC data and companies

- **Swaps push-out rules and their potential application to US firms abroad will add costs and complexity...** While it's not entirely clear if the swaps push-out will apply to US activities abroad, under this scenario, US banks would be required to track swap transactions globally to ensure that they are undertaken via the appropriate bank or non-bank entities. This could create competitive issues for US banks since other countries are not adopting similar rules and splitting transactions between entities could reduce the ability for clients to net contracts, raising margin demands.
 - **...Though firms like JPM have denied swaps push-out will be a big disadvantage** – While firms like JPM have stated swaps push-out should not produce revenue or capital disadvantages, we think it will certainly produce higher costs and operational challenges for US firms – but may not be significant enough to cause market share losses. This could be a bigger deal for JPM and BAC, which have larger derivatives businesses housed in the bank, and less of an issue for MS or GS, given smaller bank subsidiaries
- **Commodities position limits.** In October 2011, the CFTC finalized rules creating tighter limits on commodities trading (across physical, OTC derivatives, and listed futures exposures) covering 28 commodities. The limits may prove restrictive for firms given the strict interpretation of bona-fide hedging, which appears to block anticipatory hedging and may reduce client flow. Given end-user hedging transactions are exempt from limits, investor trading will be the main area impacted. This “investor product” business is dominated by Barclays, Deutsche Bank, and Goldman, and to a lesser extent by JP Morgan and Morgan Stanley. While we don't think this will drive sharp drops in dealer's commodities revenues near-term, the limits may curb overall size of investor position taking and hurt volumes. We note that Europe has also proposed establishing its own position limits.
- **Qualified Residential Mortgages and Risk Retention proposals.** – In our view, the rules as proposed are likely to contribute to a significantly limited non-agency mortgage market, which is currently shrinking ~15% a year as deal flow has frozen. There are several problems including 1) strict terms on what loans can be qualified residential mortgages that limits the amount of collateral eligible for securitization without the risk retention requirements, 2) rules that propose eliminating gains on sale when securitizing loans making economics to issuers more challenging and 3) 5% risk retention rules require holding positions that get very punitive capital treatment.

Timeline of Regulatory Reforms

Figure 19. Timeline of Regulatory Reform Impact on Fixed Income Trading Businesses



Source: Citi Investment Research and Analysis

“Swing factors” that may result in a larger regulatory headwind

1) Clarity on Volcker

“The Volcker rule could be interpreted in a way that fundamentally transforms the trading markets, and it could also be interpreted in a way that doesn’t change trading at all, but substantially increases compliance costs”

-Congressional Aide speaking
anonymously to American Banker

1/11/2012

Volcker has among the widest range of outcomes, and given much of the deliberations between regulators are private, there’s not much to watch, though we will be watching the upcoming JPM hearing closely. Experts we speak with indicate a final Volcker rule could come as soon as August or September and is very likely by year-end 2012 at the latest. News reports indicate regulators are moving forward with revisions of the initially proposed rule, rather than a full re-proposal as some in the industry have sought.

Recent disclosure of \$2 billion of trading losses by JPM’s Chief Investment Office have sparked fierce criticism of the bank and calls from politicians, particularly Democrats, including Congressman Barney Frank, Senate Majority Leader Harry Reid, and Senators Carl Levin and Jeff Merkley who helped draft the Volcker portion of Dodd-Frank. Republicans have shown a more mixed response, such as Senator Richard Shelby Ranking Republican on the Senate Banking Committee who said the losses rather prove the need for tougher capital requirements. So far the on the record regulatory response has appeared to be more neutral with Fed and OCC saying its too early to tell if the JPM trade violated the Volcker rule.¹

Permitted Market Making Activities per Dodd-Frank Act

“The purchase, sale, acquisition, or disposition of securities...in connection with underwriting or market-making-related activities, to the extent that any such activities ...are designed not to exceed the reasonably expected near term demands of clients...”

Key elements we are watching for the final Volcker rule.

■ **Language defining permitted market making activity** – Whether “expected near-term demand” of customers as written in Dodd-Frank legislation (sidebar) over-rides the stronger regulatory language in the Volcker rule requiring “clear, demonstrable trading interest of clients” – is a key unknown. If the latter language is eliminated or revamped – we see this as an important win for the industry. We note that in the rule as proposed, permitted market making must meet 7 different (and often qualitative) criteria and this disharmony vs the statutory language is one of the first concerns mentioned in the Goldman Sachs Volcker comment letter.

- **Will inventory restrictions be set, or combined with turnover and aging monitoring?** – At this point there are no explicit requirements on inventory turnover rates, or holding periods, but these measures will be tracked across the industry and across products. Regulators will presumably compare firms and outliers that turn inventories slower could risk violating prop trading rules. Broadly speaking the rule describes market-making as: 1) providing liquidity for listed securities by submitting resting orders, or 2) for standing by as a counterparty for customers ready to buy or sell in OTC markets.

In Figure 20 we show 17 specific measures which banks must begin to report by mid-2012, but there is no clarity on where limits will be set, or exactly what the definition of a “trading desk” will be where reporting must be generated.

- **The revenue criterions relating to permissible market-making activity.** Proposed rules say market making-related activities must generate revenues “primarily from fees, commissions, bid/ask, spreads or other income not attributable to appreciation in the value of covered financial positions ...or the hedging of such positions.” Given this definition, it appears any trading account inventory appreciation could be considered prop trading. Removal of

¹ <http://dealbook.nytimes.com/2012/05/14/in-washington-mixed-messages-over-tighter-rules-for-wall-st/?ref=todayspaper>

the proposed revenue criteria is the first recommendation from Morgan Stanley's Volcker comment letter.

- **Will every trade need to be 'justified'?** – While the draft rule does not intend to require trade-by-trade reporting or impede banks from hedging – the granularity of the measures seem likely to create new trade-level reporting data tracking – which in some ways puts justification at the trade level, rather than the global product level. This level of scrutiny raises the costs to administer extensive compliance and reporting systems.

Permitted Hedging Activities per Dodd-Frank Act

“Risk-mitigating hedging activities in connection with and related to individual or aggregated positions, contracts, or other holdings of a banking entity that are designed to reduce the specific risks to the banking entity in connection with and related to such positions, contracts, or other holdings.”

- **If criteria for proposed exemptions for portfolio hedging positions will be tightened** – The JPM trading loss brought the issue of portfolio hedging center stage, with Democratic lawmakers calling the provision a “loophole.”

Below we summarize the key language in the legislation and rulemaking addressing this topic – which appears to explicitly allow portfolio hedging if it is risk-reducing.

- Dodd-Frank statutorily permits hedging of “aggregated positions” (see sidebar), and this is reinforced in the proposed Volcker rule which notes “consistent with the statutory reference to mitigating risks of individual or aggregated positions, this criterion [for permitted risk-mitigating hedging activities] would include the hedging of risks on a portfolio basis.”
- The draft rule also notes portfolio hedging “slightly” in advance of expected risks and on a dynamic basis are permitted. A hedge must be “demonstrably risk-reducing ...[and banks must] be prepared to identify the specific position or portfolio ... being hedged and demonstrate that the hedging transaction is risk-reducing in the aggregate.”
- **JPM's Volcker comment letter objected to the rule using an example of nearly an identical trade that has been widely reported to have led to losses in the CIO portfolio.** We reproduce the relevant portion from page 56-57 of the letter below. The following discusses a hedging strategy and which JPM seemed to imply had been used effectively throughout the crisis.
 - “To protect [JPM] against credit losses that, based on its analysis, the Firm perceived were possible to occur in the near term, the Firm's ALM team used credit derivatives to purchase protection on high yield CDS indices with short term maturities and to sell protection on high yield credit CDS indices with longer-term maturities—in effect, taking a high yield curve flattening position in the credit derivatives market.
 - This strategy resulted in [JPM] recognizing some gains as near term default risks increased. The gains recognized on these derivatives strategies offset in part the losses that occurred on credit assets held by the Firm.
 - Under the proposed rule, this activity could have been deemed prohibited proprietary trading. The derivatives used in the hedging strategy were booked in the market risk capital trading account and may not have qualified as hedging because: (1) the actions taken were forward-looking and anticipatory; (2) the Firm's purchases of the credit derivatives may not have been deemed “reasonably correlated” with the underlying risk, as different instruments were used to effect the hedging strategy than the assets giving rise to the risk; and (3) the gains realized upon the unwind of the hedges could have been determined to be larger than the countervailing risks.”

- **Will we see a revision to the initially proposed rule, or a full-scale re-proposal?** Recent press reports² indicate a re-proposal is not currently in the works and regulators are pushing to finish a revised version of the final rule by September. Nevertheless, given the high potential market impact and political sensitivity of the Volcker rule heading into the November elections – we believe a delay and a re-proposal, while now apparently a lower probability – cannot be fully dismissed.
- **Optimists point to outcries from foreign gov't on Volcker's potential negative hit to sovereign bond markets and potential impacts to munis** – Objections from foreign central banks and finance officials legitimize fears of potential negative side-effects as they come from credible and respected sources. US regulators have also shown willingness to consider changes – e.g. SEC Chairman Mary Shapiro signaled they will consider widening the exemption on certain municipal bonds affected by original rule drafts.

Figure 20. Volcker requires 17 measures to be reported to regulators – many of which are rarely tracked or entirely new

Risk Management		Used?	Source of Revenue Metrics		Used?
1	VaR & Stress VaR	Y	10	Comprehensive P&L	Y
2	VaR Exceedence	New	11	Portfolio P&L	Y
3	Risk Factor Sensitivities	Y	12	Fee Income & Exp	Y
4	Risk Limits & Position Limits	Y	13	Spread P&L	New
			14	Comprehensive P&L Attribution	Y
Revenue vs Risk Metrics		Used?	Customer Facing Metrics		Used?
5	Volatility of Comprehensive & Portfolio P&L	Rarely tracked	15	Inventory Turnover	Y
6	Comprehensive & Portfolio P&L to Volatility Ratio	Rarely tracked	16	Inventory Aging	Y
7	Unprofitable Trading Days based on Comp & Portfolio P&L	Rarely tracked	17	Customer-Facing Trade Ratio	New
8	Skewness & Kurtosis of Portfolio P&L	Rarely tracked			
Payments of Fees/Commission Metrics		Used?			
9	Pay-to-Receive Spread Ratio	New			

Source: Oliver Wyman and Volcker Draft.

² NY Times "Progress Seen in Advancing a Final Volcker Rule" May 2, 2012

2) Final Basel 2.5 and 3.0 Rules

Broadly speaking we believe the major principles of Basel 2.5 (market risk rules) and Basel 3.0 (rules on what counts as Tier 1 common capital, CVA charges, and liquidity requirements) are mostly understood by the industry, but with final rules not published there still remain a few uncertainties.

- **Whether final Basel 2.5 rules implementation in the US will soften any of the onerous parts of the recent notice of proposed rule-making (B2.5 NPR).**

Public comments on the Fed's proposed rule implementing Basel 2.5 closed in Feb 2012 – where banks were seeking to get regulators to give more (favorable) risk-sensitive capital treatment for higher tranches of securitizations to bring the capital charges more inline with a ratings based method, as well as address onerous impacts on correlation trading portfolios. Note, separate rules under the Basel 2.5 NPR that gave tougher treatment to corporate bonds, financial company exposures, and sovereigns are less of a concern to the largest US banks – as they applied only under the standard calculation method and not when banks calculate RWA under internal models.

- **Official Basel 3 'Notice of Proposed Rulemaking' (B3.0 NPR) yet to be seen.**

While in Europe the recent March CRD IV proposal provides draft rules for Basel 3 implementation in EU, the Fed has have yet to issue formal proposed rules for Basel 3 in the US. We expect to see an NPR issued sometime very soon, followed by a comment period, and then a revised draft (with additional comments), or a final rule.

- **Will European regulators exempt EU banks from CVA capital charges for corporate-end users, sovereigns and pensions...**

Recently the EU Parliament proposed enacting an exemption for Basel 3 CVA counterparty charges for swaps sold to un-margined corporate end-users with the intent to align capital rules with pre-existing corporate exemptions from margin and clearing requirements. Europeans are also moving to exempt sovereigns from CVA charges. The March 2012 draft of Europe's proposed Basel 3 implementation (CRD IV) regulators added an exemption for CVA on un-cleared derivative trades between banks and EU central banks or other national bodies. This change would also help cut a negative feedback loop on EU sovereign CDS, where higher CVA charges could have forced banks to buy sovereign CDS to reduce capital charges. Separately, larger EU pension funds are expected to get a CVA exemption based on recent EU Council compromise text, which would extend a planned 3-year exemption allowing pensions to avoid mandatory clearing.

- **... And will US regulators follow if EU gives corporates exemptions?**

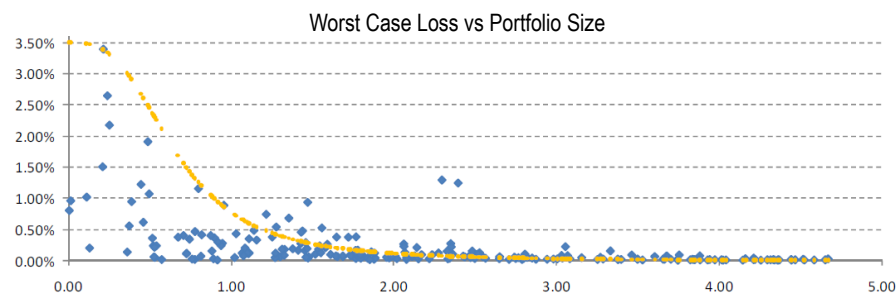
– If US regulators fail to adopt similar exemptions for corporates, sovereigns and pensions, US banks will be disadvantaged when dealing with these clients – as prices will need to be higher to account for higher capital. We note that while US regulators are concerned with reducing regulatory arbitrage, safety and soundness is likely to be a far dominant concern – and we would be very surprised to see US regulators weaken US rules from the internationally agreed Basel principles.

3) Collateral Efficiency

Collateral requirements for derivatives trading in the “new world” will be very large and grow over time... ISDA and the OCC estimate incremental collateral requirements from derivatives clearing rules range from \$1-2 trillion globally over the course of the next several years, or a 25-50% increase vs the \$3.7 trillion of existing collateral currently posted globally per ISDA estimates (see Figure 38). In addition, the average quality of collateral likely demanded in the new world will be much higher than is currently posted today. While outstanding derivatives trades will not be forced to clear – new derivatives trades could put a liquidity squeeze on some clients – that may spill over and hinder trading volumes. *For more background on margin see p 106.*

...Making collateral efficiency more important in the post-regulatory reform world... As clients shift more of their swaps portfolios to clearing, to the extent directional risks are diversified, clients should begin to recognize netting benefits that reduce required margin significantly – see Figure 21. As portfolio size increases, diversification benefits rise, and estimated losses* fall from between 1-3% to just 0.05% of notional.

Figure 21. Initial Margin requirements should decline as clearing volumes increase



Source: SwapClear. Worst case loss as % of portfolio for single currency portfolio (\$100 mil = 0.00 on log scale).

*Margin is designed to protect against worst case loss.

Top Margin Netting Uncertainties

In Figure 22 we summarize the potential challenges to reducing the collateral intensity in the “new world” and how portfolio margining and netting will be affected.

- **Un-cleared vs Cleared - Will clients lose most of the benefit from portfolio margining due to very high initial margin rules for un-cleared trades?** – Based on our understanding of expected rules, portfolio margining as a concept appears likely to still be allowed in the “new world”. But the effectiveness of portfolio margining will be highly dependent on the minimum margin levels for un-cleared trades – which as proposed in the US using VAR at a 10-day 99% confidence level, seem very tough.
- **Reducing initial margins for un-cleared trades was the main tool dealers used to give portfolio margin offsets** – Historically, the industry has been able to offer clients a more holistic view of risk and lower margin calculations by adjusting margin collected on the un-cleared portion of the client’s portfolio to give credit for “excess” margin held on cleared trades. In the “new world” client portfolios will be margined using calculations that produce two separate and distinct regulatory minimums for cleared and un-cleared trades. With less

flexibility given new mandated minimum margins for un-cleared trades, banks may be limited in the portfolio margin benefits they can offer. Additionally, there will be new cross-asset class netting restrictions that did not exist previously (see Figure 22).

- **Cleared Cross-Asset Class netting – Will proposals prohibiting cross-asset class netting be softened?** Another key uncertainty is whether rules limiting netting between cleared positions on the same CCP across asset classes will be softened. Proposed US collateral rules allow firms to offset cleared trades housed at the same CCP within four distinct product verticals; (1) Rates and FX, (2) Credit, (3) Equities, and (4) Commodities. We note this aspect of the collateral rules has been very controversial.
- **Cleared Cross-Regulatory Jurisdiction netting – Will netting of OTC products covered under different regulators be allowed?** – As the rules have been proposed, there appears to be no framework for offsetting margin between CFTC and SEC regulated products, which unless exempted will need to be held in separate accounts and thus margined separately. The most notably affected assets would be CDS Index products (CFTC regulated) vs single-name CDS trades (SEC regulated), which could be ineligible for margin netting even if cleared on the same CCP

Industry participants including the Intercontinental Exchange and the Managed Funds Association have been petitioning the SEC to provide an exemption allowing the commingling (and thus co-margining) of single-name CDS in a CFTC regulated futures account as a fix. So far, the SEC appears to be guarding its regulatory turf, and instead wants ICE to offer clients the option to hold all positions in either a SEC or a CFTC regulated account.

- **Netting cleared trades between different CCPs not allowed.** One relatively certain outcome is netting of collateral held by the same client at different CCPs will not be allowed. This concept is generally called CCP “interoperability”. There are many reasons cross-CCP netting is not allowed today, nor is likely to be allowed in the future: 1) No formal structures for transferring collateral between clearinghouses exist; 2) In the event of a client default it would be very hard to gross-up and unwind trades netted across multiple clearinghouses; 3) Operational challenges due to different margin calculation methods; and the most significant, 4) Contagion risk of directly and financially linking systemically important CCPs. *For more on this topic see our discussion on the Global Clearing Framework and interoperability in the following few pages.*
- **Cash bond and other collateral vs un-cleared seems allowable** – We do not foresee regulators dictating the form (e.g. cash, high grade bonds, equities, etc.) of collateral for un-cleared trades to be mandated (unlike for CCP cleared trades). *As mentioned, the big question for un-cleared trades that remains is how high absolute margin levels will be – discussed next.*

Proposed Margin and Netting Rules Appear Limiting

Figure 22. Tentative rules on margin and netting pose a number of restrictions

Cross Asset Class Netting on Cleared Derivatives	<p>Initial proposal prohibits Inter-Asset Class Netting (e.g Rates vs CDS)</p> <p>Proposed rule: ■ Netting allowed only within 4 broad categories: 1) Rates & FX, 2) Credit, 3) Equities, 4) Commodities</p> <p>Industry view: ■ Cross-risk category hedges are common and netting / diversification benefits should be permitted</p> <p>Netting across regulatory frameworks may not be recognized</p> <p>Proposed rule: ■ CFTC & SEC share oversight of products, with some conflicts - e.g. CFTC oversees credit index trades, SEC oversees single-name CDS</p> <p>Industry view: ■ Without resolution, credit markets will be significantly impacted as hedging single-name CDS using index trades will not benefit from margin netting</p>
Cross-CCP Netting	<p>Netting Cleared trades between different CCPs ("interoperability") not likely allowed</p> <p>Proposed rule: ■ No cross-CCP netting of derivatives</p> <p>Industry view: ■ Generally agrees, interoperability of CCPs viewed as potentially causing systemic risks. ■ Investors are likely to consolidate CCP relationships to permit most effective margin netting</p>
Cleared vs Uncleared Netting	<p>Netting benefit from Un-Cleared & Cleared may limited by very high Un-Cleared initial margin minimums</p> <p>Proposed rule: ■ Potentially very high stand-alone initial margin requirements for un-cleared trades (99% 10-day VAR) will reduce banks' ability to take portfolio view on risk and margin</p> <p>Industry view: ■ Industry wants regulators to allow a portfolio view so once minimum CCP margin is met, margin held by the bank on un-cleared products reflects the total portfolio risks across cleared, uncleared and cash products ■ Hedging and risk reduction across cleared, un-cleared and cash products as a portfolio is common (e.g. swaps with caps & floors, CDS positions with bonds) ■ Margin offset sought where bank claims on any risk offsetting trades are legally enforceable</p>

Source: Citi Investment Research and Analysis.

4) Un-Cleared Margin Levels and Capital for Cleared Trades and CCP Exposures

Will the combination of capital and margin charges make clearing attractive?

Final global rules on capital and margin are expected to encourage clearing over trading un-cleared swaps by giving cleared trades favorable margin and capital treatment. The key unknowns include:

1. How much margin and capital must banks hold for un-cleared trades?

■ Will global regulators push forward tough minimum initial margin rules?

One major issue is how strict minimum initial margin requirements will be for un-cleared trades. Un-cleared margin levels technically will be set by local regulators, but are expected to be constructed in a globally coordinated way – based on ongoing collaboration between Basel and the IOSCO working group – with a potential draft proposal out in June 2012.

– **US proposed un-cleared margin rules are viewed as very tough...** US regulators have proposed margin for un-cleared trades to be calculated via a 10-day VAR with 99% confidence interval formula, considered by many to be an overly harsh minimum. The CFTC has also proposed somewhat onerous formula of un-cleared margin 2x a cleared or 4.4x an equivalent futures trade. We will be watching for any positive revisions to final minimum initial margin requirements for un-cleared trades, which will be important given we estimate a larger portion of dealer revenue will come from un-cleared vs cleared trades.

– **...But may be adjusted given buy-side comments** – Large buy-side Fixed Income firms like PIMCO have publicly expressed concerns in comment letters to the CFTC that proposed 10-day 99% VAR methods are too high, instead suggesting 5-day VAR threshold for un-cleared trades, and 2-days for cleared.

■ **Will capital requirements for un-cleared trades be prohibitive?** – Capital requirements for un-cleared derivative trades will depend on the volatility and duration of the swap, collateral received, and the treatment of CVA counterparty risk charge. See *swing Factor #2 Final Basel 2.5 and 3.0 Rules*

“If Basel gets its way, the incentive for clearing could be swiped off the table in one fell swoop.”

-Patrick Pearson, Head of
European Commission, Financial
Market Infrastructure Unit

2. Capital Charges for Cleared Trades and Exposures to CCPs

Another big question is will capital charges for cleared trades actually offer an incentive for banks to clear? Cleared trades create new capital exposures for both the trade exposure (to face the CCP on behalf of the client) and to the CCP default fund for the clearing bank that could become disincentives for banks to clear on behalf of clients. Depending on rules, banks may instead choose to act strictly as an executing broker for a cleared trade and give up the clearing to a second party, or try to trade un-cleared swaps with clients willing to post margin bi-laterally.

Below we explain two key capital unknowns arising for banks clearing OTC trades:

■ **How big capital charges will be to CCP “default funds” as proposals have been criticized as complex and risk-insensitive** – Default fund capital charges use a crude notional-based calculation under the “Current Exposure Method” that risks producing large cumulative capital requirements over time. The CCP default fund is designed to mutualize losses in the event of a CCP member default, and

the formula will be calculated by the CCPs and disseminated to the banks; however, final calculations have not been made, so it is tough to see exactly how severe this will be. The current calculation includes a non-risk-adjusted notional-based figure, so banks worry outstanding swap trades (that could offset to near flat on an economic risk basis) will build up overtime, making this charge cumulatively significant.

- **...And banks will also have “trade exposures” for CCP cleared trades that can grow with the notional amount trades cleared** – In November 2011, the Basel Committee issued a consultative document on central counterparty exposure that proposes the risk weighting for qualifying CCP will increase to a 2-4% risk weight for trade exposures, up from zero under the Basel 2 requirements, and the 2-4% could jump to 20% if the CCP fails to meet certain minimum global standards. For client clearing, the clearing bank will also have a bi-lateral capital charge for the client exposure. *See page 128 for more detail on CCP capital charges and potential consequences of cleared trades.*

5) Global Clearing Framework

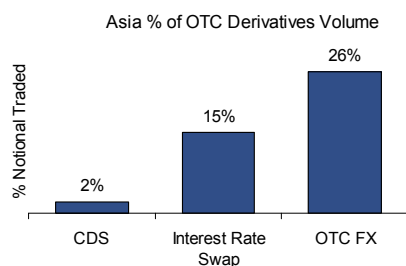
Local regulations and global derivative clearing appear to be running at odds as countries begin to enact new mandatory clearing regimes. Derivatives trading is regularly conducted across international borders between multinational clients in one country and global banks in another, and has the potential to be cleared at central clearinghouses residing possibly in yet a third country. Conversely, regulatory jurisdiction broadly resides within national borders. One fear is strict nationalist / protectionist rules for central clearing – with the intention of reducing systemic risk and controlling nationally important markets – could backfire and have significant negative impacts on market liquidity and cross-border trading.

- **Will we see a proliferation of “national” CCPs?...** The key question is will local regulators mandate trades made by local banks clear in domestically domiciled CCPs. As we move to a mandatory cleared world, local regulators are wrestling with how to set up clearing regulations and data monitoring for operations that may end up concentrating outside their home nations' borders. Some countries (Japan and Hong Kong) have signaled their intention to create national clearinghouses. We believe Canada, Australia, South Korea, China and India have been considering establishing local CCPs and location requirements on certain trades – though some of these nations may wait to see how clearing markets develop, before enacting rules. Conversely, both the US and Europe already have several of the largest CCPs operating in their respective jurisdictions, allowing direct regulatory influence and control.
- **...And if many CCPs do pop up, how will volumes fare if multiple venues inflate margin (due to less netting) and bifurcate market liquidity?** – From purely a market standpoint – a single global clearinghouse, or one for each product is likely the best way to maximize netting and efficiency. However, very large global CCPs also become concentrated centers of systemic risk. Bifurcation of liquidity is another issue – for example, if a local Japanese bank is required to clear through a local Japanese CCP, and due to costs and complexity global players choose not to operate in that market – this limits counterparties and liquidity. Bifurcation could also simply increase the cost and reduce the overall volume of derivatives activity.
- **Some jurisdictions are already erecting nationally mandated clearing policies...** Japan is expected to announce determinations for swaps eligible

for clearing this summer and will begin mandatory clearing in November for domestic dealers – which will be *required* to clear Japanese CDS contracts through a domestic CCP. While yen-denominated IRS can be cleared locally or via an approved foreign CCP, as of yet there is no foreign CCP approved by Japanese regulators. From what we understand, cross-border trades are over 50% of yen-denominated IRS volume – so incomplete rules could damage liquidity and volumes until they are fixed.

- **...And US regulators may not recognize all foreign CCPs.** US rules say banks must clear with eligible CCPs that are registered with the CFTC, or that are given explicit exemptions by meeting similar local requirements. If small national CCPs do not register or aren't exempt, US firms may be restricted. Nevertheless, we see this as likely to be a smaller issue, and would expect cooperation among regulators to result either in foreign CCP registrations with US regulators, or exemptions. That said we could also envision an adverse scenario where regulations are out of synch, at least for a short time during initial implementation.
- **The potential impact of having multiple regional CCPs could require up to 25% more margin with 25% more risk.** In a world with multiple regional CCPs for various products, some market inefficiencies will be created. A March 2012 BIS working paper found that a single global CDS clearinghouse would reduce the initial margin requirements by 25% vs having three separate regional CCPs (and estimated \$17 billion of incremental required margin for the top G-14 dealers in the multi-region scenario). Due to the diversification benefits and using the same default assumptions, the same analysis found a single consolidated global CCP for CDS trading would lower risk to the default funds by 25% vs three regional CCPs, despite 25% less margin collateral.
- **“Interoperability” - a proposed method to provide cross-CCP netting seems highly unlikely due to systemic risks of linking CCPs around the globe –**
One proposed – and seemingly failed – solution to this problem is the concept of CCP “interoperability”, where new or existing local/regional CCPs would have netting capabilities with larger global CCPs.
 - In practice differences between margin methodologies between CCPs, default fund contributions, and lack of systems to exchange collateral have made the operational aspects of inter-operability very difficult.
 - Perhaps more damaging, however, are fears of creating new risk connections between concentrated systemic CCPs. This fear appears to have tabled the idea of interoperability, leaving smaller jurisdictions concerned about the loss of sovereign control over local derivatives clearing. It remains to be seen whether regulators can devise a method of creating linkages between CCPs while not creating the risk of an inter-connected highly systemic domino chain.
 - A separate alternative some have discussed: local onshore platforms from global clearinghouses – that operate in a way as local branches – but can still interact with the parent global CCP, though this concept is far from the execution stage.

Figure 23. Asia represents a relatively small share of OTC derivative trading



Source: CIRA, Celent: OTC Derivatives Reforms in Asia. 2010 notional values.

Extraterritorial application of US rules abroad remains a big competitive concern for US banks competing for foreign business vs potentially less regulated rivals.

Some argue that extraterritorial rulemaking exceeds the legislative intent set out in Dodd Frank

Dodd Frank Act, Sec 722 (d): The provisions of this Act relating to swaps ... shall not apply to activities outside the United States unless those activities:

“(1) have a direct and significant connection with activities in, or effect on, commerce of the United States; or

“(2) contravene such rules or regulations as the Commission may prescribe or promulgate as are necessary or appropriate to prevent the evasion of any provision of this Act that was enacted by the Wall Street Transparency and Accountability Act of 2010.”

- **Even in the worst-case, Asia is a relatively smaller portion of the overall derivatives market** at just 2% of CDS volumes, 15% of IRS volumes, and 26% of FX derivatives (Figure 23); and not all Asian countries are necessarily moving to a protective stance, which reduces the potential magnitude of negative consequences.
- While fears remain that easy rules in Asia will send business overseas, this seems unlikely to be the case, as high level Treasury Department officials are working closely with EU commissioners and with emerging financial centers like Singapore ensure coordinated reforms. US officials have noted repeated assurances from Asian regulators such as the Singapore monetary authorities they will move in “lock-step” with Europe and the U.S. on derivatives rules.

6) Extraterritoriality

Extraterritoriality is the application of one jurisdiction’s laws and rules on corporate activities abroad in other jurisdictions. More specifically, US banks are worried that tougher US laws will be applied to their dealings in Europe and Asia, while rivals will operate under different rules with broader exemptions. Whether US banks will be disadvantaged when operating abroad is a key unknown, and a major competitive concern. Separately, European and Asian banks are concerned that broad application of US rules in instances where foreign firms interact with US persons or corporations will subject foreign banks to US supervision (as is the case with the Volcker rule). Importantly, US regulators do not have jurisdiction to regulate foreign entities operating abroad, just as foreign regulators cannot control US firms operating in the US.

- **Draft rules for required OTC derivative margin rules do not exempt US banks’ activities overseas.** By not providing any explicit exemptions, the proposed US margin rules appear likely to require Dodd Frank compliance by non-US branches, and any entity guaranteed by a US parent. This means certain foreign clients exempted under European margin rules may not be exempt when dealing with non-US branches of US banks.
- **One implication could be that US banks lose derivatives business with sovereigns or other foreign clients.** As proposed, US swap rules give no exemptions regarding margin and clearing rules for sovereigns, central banks or multi-lateral development banks, vs European rules that appear likely to do so. These clients typically are opposed or restricted from posting margin, with the potential knock-on effect of lost debt-underwriting business given inability to act as a swap counterparty. The European Investment Bank (EIB) and the European Central Bank (ECB) recently warned the CFTC they may cease trading with US firms if they are not exempted from clearing, margin and reporting requirements from Dodd Frank.
- **The CFTC is expected to offer proposed rules on extraterritoriality by early-June.** On May 22, 2012, CFTC Chairman Gensler gave a speech outlining his views on extraterritorial aspects of derivatives rules. While the upcoming proposed rules are not yet clear and will need to get at least three out of five votes from CFTC commissioners, Gensler appeared to reiterate a relatively tough regulatory stance towards US firms and those operating abroad. Once proposed rules come out they would be subject to a 60-day comment period.

- **Extent of activity with US entities will be key determinant of US swap dealer registration and whether US rules apply.** Gensler noted in the speech various entities that could be subject to US rules and the intention of setting a *de minimis* threshold regarding US-facing activities. Foreign firms that exceed the threshold would also be subject to US rules.
- **Understanding the Branch vs Subsidiary structure** – Generally speaking, US banks operating outside of the US can operate via a 1) branch structure (using the US incorporated legal vehicle) or 2) via a subsidiary structure using a separate locally incorporated legal vehicle that is usually a fully capitalized locally regulated entity. Firms like JPM and BAC (with the exception of certain Merrill subsidiaries) generally operate abroad using a branch structure, while MS and GS primarily operate via foreign subsidiaries.
 - **Non-US branches appear likely to fall under US rules, given the parent must register as a swap dealer** – In his recent speech, Gensler explicitly noted his view that non-US branch structures should fall under the definition of “US facing transactions,” implying these structures will need to register as US swap dealers and be subject to US derivatives rules at both an entity and transaction level.
 - **Subsidiaries will also likely need to register as US swaps dealers as well given significant interactions with US clients...** While we believe Goldman and Morgan’s foreign subs are separately regulated and capitalized, certain subsidiaries (e.g. London) are also likely to be forced to register as swap dealers given significant interaction with US clients.
 - **...But subsidiaries may get some advantage over non-US branches that could create an un-level playing field** – One of the biggest unknowns that remains is will foreign subsidiaries of US firms (e.g. GS in London), even if they are registered as US swap dealers, be treated differently than non-US branches when dealing with non-US clients – especially with respect to margin and clearing requirements. This issue could be most significant in areas of the world outside of major financial centers where there are unlikely to be local laws similar to Dodd-Frank that would allow US regulators to defer to in place of US requirements (aka substituted compliance). In these instances US regulators may force Dodd-Frank on US regulated entities’ foreign branches, but foreign subs of US firms might operate under easier local rules.
 - **Non-US banks could also be forced to register and abide by US rules to the extent they do business with US clients** – The third group that will be subject to US rules and registration as swap dealers are foreign firms to the extent that their business with US clients exceeds the *de minimis* threshold. It is anticipated, however, that this group will only be subject to Dodd Frank requirements when facing US clients. We believe this would allow a foreign dealer like Barclays to face a non-US subsidiary of a US multinational under local transaction rules rather than under the full requirements of Dodd Frank. Non-US banks operating outside of the US, to the extent they do not do a significant volume of US-facing trades, will be subject exclusively to local regulations.
 - **Foreign counterparties could avoid trading with non-US branches of US firms to avoid swap dealer registration requirements** – Another implication is that foreign branches of US banks appear likely to be treated as a US entity. In a hypothetical scenario, if an Australian bank trades extensively with JPMorgan’s Japan branch (which is considered a US entity), that Australian

bank could potentially cross the *de minimis* threshold and be forced to register as a US swap dealer. This could cause foreign clients to shun certain US counterparties to avoid the potential cost of regulation – and cause disruption to foreign markets by reducing the number of available counterparties if the non-US branches of US firms are forced to exit.

7) Final Definition for SEFs and OTFs

The ultimate form of trading architecture (e.g. SEFs/OTFs), the proportion of trading that shifts to electronic, and what types of electronic markets dominate. There are a number of question marks regarding what will be the future dominant trading structure of derivative trading – which will be impacted by the regulatory definition of the swap execution facility (SEF) in the US, and potentially by the organized trading facility (OTF) concept in Europe. According to Gensler, final SEF rules for US implementation are slated for sometime this summer, while European regulators are still in very early stages defining OTF rules and applicability. Below we walk through key uncertainties surrounding SEFs in the US, followed by the broader set of unknowns for the nascent OTF concept in Europe.

“SEF swing factors”

- **“Form” of SEF remains unknown, but seems likely to be controlled and run by existing non-bank players** – Given lack of final definition of what constitutes a SEF, the form of new market structure remains a question mark. Nevertheless, given the thrust of proposals, we see bank dealers as most likely to use existing multi-dealer trading platforms like Tradeweb and Bloomberg, than build new SEF platforms due to: 1) Limits on bank control/ownership of SEFs in the US, 2) High costs of building a new shared dealer platform, and 3) Proposed US requirements that platforms must accommodate multiple players and not just one dealer. Using existing platforms may increase the speed of any shift to new venues, and diminishes the importance of bank investment to get new architecture off the ground.
- **Will new minimum RFQs requirements cause significant pre-trade information leakage, raising risks for market makers and hurting liquidity?** One major risk is whether clients will be mandated to send requests for quotes to a minimum of five dealers as proposed by the CFTC or just one as proposed by the SEC. This is important because the number of minimum quotes required in the new world (vs no minimums today) will determine the amount of pre-trade information leakage to other market participants. High leakage puts the “winning” broker that bought risk from a client at risk to adverse market movements (falling prices), when seeking to sell the trade risk “won” back to the market as competing market participants lower prices in anticipation of a large seller.
- **How quickly will electronic derivatives trading evolve and how much moves to the lowest margin platforms – like central limit order books?** How much electronic trading aggregates on multi-dealer RFQ platforms is a key unknown. These platforms seem likely to first gain share in products mandated on SEFs. RFQ platforms allow clients to still select banks by name, and are not anonymous, so are preferred by dealers that want to preserve client relationships. The longer-term risk, however, is that trading eventually migrates to lower margin central limit order book (CLOB) style platforms. CLOB platforms would allow multi-to-multi trading, anonymity among players and would reduce transaction counterparty choices to be executed on price alone, significantly diminishing bid/ask and dealer margins. The swing factor here is whether there

will be enough liquidity migrating to this style platform to be a viable risk transfer system for clients.

■ **We could envision two possible scenarios depending on SEF rules...**

– **SEFs gain liquidity and function well for standard products...and all plain vanilla swap and index CDS migrates to low margin electronic platforms.**

Multiple electronic trading venues arise with varying liquidity for different products. Overtime, a highly transparent, low margin central limit order book style market seems likely to become the dominant venue for the most standard instruments like plain vanilla swaps and index CDS. While this would represent a loss of existing revenues, it's important to note we see these products as already generating relatively low levels of revenue for the Street.

– **An alternate outcome is one where we see very weak liquidity on new SEF platforms due to strict RFQ protocols and broad forced placement –**

An alternate outcome is the US regulators institute tough RFQ rules, high block trade exemptions, and broad definitions of standard products – for example, pushing most single name CDS to mandatory SEF trading. Increased pre-trade transparency risks to dealers – would widen bid/ask spreads – causing clients to reduce trading volumes. Less liquid products like CDS (today) would see liquidity reduced even further. Lower client volumes, higher risks could cause dealers to refocus trading resources elsewhere, creating negative spiral. New thin markets could be more highly susceptible to adverse market events – where liquidity dries up when everyone wants to sell simultaneously.

OTF “swing factors”

Whether Europe’s comparable SEF rules for “Organized Trading Facilities” (OTFs) include mandatory trading or if they are significantly looser. Europe is significantly behind the US in its progress reshaping trading platform regulations, as we see it. The future form of trading will be determined by two sets of legislation – the European Market Infrastructure Regulation (EMIR) will determine which derivatives are “standardised” and must be traded on regulated trading venue, and MiFID II which will define the OTF concept – the nearest equivalent concept to the US SEF.

The early stage of the OTF debate means that a wide range of outcomes are possible, including the potential that OTFs are not introduced at all. With the debate between legislators and market participants ongoing, we see the following key swing factors:

- **Will trading of standardized derivatives contracts on OTFs be mandated in Europe?** – The G-20 agreement on derivatives trading called for “all standardized OTC derivative contracts [to] be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest” (emphasis added). Within the scope of this statement, European regulators may not mandate all standardized derivatives trading to move to exchange/OTF trading. That said, one of the objectives of new European trading regulation (MiFID) appears to be to impose a trading obligation on all clearable derivatives to trade on trading venues – though these rules remain in early stages – and what will be considered an allowable venue remains highly uncertain.

- **Will an operator of an OTF be able to use their own capital on the platform?**
As currently drafted, the European proposals would not allow an operator of an OTF to use their own capital in trades on their platform. This rule was designed to prevent conflicts of interest between third-party traders and the OTF operator, but could significantly reduce market depth if applied to fixed income derivatives like interest rate swaps, where banks as market makers serve as important liquidity providers.
- **How much flexibility will OTF operators have over execution methods?** – While the execution methods of SEFs in the US seems likely to be limited to “multi-to-multi” request-for-quote platforms or central limit order book style venues, European OTFs may be permitted to engage in voice brokerage, which could allow less pre-trade information leakage and greater execution discretion.
- **Will OTFs capture both fixed income and equities trading?** – While the US concept of SEF is specifically designed for the trading of swaps, original proposals for OTFs conceptualize these platforms for both fixed income and equities trading. Legislators may choose to limit OTFs to non-equities instruments to prevent crossover with existing equities MTFs and potential regulatory arbitrage.

8) SEF Block Trade Exemptions

The level of “block trade” exemptions will be a key driver on how much volume shifts from bi-lateral voice to mandatory SEF trading in the US – A key area of uncertainty in US derivatives reform is at what transaction size (if any) a block trade exemption will apply.

- **Block trades will be exempt from required trading on new SEF platforms...**
First proposed by the CFTC in early 2011, block trades would NOT be required to be executed on exchanges/SEFs, and could be executed by the existing bi-lateral voice methods, so pre-trade price transparency on “screens” would not exist, though trades would still need to be cleared and post-trade prices/economics reported. The lower the block trade limit, the better for dealers, because the greater the volume that could be exempted and remain in existing bi-lateral voice trading.
- **...But proposals have set block minimums very high, making very little activity exempt** – In March 2012 the CFTC released a revised proposal for “block trade” rules, lowering the proposed threshold to 67% of the historical 3-year cumulative total notional value of swaps traded, using a “trimmed” total calculation that excludes the very largest, but not the very smallest transactions.³ By the CFTC’s own estimates (and somewhat counter-intuitively) only 6% of interest rate and credit trades would qualify for block trade status under the >67% notional method (based on three months of data collected for interest rate swaps and CDS). We note that the CFTC’s proposal included over 100 questions and mentioned the possibility of several other calculation methods, including one using the above methodology and a lower 50% threshold. Public comments for the proposal closed May 14, after which the CFTC will write its final rule to be published in the Federal Register.

³ The method takes all publicly reported swap trades over the prior 3 years using in common currency, “trims” the sum logarithmically, computes the mean, and excludes large trades 4 standard deviations above the mean. The Commission proposes using a trimmed data set since it believes removing the largest transactions, but not the smallest will set the most appropriate block minimum, as the smallest transactions reflect liquidity available to offset large transactions.

9) Single-Counterparty Limits

The 10% single-counterparty limits could be a major issue and require dealers to significantly reduce inter-dealer exposures if not changed – Dodd-Frank required the Fed to set new rules governing single-counterparty credit exposure at a maximum of 25% of capital – and authorized the Fed to set such limits at a lower level if necessary to mitigate risks to financial stability. Exposure for the purpose of this rule goes beyond lending and commitments to include any credit exposure from derivatives, repos/reverse repos, or securities lending/ borrowings.

- **But Fed's rules went further than minimums required by Dodd-Frank** – In Dec 2011 the Fed put forth its “enhanced prudential standards and early remediation requirements” rules – aka “SIFI” rules – which recommended a limit below the statutory minimum of 10%⁴ “single-counterparty” limit for banks with over \$500 billion in assets.
- **Counterparty limits would be a major problem for US banks if not changed.** While final rules have not been set, if enacted this rule could force major structural changes at US banks. At a recent meeting GS CFO David Viniar described the rules if passed as “extremely detrimental to the world’s capital markets.” Based on current levels many banks would be in excess of counterparty limits based on sovereign debt holdings, and thus in an auction no dealer could purchase and re-sell them because they were already over their limit. Separately, the rules limit bank exposures to all counterparties, including CCPs – which are not exempt. While issues with sovereigns and CCPs could be fixed with exemptions, we worry that one of the key goals is to reduce inter-bank exposure, which if closely limited could reduce banks’ trading partners and potentially crimp volumes.
- **Method required to measure counter-party exposures inflates risk levels by over 150%.** The rule requires use of the “current exposure method” (CEM), which uses a gross notional basis rather than net. Banks have moved away from CEM to use internal model methods (IMM) as CEM proved to be risk insensitive and tended to overstate risk exposures, increasing reported risk by up to 7-8x on a portfolio basis. Banks propose that internal models should be used where available, with the use of a multiplier to create a buffer to satisfy regulators. According to the FT, citing an unpublished study by trade association called The Clearing House, there are currently widespread breaches of the limit and \$1.2 trillion of credit exposures between financial firms that would have to be reduced – though this could be reduced to \$450 billion if banks used internal model counter-party exposure methods instead of the required CEM approach.
 - **‘Current Exposure Method’ generates risk toward the 10% limit, even in perfectly offsetting trades.** The CEM approach counts risk toward the 10% limit, even in perfectly offsetting trades with the same counterparty. Based on an example provided in Goldman’s comment letter on the topic, if we take two \$100 mil, 6-year swaps (one pay-fixed and one received-fixed) with perfectly offsetting payments and the *same* counterparty, if trades are subject to a master netting agreement, no collateral is posted. Using internal model methods, would calculate economic counterparty exposure as zero.

⁴ Limit is set as a percentage of Capital stock and surplus. Law directs prohibition of credit exposures above 25%, though authorizes regulators to lower the threshold if necessary to mitigate risks to the financial stability of the US.

Using CEM's formulaic approach, including prescribed risk factors (which vary by product and maturity; in this case, 1.5% for interest rate swaps >5 years), plus a prescribed weighting of 40% to the notional exposure and 60% to a net exposure ... we get $((\$100 \text{ mil} + \$100 \text{ mil}) \times 1.5\% \times 40\%) + (60\% \times \text{zero}) = \1.2 mil of exposure. So CEM results in \$1.2 mil of exposure, vs zero actual economic exposure, as it fails to capture that the two matched trades fully offset. Given the large number of offsetting trades counterparty exposure, banks fear that using CEM would quickly add up pushing banks over the limit, even for trades where no economic counterparty exposure existed.

- **10% limit is challenging for large banks and significantly lower than for international peers** – While the law allows for the Federal Reserve to lower the counterparty exposure threshold from 25%, no evidence has been provided for reducing the limit to 10%. The limit also creates competitive advantage concerns, with equivalent EU and UK limits no lower than 25%.
- **Inclusion of CCP's as counterparties could frustrate move to clearing** – Draft rules do not specifically exempt CCPs from being the 10% counterparty limit, which would result in many banks breaching or “near-breaching” exposure limits to the largest global CCPs. Given Dodd-Frank encourages clearing, the industry is seeking a CCP exemption, or at a minimum a higher limit.

10) Basel 2.5 Fundamental Review of the Trading Book concept paper

In May 2012 the Basel issued its formal review paper called the “Fundamental Review of the Trading Book”. There is a comment period that lasts until September 2012. Importantly, this as a conceptual “consultative” paper, with proposals not set in stone, and will involve numerous intermediate steps before finalization (e.g., a more fleshed out proposal, industry comments to the fleshed out proposal, a “quantitative impact study”, and possibly a final round of proposals and comments) before a final version is issued by the Basel Committee. Additionally these rules can not override the mandate from Dodd-Frank in the US prohibiting use of rating agency ratings in capital rules. In short, it will take several years before this is likely to come anywhere near to a final version, and these rules will not impact the upcoming US implementation of Basel 2.5 that has already been proposed.

- **AFS securities portfolios could be caught under tougher trading book rules, driving material increases in RWA.** The concept paper proposes two new methods for determining the “boundary” between what gets calculated as a “Banking Book” risk-weighted asset, and what falls into the “Trading Book”. Trading book rules are inherently tougher, so any changes that push more assets to be calculated under Trading Book rules, the more capital likely required.

The concept paper proposes two criteria: 1) a simple “intent-based” criteria for trading that requires some extra evidence (e.g., there is liquidity in a traded asset), which we believe could be relatively benign; and 2) a broader criteria saying any mark-to-market or fair value asset where changes in value affect Tier 1 common should be considered trading. This method could be a significant negative for US banks as under US GAAP and proposed Basel 3 rules, the available for sale portfolio would fall into the trading book, vs current treatment in the banking book.

- **Broader use of capital “floors” or “surcharges” could significantly reduce the RWA mitigation benefits from internal models** – The proposal also

suggests new calculation methods that could reduce potential RWA mitigation benefits available from the use of internal bank models. New minimum RWA levels for various calculations would be set by adding a “floor” or “surcharge” test. The floor test would be calculated based on the simpler, and less risk-sensitive standardized approach. If the model-calculated required capital was lower than the “floor-based” standard method, the model calculation would be thrown out in favor of the higher floor.

- **Proposes new risk measure “Expected Shortfall” to replace VAR, but without calibration impossible to tell if change would be better or worse** – VAR at the 99% confidence level measures the potential loss in a trading book (due to changes in market factors) which should not be exceeded more than 1% of the time. Expected Shortfall (ES) at the 99% level measures the expected loss in the entire tail, beyond the 99% confidence level loss. By definition, the ES method is larger than a VaR method, but given the concept paper gives no calibration of levels, it’s impossible to know if this would be better or worse.

Normalized Returns

FICC revenues are 20-25% below normal

“Running Harder to Stand Still”

2011 weakness in fixed income trading was due to cyclical pressure more than regulatory reform. We estimate 2011 global core Fixed Income trading revenues fell by ~20% vs 2010 (which was down 30% from 2009). The key questions we hear from investors are: 1) How much of the recent decline is cyclical vs secular pressures from regulatory reform, and 2) What is the “normalized” revenue base. The answers are complicated because they require stripping out the impact of a weak environment, plus estimating impacts of reforms where rules are not yet fully written. In this section, we provide our best estimate of “normal” FICC revenues factoring in our estimate of the cyclical impact in 2011, and leveraging our regulatory reform impact analysis from the prior section.

Bid/Ask Spreads Remain Wide

Below we show the trajectory of bid/ask for US credit trading from pre-crisis to today – with spreads still about 2-3x wider than pre-crisis levels, but considerably tighter than panicked levels in August-October of last year. The issue for credit trading remains: volumes are at weak levels not seen since the beginning of the last decade relative to the size of the market, and bid/ask is not wide enough to really compensate.

Figure 24. Bid/Ask Spreads Generally Still Wider vs Pre-Crisis, but Well Below 2009 levels

Instrument	Pre-Crisis Bid/Ask	1H09	2H09	Early 2010	3Q11	1Q12	Now vs Pre-Crisis
Inv Grade CDS Index	0.25-0.50 bps	at least 2 basis points	0.75-1.25 bps	~0.75 bps	1-1.5 bps	~0.75 bps	2-3x wider
High Yield CDS Index	5 bps	more than 50 bps	12.5 -15 bps	~10 bps	30-38 bps	~10 bps	~2x wider
Single A-rated Fin'l Cash Bond	3-5 bps	15-25 bps	5-10 bps	~10 bps	~20 bps	~10 bps	2-3x wider
Qualitative	Very Tight	Very Wide	Still Wide	Narrower	Blew out again	Coming In	

Source: Citi Fixed Income.

Estimating FICC Revenue Pools

Below we show our \$135 billion estimate of the “normal” global core fixed income trading revenue pool before regulatory reform impact, which compares to the roughly \$105 billion of core revenues actually reported last year.

- **We believe the impact of regulatory reform on 2011 revenue pool appears modest...** We do believe some changes have been made over the past few years due to expected regulations – including preparation for Basel 3 implementation by 2013, the elimination of most banks’ pure prop desks for Volcker, and even some clients having backed away from longer dated products due to the regulatory uncertainty. Nevertheless, we believe significant changes including shifts in market architecture and new capital regimes have yet to fully take hold and thus there has been little direct impact from pending regulations on derivatives or Volcker restrictions on market making so far.
- **...Implying that last year’s pressure on fixed income trading revenues was cyclical (weak volumes and trading losses) – and depressed 2011 global core revenues by ~\$30 billion...**
 - **Methodology for estimating “Normal” FICC run-rate** – While various reversals of pre-credit crisis excesses have occurred (e.g. much smaller holdings of RMBS/ABS and lower credit trading inventories), we believe there were significant distorting factors in the recent 2011 run rate that prevent us from using the full year revenues as our base case, with the main issue being

a particularly weak second half. Accordingly, to estimate normal FICC revenues we used an average of 1Q10 and 1Q11 quarters as our “base” starting point – two quarters which we believe were relatively “clean” and did not include abnormal trading gains or losses. We then utilized the historical average sequential quarterly FICC revenue seasonality from 2002-2010 to our “1Q base” to arrive at around \$135 billion as our current normal FICC revenue estimate. This would put normal global revenues about inline with that seen in 2006-2007.

- By comparing our expected historical average seasonality with the sequential performance observed in 2011 and our \$135 billion estimate to the actual \$105 billion reported (Figure 27), we identify ~\$30 billion of abnormal cyclical FICC impacts last year.

- **We also assume this base can grow at 3% a year while regulatory impacts are layered in.** Assuming 3-year phase-in period for rules, we grow the revenue pool by 3% per year core underlying growth rate while rules are implemented – putting core at about \$150 billion.
- **...But ultimately regulatory reform should have a 15-20% impact, which puts our estimate of “normal” Fixed Income trading revenue at \$120 billion.** Our \$120 billion estimate leverages our regulatory impact analysis and applies a 20% hit to revenues in our base case, (by haircutting our 20% hit for US players to about 15% for European banks, which do not have as much revenues exposed to Volcker, have already shifted to Basel 2.5, and may not see as strict mandatory OTC derivative trading reforms).

Estimating FICC Revenue Pools

Figure 25. Global Core FICC Revenue Pools 2005-2011

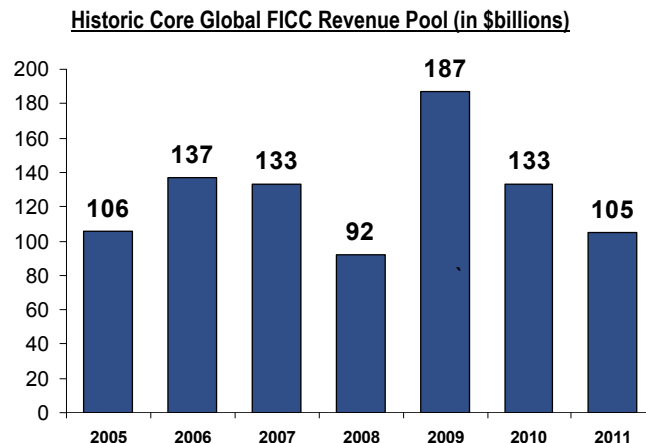


Figure 26. We see “normal” core FICC revenues of ~ \$120 billion after adjusting for cyclical weakness and regulatory headwinds

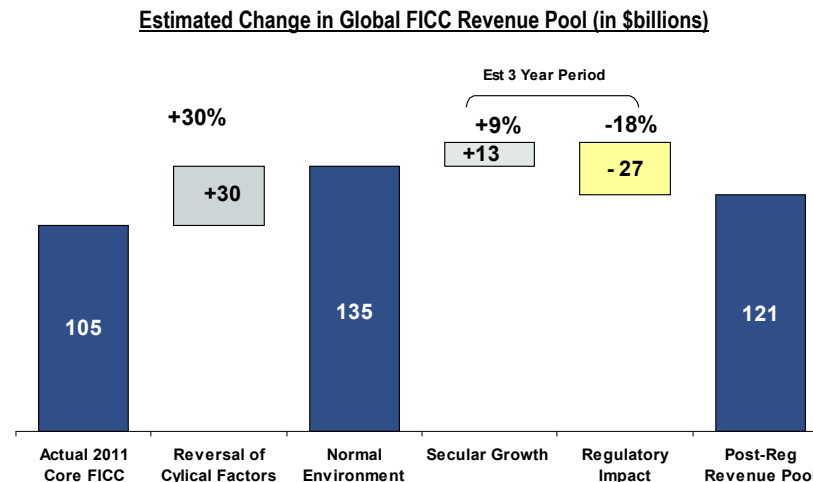


Figure 27. 2011 Sequential performance was much worse than normal historical averages.

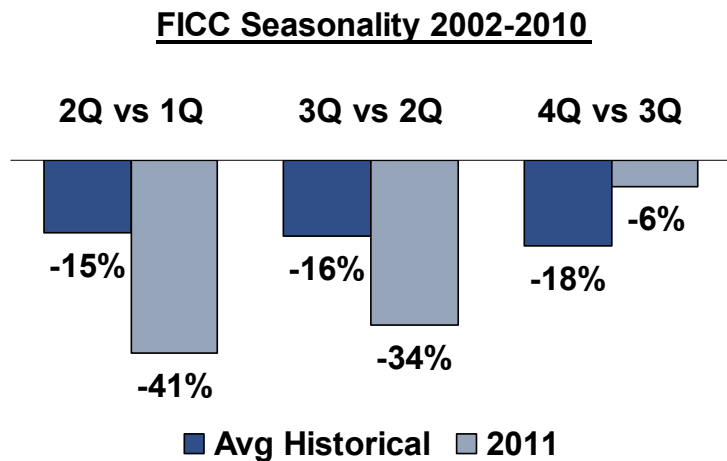
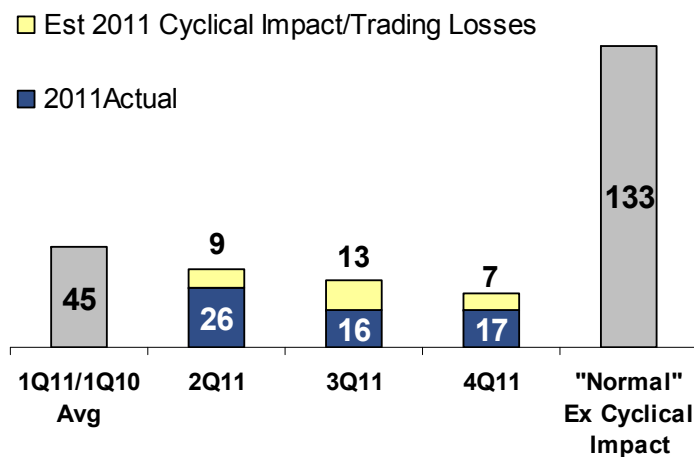


Figure 28. We see ~\$135 billion in normal revenues prior to regulatory reform.



Source: CIRA, Data set includes total FICC revenues for 7 top global FICC players from 2002 to 2010. Due to irregularity we exclude 2Q05, 3Q05 and 4Q08.

Source: Citi Investment Research and Analysis

2011 FICC ROE was 7% for the industry

In the next several pages we attempt to: 1) Estimate fixed income trading returns for 2011, 2) Estimate "normal" returns without regulatory headwinds, 3) Examine the impact of regulations on returns, and 4) Review comparative takeaways from this analysis.

Important caveats to our estimates – While we have made best efforts to make estimates for each bank on reasonable basis – limitations of disclosure regarding business line compensation costs, differences between allocations of non-comp expenses between firms and capital/RWA disclosures force numerous assumptions.

We estimate 2011 Fixed Income trading returns on equity for the Top 8 global investment banks averaged ~7% and ranged from 3% to 16% on a pro forma Basel 3 basis.

2011 returns for Fixed Income trading were in the mid-single-digits

Performance covered a wide range from 3% to 16% with many of the weaker performers in the 3-6% range. We estimate 2011 fixed income trading ROE weakness was driven mostly by cyclical factors rather than structural regulatory impacts pro forma for Basel 3 rules. Below we show the return implications for last year's \$105 billion global fixed income trading revenue pool (which was well below our estimate of \$135 billion "normal"), where the top 8 global players shown represented about \$70 billion of the total.

Figure 29. 2011 Fixed Income Trading ROEs were ~7% on average, and 3-5% for weaker players

2011 (US\$ bil)	JPM	MS	GS	BAC	CS	UBS	DBK	BARC	Total	Avg
FICC Revenues Core	14.8	6.3	8.6	8.4	5.5	5.1	11.5	10.1	70	
<i>Revenues/Mitigated FICC RWA</i>	5.0%	2.2%	2.3%	3.3%	4.4%	4.5%	3.6%	3.6%	3.6%	3.6%
FICC Comp	5.2	2.9	3.7	4.0	3.0	2.9	5.2	4.6	31	
<i>Comp Ratio</i>	35%	46%	42%	48%	55%	57%	45%	45%	45%	47%
FICC Non-Comp	2.7	2.2	2.9	2.7	2.0	1.3	1.9	1.6	17	2.2
FICC Pretax Income	6.9	1.2	2.0	1.6	0.5	0.9	4.4	4.0	21.5	
<i>Tax rate</i>	35%	35%	35%	35%	25%	25%	31%	25%	32%	
Tax	(2.4)	(0.4)	(0.7)	(0.6)	(0.1)	(0.2)	(1.4)	(1.0)	(6.8)	
FICC Net Income	4.5	0.8	1.3	1.0	0.3	0.7	3.0	3.0	14.7	
Tier 1 Common Minimum (Basel 3 est)	9.5%	9.0%	9.0%	9.0%	10.0%	10.0%	10.0%	10.0%	9.5%	10%
Basel 3 Pro Forma FICC RWAs										
Gross FICC RWA	350	363	465	450	180	160	403	364	2,735	
Est Mitigated FICC RWA	296	289	376	250	125	112	318	283	2,049	
<i>% Mitigation</i>	-15%	-20%	-19%	-44%	-31%	-30%	-21%	-22%	-25%	-25%
Basel 3 ROTE - FICC (Mitigated)	16%	3%	4%	5%	3%	6%	10%	11%	7%	7%

Source: CIRA estimates and company reports. US\$ billions. Top 8 represent about \$70 billion of the total revenue pool of \$105 billion for top 15 players.

Note for MS and GS in our subsequent normal analyses we assume incremental RWA mitigation from internal RWA model approvals.

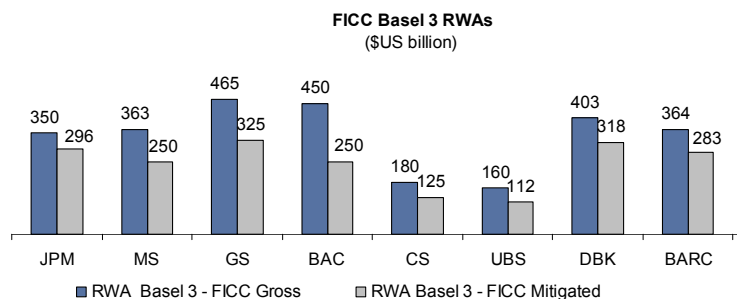
I) Methodology for Estimating Fixed Income Trading Income

Below we walk through key components of our estimated Fixed Income trading ROEs for each of the top 8 global investment banks. Note that our methodology relies primarily on the line of business disclosures for the each of the banks (plus some make extra assumptions for DB and GS which do not give as detailed segment data), and thus there may be issues of comparability between firms due to internal allocation methodologies.

- **Core revenues** – In our revenue estimates we exclude DVA or disclosed one-time marks – with the largest being \$3 bil of DVA gains and \$1.9 bil of monoline losses at MS, \$500 mil of DVA gains at JPM, \$400 mil of DVA gains at GS, and a net \$775 mil DVA/CVA at BAC.
- **Compensation** – For those banks that show investment banking compensation, we use the investment bank comp ratio as a proxy for Fixed Income trading. There are several banks (GS, BAC and DBK) that do not disclose investment bank segment compensation, and in those instances we either make an estimate of non-comp costs and back into the comp ratio, or use an estimate base on peers and our view on the comp split between equities and FICC.
- **Non-comp expense** – One of the biggest areas of variability in the estimates is non compensation related costs. These numbers are heavily influenced by the allocation of cost in the line of business accounting, but are the only information we have to go on. As a rule of thumb, we allocate 40% of I-Bank segment non comp expenses for each firm to FICC – as we view these allocations as likely head-count driven. Note that there is a fairly wide range here with the lowest being UBS at \$1.3 billion vs a high of \$2.9 billion at GS and \$2.1 bil on average.
- **Tax rate** – For the US banks, we assume a 35% tax rate and for European banks we assume rates between 25% and 31% in 2011.
- **We estimate capital allocated to fixed income trading on a Basel 3 fully loaded basis** – To estimate required capital under Basel 3 we take banks' disclosed firm-level or investment-bank level pro forma Basel 3 RWAs as of year-end, or our best estimate, and assume ~75% of the investment bank RWA relates to fixed income trading – which is supported by disclosures from CS and UBS which show 73% and 71% fixed income trading as percent of I-Bank RWA. In many instances we were also forced to make several assumptions to adjust firmwide RWA to estimate I-Bank RWA and to allocate planned mitigation from the firm or I-Bank level to fixed income trading. We detail all firm-specific adjustments below. We also estimate pro forma net fixed income trading RWA based on disclosed mitigation plans (which tend to be more passive for US players and more active for EU players). Using each firm's expected future B3 Tier 1 common targets with G-SIFI buffers of 9-10% we then calculate required common equity.
- **Additionally, our normal analysis assumes fully mitigated FICC RWA giving firms the benefits of passive, active and enhanced modeling benefits.** In our normal analysis we assume European and US banks hit the RWA mitigation targets they have laid out, plus we assume banks like GS and MS achieve incremental mitigation from advanced RWA modeling – as these firm's passive RWA mitigation disclosures do not include assumed modeling benefits vs peers like JPM and BAC that explicitly include expected model benefits in RWA targets.

II) Company Basel 3 RWA Disclosures and Estimates

Figure 30. Summary of Estimated Basel 3 Fixed Income Trading RWAs By Bank



Source: CIRA estimates and Co reports.

JPM – JPM disclosed its I-Bank segment B3 pro forma RWA of \$467 billion at 4Q11 at its recent investor day, we assume 75% is fixed income trading or \$350 billion. JPM also disclosed expectations of \$54 bil of RWA mitigation in 2012 for the I-Bank, which we assume 100% relates to fixed income trading producing our \$296 billion RWA estimate. While we believe there may be some additional passive mitigation overtime from credit correlation or derivative run-off beyond 2012, we do not model that explicitly in this analysis. Overall, we believe JPM has been more successful with RWA model approvals from the Fed than peers, so there may be somewhat less room for JPM to get extra mitigation vs peers.

MS – MS does not disclose Basel 3 RWA for the firm directly, only that its B3 pro forma Tier 1 common ratio was about 8% at 4Q11 with some cushion in case regulatory interpretation goes against them. Using our estimate of 4Q11 Tier 1 common of \$44 bil and 8.25% ratio with cushion, we estimate MS had firmwide B3 RWAs of \$533 bil at 4Q11. We then exclude an estimated \$25 bil each for Morgan's asset management and GWM businesses to get about \$483 bil for the I-Bank, and then apply our 75% factor to get Fixed Income trading gross RWA of \$363 billion.

To derive mitigated RWA, our starting point is in 2Q11 (prior to the MBIA unwind) when MS disclosed a \$480 bil 4Q12 passively mitigated RWA target for the firm as a whole. Additionally, we estimate the active MBIA unwind reduced RWA by a further \$20 billion – leaving an estimated net RWA of \$460 billion. So pulling it all together, we estimate total firm mitigation of \$73 billion (533-460) – of which we allocate 100% to Fixed Income trading to get passively mitigated RWA of ~\$290 billion. Given Morgan's forecast is only passive and we believe does not include the possible benefit of future RWA model approvals – we estimate they could achieve an additional ~\$40 billion of RWA reductions long term – putting our estimate of fully mitigated FICC RWAs at \$250 billion.

GS – Discloses total firm 4Q11 pro forma B3 RWA of \$774 billion. We exclude \$96 billion of RWA for principal investments, exclude an estimated 20% of \$52 in Operational risk RWA assuming it relates to non-fixed income businesses, and similarly exclude an estimated 30% of the firms \$160 billion of "Other" unspecified RWA (assuming most is FICC related) – to get estimated I-Bank RWA of ~\$620 billion. We then assume 75% of the I-Bank RWA relates to FICC, or \$465 billion.

For mitigated RWA, GS has noted a 4Q13 target of \$685 billion for the whole firm, or \$89 billion of total mitigation (including \$39 bil from market risk and \$50 bil from "credit risk" - which could include principal investments, derivatives and other). We

assume 100% of the planned \$89 bil of mitigation through 2013 runs through FICC, producing ~\$375 billion of Fixed Income trading mitigated RWAs. In addition, like MS, we estimate Goldman's passive RWA estimates do not include possible benefit of future advanced models – to which we estimate could trim a further \$50 billion of RWA – leaving our net fully mitigated FICC RWA estimate at \$325 billion.

BAC – At its 2011 investor day BAC disclosed \$2.0 trillion of firmwide B3 RWA and \$0.6 trillion for the investment bank. At the time the firm's target RWA was \$1.8 trillion by 4Q12. Since then there have been no updates to the I-Bank pro forma figure but the total firm target has been cut slightly to \$1.75 trillion. Given little change to the target we assume \$600 bil B3 RWA at 4Q11 for BAC's I-Bank segment is still relevant estimate and assume 75% is for Fixed Income trading. At BAC's 2011 investor day they estimated \$0.2 trillion of mitigation in the I-Bank by 4Q12. We assume that all of that mitigation runs through the FICC leaving our BAC's pro forma mitigated FICC RWA estimate at \$250 billion ($600 \times 75\% - 200$). Note: unlike MS and GS, BAC *includes* expected model approvals from regulators in its mitigation targets; therefore, we do not assume any incremental possible mitigation benefit.

CS – At 4Q11 results Credit Suisse directly disclosed its I-Bank segment 4Q11 B3 RWA of \$248 billion, as well as its 4Q11 B3 gross Fixed Income trading RWA of \$180 billion (73% of I-Bank RWA). CS also disclosed its target end-2012 mitigated I-Bank goal of \$190 billion, with its target mitigated Fixed Income trading B3 RWA at 4Q12 of \$125 billion. This implies 95% of RWA mitigation will be within Fixed Income, with the majority of this reduction coming from the wind-down of legacy assets (e.g., exit of CMBS origination, reduction of long-dated trades in rates). Unlike for peers, we are not required to make any estimates for CS fixed income trading RWAs.

UBS – At 4Q11 results UBS directly disclosed its I-Bank segment 4Q11 B3 RWA of CHF212 billion. At its November 2011 Investor Day UBS gave an end 2013 mitigated I-Bank RWA goal of CHF150 billion, as well as its target mitigated fixed income trading B3 RWA at end 2013 of CHF105 billion. We convert disclosed figures to dollars in the table.

DB – With its 4Q11 results, DBK disclosed CBandS (investment banking division) Basel 2.5 RWAs of €229bn, and identified an additional €12bn of market risk RWA as a potential future increase should the investment bank opt to re-risk in a more supportive trading environment. In its 1Q12 presentation DBK showed that Basel 3 would add €108bn to group RWAs after mitigating actions, whilst at its June 2011 investor day the group disclosed aggregate Basel 2.5 and Basel 3 RWA mitigation of €90bn, of which we estimate €66bn was related to Basel 3. Taken together, this implies gross IB Basel 3 RWAs of €415bn and mitigated RWAs of €349bn. We assume 75% of gross IB RWAs and all mitigation are related to FICC trading.

BARC – At its June 2011 investor day BARC disclosed pro-forma Basel 3 Group RWAs of £535 bil and pro-forma Barclays Capital RWAs of £312 bil. We estimate that c75% of Barclays Capital RWAs are attributable to the FICC business. Mitigation at Barclays Capital, including sell-down and other management actions, is expected to reduce Barclays Capital RWAs by c£42-62 bil by 4Q13, of which £29 bil is attributable to a reduction in legacy asset credit positions, such as former Protium assets, as well as parts of the Commercial Real Estate and Leveraged Loan portfolios. We assume that the remainder of the planned mitigation is also attributable to FICC leaving a pro-forma estimate for mitigated FICC RWAs of c£182 bil ($312 \times 75\% = 234$ gross FICC RWAs less -52 of mitigation = 182).

Estimating “normal” FICC returns without regulatory headwinds

Figure 31. Estimated market share in a “normal” FICC trading environment

	2010	2011	Est Normal
JPM	11.4%	14.1%	13.5%
DBK	10.4%	11.0%	11.5%
BARC	10.1%	9.7%	10.5%
GS	10.4%	8.2%	10.5%
BAC	9.7%	8.0%	8.5%
MS	5.7%	6.0%	6.5%
CS	5.1%	5.2%	5.0%
UBS	3.7%	4.8%	4.0%
Top 8	66.3%	66.9%	70.0%
Top 4	42.3%	42.9%	46.0%

Source: Citi Investment Research and Analysis

Next we look at the same pro forma Basel 3 FICC returns in a “normalized” revenue environment, but before any impact from regulatory reform. Our return estimates range from 8% to 20% with most players in the 11-12% range.

- **Using our estimated “normalized” revenue pool we then allocate revenue based on our market share expectations (Figure 31).** In Figure 26 on page 57 we estimated that adjusted for cyclical factors, we estimated roughly a \$135 billion global FICC pool in 2011 for the Top 15. Using this base, we then apply our best estimates for market shares in a normal year.
- **Note we assume both the total comp pool and the total non-comp expense pool both grow by ~15% –** Our comp expectations equate to a 15% increase in the comp pool vs a 35% increase in revenues, pointing to decent leverage. Note we stratify our assumptions on comp by market share to account for benefits of scale...so, JPM has the best comp ratio of 36%, while UBS with the lowest market share, gets 38%. Given investments in technology and systems, we assume all banks raise non-comp expenses by 15%. We also normalize the tax rate at 35%.

Figure 32. We see normal fixed income trading revenue pool ~35% higher driving pre-regulatory impact returns to ~14%

“Normal” FICC Returns (Pre-Regulatory Reform Impact)

“Normal” (US\$ bil)	JPM	MS	GS	BAC	CS	UBS	DBK	BARC	Total	Avg
FICC Revenues 2011	14.8	6.3	8.6	8.4	5.5	5.1	11.5	10.1	70	
FICC Revenues Normal	18.2	8.8	14.2	11.5	6.8	5.4	15.5	14.2	95	
Est Market Share Normal	13.5%	6.5%	10.5%	8.5%	5.0%	4.0%	11.5%	10.5%	70%	
Revenues to Mitigated FICC RWA	6.2%	3.5%	4.4%	4.6%	5.4%	4.8%	4.9%	5.0%		4.8%
FICC Comp	6.6	3.3	5.2	4.4	2.6	2.1	5.7	5.2	35	
Comp Ratio	36%	38%	37%	38%	38%	38%	37%	37%	37%	37%
FICC Non-Comp	3.1	2.5	3.4	3.1	2.3	1.5	2.2	1.8	20	
FICC Pretax Income	8.6	2.9	5.6	4.0	1.9	1.8	7.6	7.1	39	
Tax rate	35%	35%	35%	35%	35%	35%	35%	35%	35%	
Tax	(3.0)	(1.0)	(1.9)	(1.4)	(0.7)	(0.6)	(2.6)	(2.5)	(14)	
FICC Net Income	5.6	1.9	3.6	2.6	1.2	1.2	4.9	4.6	26	
Tier 1 Common Minimum	9.5%	9.0%	9.0%	9.0%	10.0%	10.0%	10.0%	10.0%	9.5%	10%
<u>Basel 3 Pro Forma FICC RWAs</u>										
Est Mitigated FICC RWA	296	250	325	250	125	112	318	283	1,959	
% Mitigation	-15%	-31%	-30%	-44%	-31%	-30%	-21%	-22%	-28%	-28%
Basel 3 ROTE - FICC (Mitigated)	20%	8%	12%	11%	10%	11%	15%	16%	14%	13%

Source: Citi Investment Research and Analysis

Normal returns should approach 10-12%

We estimate few firms will produce solid mid-double digit FICC ROEs even in a good environment (assuming 15-20% revenue losses from regulatory impacts) implying business must be subsidized or rescaled.

Post-Regulatory Reform impacts of 15-20% we find “normal” FICC ROEs averaging ~12%, inline with the cost of capital given above-average risk – After an assumed 25-30% mitigation for FICC risk weighted assets and an increase in the revenue pool of 23%, ROEs remain near the cost of capital for most of the group.

Only the largest firms appear capable of earning decent returns assuming no significant changes to cost structures or further RWA mitigation – Even assuming major revenue rebounds, the firms we estimate to be the best globally still only generate ROEs in the 14-16% range.

Our analysis assumes 15-20% hit to revenues for Reg Reform impacts – We apply hair-cuts to our normal revenue estimates – based on our expectation of severity from the three biggest headwinds (OTC derivative reforms, Basel 3 and Volcker). We apply a base-case estimate of 20% for US firms, and only -15% for EU firms with lower Volcker and OTC derivative impact.

And we take into account underlying revenue pool growth during the regulatory implementation period – We apply the “fully loaded” regulatory impact all at once – but because we think rules will take at least three years to fully phase in – we offset these hits adding a normal annual FICC pool secular growth rate of 3% to our \$135 billion normalized pool during the regulatory implementation period – putting the total pool at \$148 billion before regulatory impact, and \$122 billion after regulatory impact, as shown in Figure 26 on page 57.

We adjust RWA mitigation – To give all banks the full benefit of passive and active mitigation and modeling benefits we adjust GS and MS capital allocated based on estimated fully mitigated RWA, which equal ~30% of original RWA, inline w/ peers.

Figure 33. We see normalized FICC industry ROEs in the 12% range

“Normal” FICC Returns - Including Regulatory Reform Impact										
Post Regulatory (US \$ bil)	JPM	MS	GS	BAC	CS	UBS	DBK	BARC	Top 8	Avg
2011 FICC Revs	14.8	6.3	8.6	8.4	5.5	5.1	11.5	10.1	70	
Normal FICC Revs Pre-Regulation	19.9	9.6	15.5	12.5	7.4	5.9	17.0	15.5	103	
Est Reg Impact	-20%	-20%	-20%	-20%	-15%	-15%	-15%	-15%	-18%	-18%
Normal FICC Revs Post Regulation	15.9	7.7	12.4	10.0	6.3	5.0	14.4	13.2	85	
Est Post Reg Market Share	13.1%	6.3%	10.2%	8.2%	5.2%	4.1%	11.8%	10.8%	69.8%	
Revenues to Mitigated FICC RWA	5.4%	3.1%	3.8%	4.0%	5.0%	4.5%	4.5%	4.7%		4.4%
FICC Comp	5.7	2.9	4.6	3.8	2.4	1.9	5.3	4.9	32	
Comp Ratio	36%	38%	37%	38%	38%	38%	37%	37%	37%	37%
FICC Non-Comp	3.1	2.5	3.4	3.1	2.3	1.5	2.2	1.8	20	
FICC Pretax Income	7.1	2.2	4.4	3.1	1.6	1.6	6.9	6.5	33	
Tax rate	35%	35%	35%	35%	35%	35%	35%	35%	35%	
Tax	(2.5)	(0.8)	(1.6)	(1.1)	(0.5)	(0.6)	(2.4)	(2.3)	(12)	
FICC Net Income	4.6	1.4	2.9	2.0	1.0	1.0	4.5	4.2	22	
Tier 1 Common Minimum	9.5%	9.0%	9.0%	9.0%	10.0%	10.0%	10.0%	10.0%	9.5%	10%
<u>Basel 3 Pro Forma FICC RWAs</u>										
Est Mitigated FICC RWA	296	250	325	250	125	112	318	283	1,959	
% Mitigation	-15%	-31%	-30%	-44%	-31%	-30%	-21%	-22%	-28%	-28%
Basel 3 ROTE - FICC (Mitigated)	16%	6%	10%	9%	8%	9%	14%	15%	12%	11%

Source: CIRA estimates

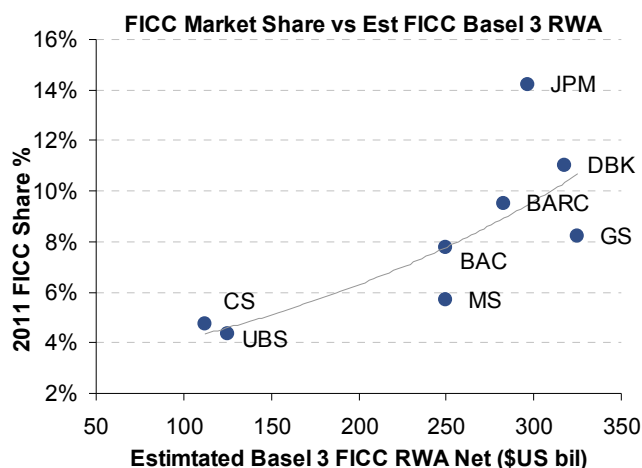
Takeaways from our comparative analysis

While we acknowledge individual company return estimates are challenged given: 1) Varying disclosures and required assumptions, 2) Likely inconsistency of RWA calculations between banks, 3) Difficulties allocating comp and non-comp costs to FICC, and 4) Our implicit assumption that FICC businesses will be run with firm-level Basel 3 fully-loaded capital with G-SIFI buffers, rather than economic risk capital – we believe the exercise provides some valuable group level observations.

- **Including regulatory impact we see normal FICC ROEs of 12% on average.**
Results have a wide dispersion, with some firms 200-400 bps above the average and others 300-600 bps below it.
 - **It will be tough for even the best-in-class competitors to produce high-teens Fixed Income trading ROEs.** Assuming our revenue growth and regulatory impact estimates are accurate, barring big revenue pool growth, only the best firms will hit 15% ROEs.
 - **While other major players seem likely to struggle to hit their cost of capital without making bigger market share gains or structural changes to costs** – Meanwhile we see the next tier group having greater challenges running in the 8-12% zone, roughly at or below their cost of capital.
 - **The next level of 2nd tier players (not shown) with less scale than the top eight appear likely to fare even worse** – While we did not analyze the next tier of competitors, we expect it will be even tougher for many of these firms to generate decent returns given smaller scale and similar expected higher capital allocations.
- **RWA efficiency will be a very significant factor for optimizing fixed income trading returns, and success so far varies widely among firms.** As we show in Figure 34 and Figure 35, Fixed Income trading market share positively correlates to the size of deployed Basel 3 Fixed Income trading RWAs. However players with relatively high flow-oriented businesses like JPM, BARC and DB rank relatively well on unit of RWA per unit of Fixed Income trading market share in 2011, while GS and MS lag significantly.
 - **Overall we see BAC, MS and GS as having below-peer RWA efficiency** – In Figure 34 and Figure 35 (see below) we compare FICC risk weighted assets to FICC market share and also look at FICC revenues to RWAs – both of which show BAC, GS and MS as having below-average RWA efficiencies relative to revenues earned – which can be viewed as both a challenge and opportunity – and JPM appears to be generating much more revenue and revenue share than its RWA levels would seem to predict.
 - **When JPM acquired Bear Stearns it was able to put Bear on its existing risk management systems....** We believe that after JP Morgan acquired Bear Stearns, they transferred Bear Stearns' transactions onto existing JPM systems. Presumably all JPM desks that had regulatory approval to calculate RWA with VAR could simply continue to do the same after the Bear Stearns positions were integrated into that desk.
 - **...But when BAC acquired Merrill it did not get same benefit, which means there may be more room for improvement at BAC.** When BAC bought Merrill, we believe trading assets were shifted to Merrill Lynch's systems and risk management processes – but Merrill was regulated by the

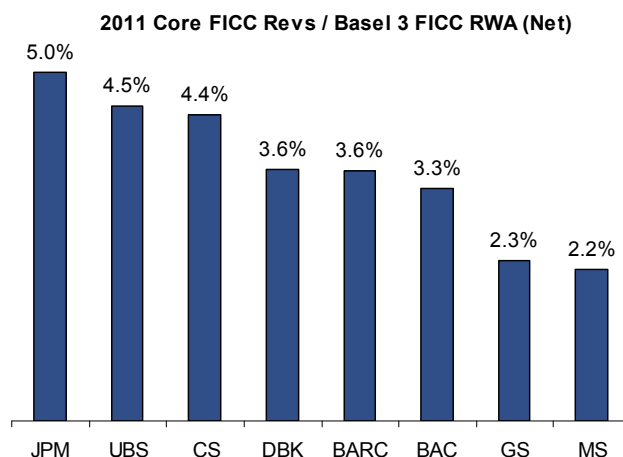
SEC, so had less experience getting any Basel 1 advanced internal models approved by the Fed. While new internal models are needed under Basel 3 vs Basel 1 – we believe it's likely much easier to make adjustments to existing models than produce and verify data for wholly new models. While it's hard to know for sure, we believe this may have left BAC with a larger percentage of its RWA based on the tougher standardized approach than JPM – putting BAC at a higher RWA “starting point” when shifting over to Basel 3. This negative, however, turns to a positive, as it may give BAC greater opportunity to improve its RWA via internal modeling. This also may partly explain why our expected future RWA mitigation levels are higher for BAC vs JPM.

Figure 34. Higher FICC market share drives greater RWA usage...



Source: Citi Investment Research and Analysis

Figure 35. ...But RWA efficiency varies dramatically among players



Source: Citi Investment Research and Analysis

How the Competitive Landscape Will Change

Sources of competitive advantage in the “New World”

Figure 36. Global Core Fixed Income Trading Revenue Market Shares 2006-2011

Core FICC	2006	2007	1H08	2009	2010	2011
JP Morgan	9.3%	9.1%	8.1%	10.1%	11.4%	14.1%
Deutsche Bank	8.2%	9.7%	11.7%	8.4%	10.4%	11.0%
Barclays	10.2%	14.6%	14.9%	11.0%	10.1%	9.4%
Goldman Sachs	9.6%	11.5%	12.2%	13.8%	10.4%	8.2%
BofA	9.9%	9.9%	8.8%	9.0%	9.7%	8.0%
BNP	2.7%	3.5%	3.6%	6.1%	5.5%	6.0%
RBS	10.8%	9.7%	5.4%	7.3%	6.1%	6.0%
Morgan Stanley	6.8%	6.6%	5.9%	4.7%	5.7%	6.0%
UBS	4.8%	2.4%	1.5%	1.5%	3.7%	4.7%
HSBC	3.6%	3.2%	4.7%	4.7%	4.6%	4.5%
Credit Suisse	5.6%	5.3%	4.1%	5.2%	5.1%	4.3%
Nomura	3.5%	2.7%	2.7%	1.5%	2.2%	3.0%
Soc Gen	2.1%	1.9%	2.9%	2.8%	2.5%	2.6%
Credit Agricole	2.3%	2.0%	1.5%	1.8%	1.6%	1.7%

Source: Citi Investment Research and Analysis. Pro forma for acquisitions. Note - GS changes disclosure in 2010 from FICC to FICC Client Execution. In 2008 and prior we allocate 60% of Lehman revenue to Barclays and 40% to Nomura.

Figure 37. Comparing players across expected FICC competitive advantages in the “new world”

Competitive	BAC	GS	JPM	MS	BARC	DB	CS	UBS
Electronic Execution / Technology								
Clearing & Collateral Mgmt Platform								
Franchise Presence (Depth & Mix)								
Emerging Markets								
Corporate Connectivity								

Source: Citi Investment Research and Analysis

Below we discuss expected new sources of competitive advantage in a highly regulated world, where we see DB, JPM as best positioned, followed by BARC and GS. Meanwhile, we find BAC, MS, CS and UBS have several areas needing improvement.

Electronic Execution and Technology Leadership

In recent years, the technology ‘arms race’ has accelerated as banks have increasingly invested in electronic execution platforms. This is not only a function of building-out existing connectivity but also getting ahead of pending regulatory reform to shift standardised business to SEFs (swap execution facilities). Potential technology advantages do not end here. Technology investments will increasingly serve to build capacity for straight-through processing for flow products. Elsewhere, improved technology will also increasingly feature within risk management architecture, across asset classes.

- **Streamlining:** Investments in infrastructure and STP (straight-through processing) are increasingly helping to streamline processing and drive down costs. For example, at their 2011 Investor Day JPM, comparing trades between 2008 and 2011, noted it had reduced the cost of each FX trade from \$0.75 to \$0.10. With further systems improvement they expect to reduce that cost to \$0.05, equal to less than 7% of the cost in 2008. As markets become increasingly electronic due to regulatory pressures, experience from FX clearly illustrates the benefits from greater efficiency.
- **Leverage flow / increase capacity:** Technology investments are increasingly supporting an expansion in capacity not only to accommodate 'spikes' in activity levels (e.g. 2-3x average daily volumes) and high-frequency trading, but also a medium-term uptick in client volumes on standardised products. Likewise, banks are increasingly looking to capture greater internalization of trading flows.
- **eCommerce:** In recent years, there has been an increasing focus on transforming eCommerce platforms from product-specific execution offerings to a standardised execution platform, supported by a common foundation.
- **Risk architecture:** Technology investments are increasingly being made to enhance risk architecture. For example, Deutsche Bank is looking to significantly reduce its Front Office risk engines, from 58 to 4. This should help the bank provide a comprehensive, integrated and standardised view of risk at the trading desk and Group level across all asset classes to provide an enhanced ability to respond to evolving risk trends, especially at times of market dislocation.

In FICC, we believe that Barclays, Deutsche Bank and Goldman Sachs lead the pack tech-wise followed by Bank of America, JPM and Morgan Stanley. Barclays' BARX platform was created from combining Barclays Capital's strength across fixed income products with Lehman Brothers offering in equities and options. Deutsche Bank has had an innovative offering via its Autobahn platform which launched in 1996.

Clearing and Collateral Management Platform

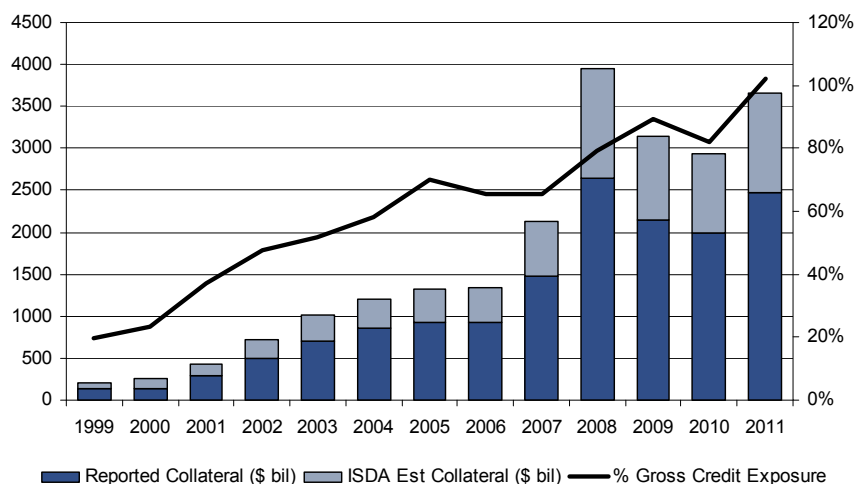
Upcoming OTC derivatives reform will mandate for central clearing of "standardized" products or margin requirements for non-cleared OTC derivatives. Investors that are required to post collateral to CCPs will do so via bank clearing members. These trends will "force" clients to allocate new resources to collateral optimization and efficiency. Going forward, we expect banks to compete on their ability to help clients access various CCP venues and derivative products, optimize collateral and maximize netting benefits. With the administrative and collateral challenges posed by clearing, we see collateral management as an area where banks may be able to deepen and consolidate client relationships and increase trading/execution share. Cross-product margining (CPM) – to the extent sanctioned by regulators – will be an important tool to deepen relationships, especially with investor clients with diverse complex portfolios. In addition to gaining wallet share, CPM platforms may also offer new revenue streams from liquidity management and portfolio optimization.

Significant increase in collateral requirements

According to ISDA there is roughly \$3.7 trillion of collateral held in the system today for initial and variation margin, down from ~\$4 trillion in 2007 as banks have "torn-up" offsetting trades and leverage in the system has declined (see Figure 38).

Moreover, ISDA estimates *incremental* global collateral requirements from new stricter margin rules could reach ~\$1.25 trillion over the next 4-5 years, or roughly a 33% increase in total collateral.

Figure 38. System-wide OTC collateral is ~\$3.7 trillion today and could rise by \$1.25 trillion over the next 4-5 years



Source: ISDA, Bank of International Settlements, 2012 Margin survey.

Depending on the outcome of final margin rules – we expect there may be increased demand for 1) collateral transformation services and 2) portfolio margining.

1) Collateral Transformation

One service banks could provide is collateral transformation... Clients trading cleared derivatives will need to post high-quality cash, Treasury, agency MBS, and in limited instances corporate bond collateral to CCPs. This compares to “old world” OTC practice, where dealers manage required collateral for trades via bi-lateral negotiation and document agreements in the ISDA “credit support annex”. According to a study by Finadium, non-cash collateral accounts for 57% of margin today, pointing to client preference/need. With clients rich in assets ineligible for posting, banks can offer services to “transform” collateral – using repo or balance sheet lending. We note this process must be integrated with other clearing process to offer a benefit, as some clients already use repo independently.

...Though broader collateral eligibility at CCP's will take away some of this opportunity... Recently CME widened its collateral-eligible securities to include high-rated corporate and select international government bonds, a change we would expect to see eventually at competing CCPs. Broader collateral eligibility rules will directly impact opportunities for collateral management. However, as long as only cash is accepted as variation margin collateral transformation will have value for clients.

....And bank balance sheet capacity for collateral transformation is not unlimited – While collateral transformation likely will play an important role in investors' ability to meet margin requirements, it remains uncertain how much capacity banks will be able to supply. With liquidity rules included in Basel and the

likelihood of extensive stress testing of the product, it may be that transformation is only available to select clients.

2) Portfolio Margining / Cross-Product Margining

High collateral demands will drive client desire for Portfolio Margining services, but availability will depend on final rules for un-cleared margin.

Cross-product margining services (also called portfolio-based margining) are collateral optimization services offered by banks primarily to institutional investor clients. Portfolio margining platforms are common in derivatives trading today – and in current form – attempt to recognize client hedges and match collateral demands with the overall net portfolio risk across cleared futures, un-cleared OTC trades, and cash instruments held with the bank in the client's trading account.

For example, a dealer will calculate an overall portfolio-based initial margin requirement using VAR or other risk measure. Then the dealer will look at the client's collateral posted for its cleared futures trades at the CCPs (which are subject to mandatory CCP-set minimums). Any collateral held at the CCP over and above the portfolio-margin calculated requirement – can be deemed “excess” and be used to offset collateral needs from other un-cleared OTC positions. We note that new un-cleared OTC derivative margin minimums from regulators – if set too high – could be a key limiting factor in the industry's success with portfolio margining.

We believe the key drivers of a successful CPM offering include a platform across asset classes, strong infrastructure as well flexible margin methodologies:

- **Infrastructure:** Once again, cutting-edge systems and technology will be key as will value-added client-analytics tools.
- **Margins:** The ability to offer multiple margin methodologies used by different clients may be a differentiating factor – such as VaR-based or Rules-based models – to the extent allowed within context of regulatory-defined minimums.
- **Platform:** The breadth of products or asset classes across fixed income (including IRS, CDS, FX) and equities (including indices, convertibles, EM) will also provide for a more attractive offering.

Deutsche Bank and JP Morgan look best positioned for collateral management. Although many firms have shown historical strength of prime brokerage platforms (such as GS, MS and increasingly CS, DBK and JPM) most of these PB platforms (where portfolio margining was offered) traditionally had an equity bias. The new reforms, to some extent, will open up the focus of CPM to the full suite of FICC products. In this respect, we believe that Deutsche Bank and JPMorgan have the most developed offering.

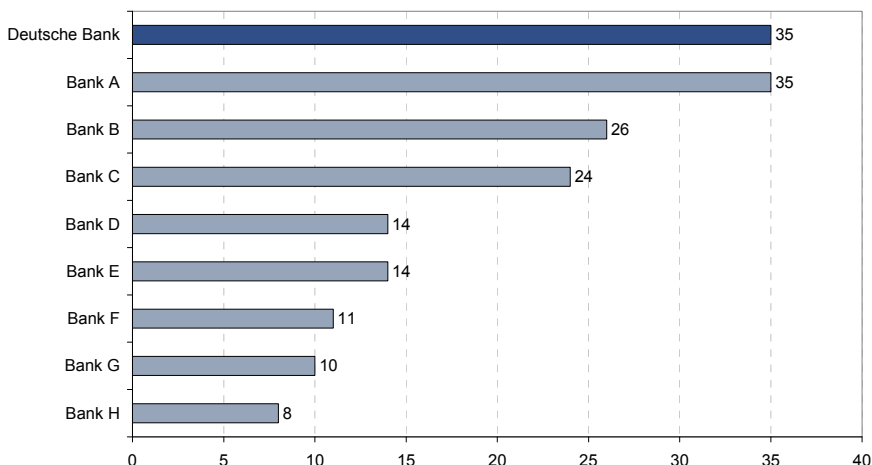
Franchise presence – depth and mix over breadth

In the “New Normal”, significantly higher capital, funding and liquidity not only have an impact on returns, as discussed in this report, but also “test” scarce resources. In more challenging market conditions, we believe that fewer banks will be able to deploy the breadth and depth of franchise footprint, compared to pre-crisis levels.

For example, at Deutsche Bank's CIB Workshop (June 2011), the bank highlighted that only four banks posted Top 3 rankings across 64 distinct market segments in

more than one-third of the market segments. The other five major players 'only' ranked Top 3 in 10-20% of these segments.

Figure 39. FICC breadth comparison: Number of markets where banks rank Top 3



Note: Rankings counted for each product and major region (Americas, Europe, Asia ex Japan, Japan). Products include a wide range of fixed income, equities and corporate finance products. Rankings generally on the basis of client market share, penetration or fees. Total of 64 markets analyzed.

Source: Deutsche Bank CIB Workshop, 1 June 2011

We believe that weaker-positioned players will increasingly have to make tough choices. In other words, we believe that franchise depth and business mix considerations will increasingly gain at the expense of breadth. Some banks may choose to increasingly focus on businesses with a low-to-medium regulatory impact. Others may be more than willing to “stick to their guns” on more structured or solutions-type activities which typically have the greatest regulatory impact – as competition gradually declines, profitability may well improve.

Figure 40. Deutsche Bank – Comparative Regulatory Impact of Markets Businesses

	Underweight	In-Line	Market-Leading
Regulatory Impact			
LOW	US Equities Asia Equities Flow Equity Derivatives 20% of revenues	EU Equities Origination / Advisory	Prime Finance
MEDIUM	Commodities	50% of Revenues Emerging Markets Foreign Exchange Global Finance Flow Credit Flow Rates	
HIGH	Securitized Products Structured Equity Derivatives	Rates Solutions 30% of Revenues	Credit Solutions

Source: Deutsche Bank CIB Workshop, 1 June 2011

Below we summarize our estimation of relative FICC product strength across the industry's top global competitors.

Figure 41. FICC product breadth comparison

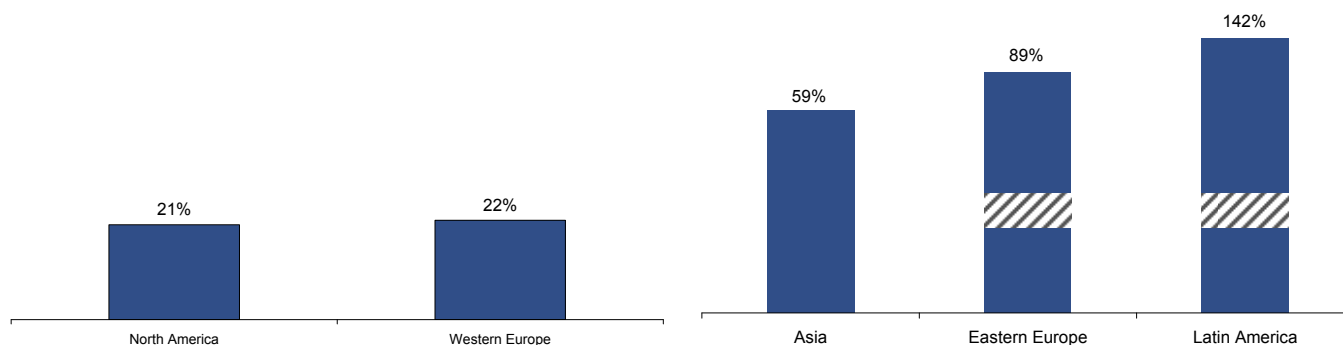
Product	BAC	GS	JPM	MS	CS	DB	UBS	BARC	HSBC	RBS	STAN	BNP	CASA	SG
FX - G10	●	●	●	●	●	●	●	●	●	●	●	●	●	●
FX - EM	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Rates - G10	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Rates - EM	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Credit - IG & HY	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mortgages	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Commodities	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Source: Citi Investment Research and Analysis

Emerging Markets Strength

The financial penetration of Emerging Markets (197% of EM GDP) remains significantly lower than that of Developed Markets (427% of DM GDP), based on McKinsey data (see Figure 43). Thus, while EM only accounted for 18% of the global total financial stock at end-2011, the growth rates have been considerably stronger – 13.5% growth in EM in 2010 vs c4% for DM. This has corresponded with greater growth in the number of client counterparties in Emerging Markets - Goldman Sachs reported 3-7x faster growth in counterparties in EM versus DM over 2006-2011 (see Figure 42). The value of corporate bonds and securitized assets was 'just' 7% of EM GDP vs 34% in Europe and 108% in the US.

Figure 42. Goldman Sachs - Counterparty Growth: Developed Markets vs Emerging Markets, 2006-2011

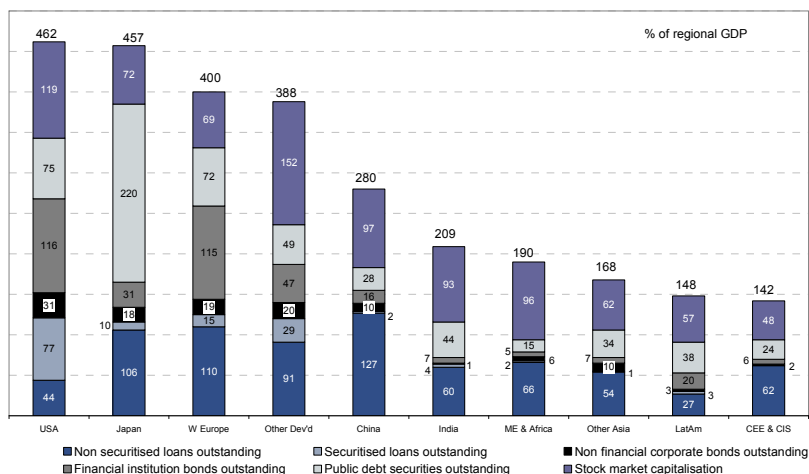


Source: Goldman Sachs

Thus, banks with strength and depth in EM remain better-placed to capture future growth. Among the major emerging markets, the Emerging Asia region offers not only the largest capital markets but also the most developed markets in the EM space. At the same time, accessing Emerging Markets can be challenging for global banks given intensive competition from local players, harsher regulations as well as potential scale issues.

We believe the strongest positions are held by Deutsche Bank and HSBC followed by the likes of Barclays, Credit Suisse, Goldman Sachs, JPMorgan and Standard Chartered. Both Deutsche Bank and HSBC offer leading positions across all major FICC products, with the latter benefiting from its strong commercial presence in Asia, together with Standard Chartered.

Figure 43. Comparing “financial depth” (financial system assets vs GDP) across developed and emerging market countries



Source: McKinsey Mapping Global Markets 2011, Exhibit E2.

Corporate connectivity

As certain parts of the institutional markets – notably leveraged investors – remain a shadow of their former selves, we expect greater focus on wallet share from traditional corporate customers. We expect banks to increasingly leverage such relationships via their cash management, corporate banking and transaction banking franchises.

For example, Barclays is increasingly looking to integrate its Corporate and Capital businesses to create a lower-cost client servicing model using joined-up client coverage and co-location – driving run-rate cost synergies of £250-300m as well as continued strong growth in cross-sell revenues. Similarly, Deutsche Bank is increasingly leveraging its GTB (Global Transaction Banking) franchise to increase wallet share. In its February 2012 IB Investor Day, JPMorgan highlighted 29% growth in Markets revenues in 2011, driven by Global Corporate Bank relationships.

Broadly speaking, within the US we see JPMorgan and Bank of America's lending relationships, debt capital markets strength and treasury management connections as having greater corporate connectivity than Goldman and Morgan Stanley's, which have weaker DCM businesses and no real corporate banking, rely more heavily on advisory and equity franchises, and have greater presence with institutional investor clients.

Overall, we see Deutsche Bank, HSBC and JPMorgan offering among the leading platforms with the former two also benefiting from their strength in cash management.

Non-bank competitors seem like a manageable threat

While we expect to see large capacity exits from the large banks, we also see niche opportunities for new non-bank competitors, but we do not see them taking >10% market share. The Volcker rule, stiff Basel 3 charges and changes in OTC derivatives market structure may create new opportunities for market-making entrants to gain market share at the expense of large banks. Two risk areas appear in 1) broader principal market making given Volcker restrictions either from smaller non-bank brokers or hedge funds, neither of which will be subject to Volcker's proprietary trading restrictions, and 2) OTC derivative market making from new infrastructure/electronic platform providers and electronic-only market makers.

1) Risks of market share losses posed by Volcker

Volcker may open a door for new competition on trading, but we see trading businesses as less susceptible to new entrants given... Small non-systemically important broker dealers that are not banking entities (such as Jefferies) will not be subject to the Volcker rule – which may cause some trading market share losses, depending on the severity of implementation. While smaller dealers may not have balance sheet capacity today to meet client needs on principal basis, should bank dealers significantly scale back, we could envision smaller players growing to be more active market makers, increasing balance sheet size, but remaining small enough to not be classified as systemically important. To put this into some context, currently JEF has a \$34 billion balance sheet versus \$750 billion at MS.

...New limits given the potential for non-banks to be regulated as SIFIs –

According to the most recent proposal from the FSOC metrics for considering if a firm might be designated a non-bank SIFI include \$50 billion in assets (globally for US firms) *and any one of* \$390 billion in gross notional CDS outstanding with the firm as reference entity, \$3.5 billion of derivative liabilities (fair value after netting and cash collateral), \$20 billion in outstanding loans/bonds borrowed, a leverage ratio of 15-1, or a ratio of debt with maturity of less than 1 year greater than 10% of total consolidated assets. If these criteria are met then there is a two-step seemingly qualitative process to designating non-bank SIFI's.

...and there are significant costs to entering trading and market making businesses, which should limit ability for new entrants to take significant share, especially in non-derivative cash trading markets – Costs produce higher barriers to entry – and should ultimately limit the ability of new entrants to take significant share. Some argue that costs of doing business could be relatively low for upstarts – personnel and a credit line to fund an inventory – depending on the product – but these players would likely be forced to operate with less leverage than bank competitors, producing disadvantages. Strategically, it's also not clear if banks would be willing to fund direct competitors.

- **New regulatory and reporting costs will put a floor on the cost of doing business –** US Banks face a large expense simply to be in compliance of 400 new rules mandated by Dodd-Frank, many which require regulatory reporting. Volcker alone – as written - requires banks to collect trade-level revenue data and aggregate at a trading desk level across 17 metrics (Figure 20), many of which are new or rarely tracked today, requiring new systems, risk management frameworks and compliance officers.

■ **Higher technology requirements for connectivity to clearing platforms, swap data repositories.** With a large volume of client trades moving to central clearing, banks will need to track client margining and exposures across several clearing houses, rather than simply tracking the client's portfolio exposure to the bank. Banks and SEFs will be required to report trades to a registered swap data repositories. We believe industry investments in technology systems are likely to range in the \$50-150 mil range for large firms on an upfront basis and in the \$5-40 mil range for medium sized firms according to research by TABB Group, and ongoing costs are unclear.

For hedge funds, we would expect any competition to be much smaller and targeted. Given the high variability of profits and returns, and the required commitments to top institutional clients over full market cycles, we see hedge-fund operators as unlikely to step in to make markets when risks rise, hurting liquidity. There is also the issue of whether buy-side investors would perceive hedge fund market makers as service providers or competitors, and trust these players with knowledge of their order flow.

In our view, while hedge funds may see less competition from bank prop desks – it seems less likely these players will create enough liquidity on an ongoing basis to offset impact of banks' retrenchment in a strict Volcker world. Instead of directly competing as market makers, we believe hedge funds are more likely to seek to profit as investors from market dislocations created by low liquidity. For example, if large redemptions from ETFs sparked indiscriminate selling and dealers were unable or unwilling to step in due to strict Volcker rules.

Plus there is the prospect of buy-side firms dis-intermediating some of dealers' business – BlackRock is launching a fixed income trading platform (called Aladdin) to minimize trading costs by allowing transactions between different BLK funds internally and is working to open this system up to outside buy-side investors (insurance companies, sovereign wealth funds or other bond managers). While BlackRock has said the service does not intend to compete with Wall Street dealers, investment banks would not be part of the system.

"Between centralized clearing and the increased use of technology... the barriers are coming down.

The landscape where the over-the-counter market, a transaction typically occurred between a bank and his customer, is moving slowly but surely towards an environment ... where the banks become more of a prime broker, an intermediary.

[Inter dealer broker] trading platforms will, over time, evolve onto the desks of hundreds of hedge funds, in all probability, via our banking clients."

- GFI Group Chmn and CEO Mickey Gooch
6/9/11

2) Risks of market share losses from OTC rules and new entrants

Overall we expect the new derivatives landscape to produce some market share losses for the banks collectively.

The creation of SEFs provides a platform for new competitors to steal client clearing relationships from the banks. The new rules for margin and SEF are likely to push the big banks to focus on their larger relationships and better capitalized clients, who are better prepared for the move to margining and offer strong firm-wide value. We see new entrants making some headway into banks' market share, but only expect to see modest losses. Below we discuss impacts from market share shifts to new competitors; however, we believe bigger impacts to profitability are likely to come from compression of overall bid/ask spreads from greater use of electronic trading.

■ **New paradigm presents opportunities for new entrants seeking to compete in derivative trading.** As clients now face CCPs instead of dealers, new standardized swap trading requirements will open the flood-gates to a host of new competitors, including existing players that have long worked in the inter-dealer realm (e.g. ICAP, Trullet Prebon, Tradition, and GFI Group) as well as electronic multi-party RFQ platform operators like Tradeweb, MarketAxess, and

Bloomberg. State Street has also recently launched a SEF, looking to leverage off its reputation as a custodian and clearer.

According to an October 2011 Tabb Group Survey⁵ 56% of Top Tier firms viewed barriers to entry as rising from Dodd Frank, while 100% of new entrants view barriers as lower. These answers are framed by the respondent – for banks that require more capital, technology and compliance costs – it feels like barriers are going up. Conversely, new entrants are looking to leverage technology via an agency-model, and no longer need a balance sheet to compete – the current environment appears to have much lower barriers.

- **But we see agency-only models as likely to see challenges gaining liquidity to compete.** While inter-dealer brokers will operate trading platforms as agents – which may create a venue for new entrants to take market share at the fringes, we believe IDB's (which act as strictly agents and not liquidity providers) will still need to work closely with traditional bank customers to bring liquidity to these platforms. New competition for banks will really come from the other participants who chose to trade on IDB platforms – such as smaller banks that historically did come will likely be limited to hedging in futures and listed swaps, with established bulge bracket banks able to use existing flows from cash bond trading (like agency and treasury bonds) to hedge risk and make deeper, more liquid markets more effectively.
- **Given the outcome of Dodd Frank rules, some hedge funds may step into the fray as liquidity providers** – In less-liquid non-standard trades – that end up remaining outside of the clearing and SEF universe – we would expect market share to increase among non-bank dealers or hedge funds. Hedge funds, which will not be subject to higher capital requirements under Basel 3, do have an opportunity, but importantly these trades would still be bi-lateral – so “old world” advantages such as being viewed as a strong counterparty seem likely to apply, which may reduce the ability to take share.
- **Exchanges appear focused on clearing vs competing on banks' trading “turf” by expanding execution platforms – at least so far** – Per Citi's exchange and market structure analyst Don Fandetti exchanges like CME and ICE are more likely to focus on derivatives clearing, and are not likely to make a broad push into execution anytime soon.
- **Inter-dealer brokers could take some share in electronic trading, but we see fierce head-to-head competition vs banks as unlikely since main client base remains with large banks...** Inter-dealer brokers, like ICAP, Tullet Prebon, Tradition, BCG Partners and GFI Group, by definition have historically focused on bank dealers vs real-money clients; however, many IDBs will register as SEFs putting them in more direct competition with banks. For cleared trades over electronic execution, IDBs, however, may start to compete for hedge-fund and small corporate clients. For example, GFI Group has described the move to SEFs as having similarities to when equities and energy moved to clearing. With those products gaining greater fungibility and standardization allowed many hedge funds to enter the market on IDB platforms, broadening the IDB customer base. Additionally, IDB's already have RFQ systems in place that could be used on a SEF. It's also possible that dealers will use IDB electronic platforms to source liquidity or distribute risk.

⁵ Tabb Group – Credit and Rates Swap Dealers 2011: Redefined and Reborn. Oct 2011.

- **...Electronic Execution platforms will also compete but these players only provide a venue, and do not commit capital to make markets or capture bid/ask** – A number of multi-party electronic platforms including Tradeweb, Bloomberg, Reuters and MarketAxess seem likely to also compete as SEFs, with Tradeweb seeming favorably positioned as a result of banks being stakeholders. Many of the largest bank dealers are already executing and providing liquidity on these platforms today.
- **Custodian banks like State Street also intend to compete as a SEF** – In February 2012 State Street announced its intention to become a SEF with its new “SwapEx” platform designed to comply with both Dodd Frank and EMIR and to integrate with their existing derivatives clearing, custody, collateral and risk management services for buy-side clients.

Regulatory Impacts by FICC Business

Interest Rates

Figure 44. Rates Revenue Pool Breakdown

Est Global Rates Rev Pool	
G10 Rates	74%
Interest rate derivatives	47%
Swaps	25%
Options/Exotic	11%
Cross-FX Swaps	11%
US Treasuries	14%
Agency Debt	3%
Sovereigns	10%
Emerging Markets Rates	23%
EM Derivatives	13%
EM Cash Bonds	10%
Municipal Bonds	3%
Total	100%

Source: Citi Investment Research and Analysis

We see the biggest impacts to Rates coming from OTC derivatives reform, and its interaction with Basel 3.0 CVA/capital charges. The next biggest issue we see is Volcker given expected impacts on sovereign and municipal cash markets, which could be more or less severe depending on strictness of rules on retained risk from market making. We estimate only about 20% of Rates revenues are explicitly exempt from Volcker. Lastly, as Rates tends to require little low-rated/low quality cash bond inventories, we see Basel 2.5 RWA impacts as less important to vs other businesses.

Rates is the largest FICC revenue pool, so hits have outsized overall impact.

We estimate Rates is about 36% of the total normal FICC pool, so impacts to the business have an outsized impact on FICC revenues as a whole. At left we walk through an approximation of Rates revenues by product.

We see a 17-18% potential impact to Rates trading revenues – The biggest risks to Rates appear to be from 1) impacts on un-cleared trades (from either onerous margin or capital charges) at about 800 bps, and 2) a potentially tough Volcker rule about 700 bps. 3) A third risk is lost revenue from clearing and exchange trading, but we see this as less significant (about 300 bps), despite anticipation of a large chunk of plain vanilla volumes moving to clearing as we see the volume shifting to these platforms to be lower profit, and see liquidity dynamics in these new market venues as unlikely to match client preferences, which may limit uptake.

Figure 45. Estimated Rates Derivative Revenue Pool Breakdown

Interest Rates Revenue Pool	
Linear Swaps Clearable	23%
Linear Swaps Unclearable	8%
Cross-FX/Options/Exotics/EM	30%
Impacted by OTC	60%
US Treasuries	14%
Agency Debt	3%
Sovereigns	10%
Emerging Mkt	10%
Municipals	3%
Cash Bonds	40%
Total	100%

Source: \$ in US billions. CIRA estimates.

OTC Derivative Rule - Impact on Rates

We estimate roughly 60% of Rates revenues come from derivatives – We estimate that 60% of the Rates revenue pool comes from derivatives and 40% from cash bond trading – though this will vary by firm (e.g. GS is much larger in derivatives).

Of the derivative pool, we see about half of revenues coming from linear swaps (e.g. fixed for floating swaps) and the other half from un-clearable or non-standard options, exotics and cross-currency swaps (or 30% of total Rates revenues). In linear swaps, we estimate about 3/4 (23% of total revenues) comes from what will eventually be clearable standard trades and the rest (8% of total revenues) will be un-clearable due to non-standard terms (e.g. unusual tenors or reference rates) or non-standard trade types.

Decomposing impacts – The impact on Rates trading from derivatives reforms will come from 1) margin and exchange trading (bid/ask vs volume impacts) on standardized cleared trades, and 2) margin and capital impacts for un-cleared trades.

1) Cleared rates trades likely to be a smaller negative given revenue pool is smaller and bid/ask already pretty tight – Overall we have a relatively optimistic view on the negative impact from cleared and exchange traded Rates products, as we see: 1) the revenue pool as relatively small (we estimate 23% of total) despite very large volume sizes, 2) expectation of a decent level of client resistance to proposed trading protocols particularly for big trades, and 3) our expectation that dealers will retain sizeable share due to banks' large capacity for principal risk-taking due to large offsetting cash/Treasury flows.

- **Roughly 85% of the notional volume of Rates OTC derivatives trades will eventually be eligible for clearing** – Given high proportion of standardizeable transactions, a significant proportion of interest rate swap volume is likely to migrate to clearing and exchange trading. According to LCH.Clearnet, 85% of total interest rate derivative notional volume is expected to be clearable, with the remaining 15% (interest rate options) not expected to be clearable. Importantly, not all eligible trades will be cleared as corporate end users take advantage of their exemptions to avoid initial margin requirements. While historically clients have disliked futures because of lower liquidity and less date flexibility, we note that in the new world cleared IRS seem likely to see higher margin requirements at 5-day 99% VAR vs 1 or 2-day VAR for futures which could push some volume away from cleared swaps.
- **SEF/Exchange trading may encounter some client resistance** – Mandatory SEF trading in the US will only apply to trades not large enough to qualify as “block trades”. This subset in the US may also be subject to greater pre-trade transparency either due to more widely shared request-for-quote-requests, or because orders are posted publicly on trading screens. In our view, greater pre-trade transparency may keep available liquidity on these new SEF venues lower.
- **Bid/Ask already relatively tight in Rates, which may limit further compression** – While currently dealers are capable of making a 1/4 to 1/8 of a basis point given typical quotation conventions on a given rates trade – under clearing and SEF trading this could compress. Additionally, given non-standard date requirements often desired by clients, mandatory electronic rates trading is likely to be more conducive to an electronic RFQ-style market, vs a centralized limit order book, which also may somewhat limit further bid/ask compression.

2) Un-clearable/Structured trades will remain an important revenue source, and, in our view, seem likely to be more impacted than cleared – We estimate un-cleared derivatives represent about 35-40% of the total Rates revenue pool and 2/3's of the Rates derivative revenue pool including un-clearable linear swaps, options, cross-currency swaps and exotics. These trades are not expected to be clearable due to operational issues surrounding clearing, settlement, options expiration, daily mark to market valuation (e.g., valuation challenges for far out-of-the-money options which impacts daily and initial margin calculations and product proliferation from varying strikes and maturities). Cross-currency swaps are also not expected to clear due to lack of consensus on currency for collateralization and the impact that has on valuation. Among these products, interest rate options are mostly traded by institutional investors, while cross-currency swaps are more often used by institutional corporates (who would also be exempt from margin posting).

- **Un-cleared rates trades are likely to see onerous margin requirements, and may lack relief from portfolio margining...** One of the key unknowns is how high regulators will set initial margin requirements for un-cleared trades – and if they will remain at the 10-day 99% VAR levels that have been proposed in the US. Separately, if there are high trade-by-trade margin requirements and little portfolio-level netting relief (which we do not expect), un-cleared rates trades could see significant volume reductions. We believe very harsh margin rules could have the most impact on options trades which tend to have a large following among institutional investors.
- **...Plus high capital charges for Basel 3 CVA counterparty risk charges, particularly for long-dated trades.** The second impact would be from volumes

that “go away” due to prices that are too high – after embedding new CVA charges. We estimate about 1/4 of the un-cleared derivative revenue pool is long-dated and thus will see extra tough Basel 3 CVA treatment. Cross-currency swaps are not expected to be clearable – and will be subject to very high capital charges for un-margined trades – which raises the longer the duration of the trade.

Preliminary estimates point to spreads for cross-currency swaps needing to rise from several basis points (old world pricing) to as much as 100-bps-plus for the most extreme example of a un-collateralized 30-year cross currency swap for a low rated counterparty (even if the bank hedges counterparty risk with Index CDS contracts). However, if banks can actively hedge their client counterparty exposure with client-specific CDS contracts and can collect initial margin, the price can fall to only 2-4 basis points depending on the credit quality of the counterparty.

- **We could also see short-term revenue impacts as banks seek to unwind heavy “RWA-hog” trades** – For long-duration swaps banks may be willing to “pay away” revenues in the form of incentives to encourage clients to unwind and re-book certain derivatives in a more capital efficient manner.
- **Longer term we may also see some end user volume moving to cleared products given the impact from Basel 3** – Assuming end-user clients are not given exemptions from CVA charges (as is being contemplated in Europe) the impact from Basel 3 CVA will be felt most by lower-rated corporate-end users that do not want to post initial margin, but which also pose difficult credit risks for banks to hedge. This means clients, especially middle-market companies where there happens to be no CDS contracts available (to protect against a client default), will be forced to pay higher prices for interest rate swaps or substitute listed futures contracts.

Figure 46. Estimated percent of Rates revenues exempt from Volcker

Volcker Exemptions for Rates	
US Treasuries	14%
Agency Debt	3%
Municipal Bonds*	2%
Volcker Exempt	19%

Source: CIRA estimates. *Revenue bonds from state agencies and municipal tender option bond programs may not be exempt.

Volcker - Impact on Rates

The most obvious Volcker impact will be on cash bond trading for non-US sovereign bond trading assuming broader exemptions are not enacted. Firms are likely to see greater restrictions on retained interest rate derivative positions – held for abnormally long periods of time – however, we view defining this as proprietary risk taking may be more difficult for banks and regulators to measure versus other areas with physical cash inventories. For this reason, Volcker impact in “worst-case” on Rates revenues may be less severe than other areas – though admittedly with virtually all business conducted on a principal basis, impact from Volcker could be severe in a “tough” form.

- **About 80% of Rates product-level revenues will be subject Volcker rule restrictions.** We estimate only about 20% of Rates revenue pool relates to US Treasuries and agency debt which are exempt by statute under Volcker. Additionally, municipal bonds which we estimate are another 2-3% of industry trading revenues are likely to be partially (if not entirely) exempt.
- **Sovereigns, some munis and tender option bonds appear at risk** – We would expect the most direct impact from Volcker will be restrictions on cash bond trading for non-US sovereign bond trading (an estimated 10% of industry revenues) assuming broader exemptions are not enacted. Many foreign governments have expressed concern that Volcker restrictions – if enacted as proposed – could raise their borrowing costs and hurt sovereign bond markets.

Other areas that remain at risk include municipal revenue bonds issued by state agencies, not explicitly exempt under Volcker and Tender option bond programs.

- **Municipal bond market could be hurt without changes in proposed exemptions** – Based on [research](#) from our Municipal Bond team the definition in Dodd-Frank regarding qualified exemptions includes only “obligations of any state or of any political subdivision thereof” and appears to exclude debt issued by state agencies or authorities, in most cases. While in late January SEC Chair Mary Schapiro told House Financial Services Committee the agency was considering broadening the exemption to all municipal issuers as defined under the 1934 SEC Act acknowledging concerns that the SEC may have approached munis too restrictively – no changes or proposed changes have been formally made.
- **Revenue bonds issued by state-agencies seem likely to be impacted** – Revenue bonds are primarily issued by state agencies or authorities and based on current rules, about 60% of the municipal bond market appears likely to be subject to Volcker market making limits. Given reduced institutional participation and greater number of cusips there is typically lower overall liquidity in the muni market under normal conditions – and this change seems likely to exacerbate these issues.
- **And Tender option bonds seem to be considered “covered funds” and may need to be reduced if rules are not changed** – In addition, based on our interpretation of current rules, tender option bond trusts – municipal finance vehicles run by banks that allow investors to finance purchase of long-term bonds at short-term rates – appear subject to prohibitions for “covered funds” that more broadly restrict hedge fund and private equity investments. investments in funds proprietary
- **Volcker impact on Rates will partly be driven by how strictly residual “basis risks” will be restricted.** In the rates business, swaps and other derivatives transfer risk from clients to dealers. These risks are then hedged, though sometimes imperfectly either due to cost or availability creating basis risk. Given swaps remain on the books for the life of the contract, basis risk must be managed on an ongoing fashion. Examples of basis risk could include being long an interest rate swap maturing in 51 weeks and short one maturing in 52 weeks, being long/short differing reference rate maturities (e.g. 3mo vs 1 mo Libor), or differing reference rates altogether (e.g. US Libor vs Euribor).

Foreign Exchange

Overall we see a ~7% potential impact to FX trading revenues.

Figure 47. FX revenue breakdown

Est FX Global Rev Pool	
G10 Currencies	60%
G10 Spot	35%
G10 Forward	15%
G10 Options	10%
EM/Local Market Currencies	40%
EM Spot	25%
EM Forward	10%
EM Options	5%
Total	100%

Source: Citi Investment Research and Analysis

Regulatory impact to FX trading should be relatively limited, given broad derivative trading exemptions or operational hurdles that will keep large portions of the market from moving to clearing or SEF trading. Additionally, FX gets among the larger exemptions from Volcker as spot trading is not covered under proprietary trading rules. We estimate only 40% of FX revenues (all non-spot) will be subject to Volcker, though impact will depend on tightness of provisions around swap and forward trading. On Basel 3, FX trading has a greater tendency for shorter duration trades leaves it less exposed to high Basel 3 CVA counterparty charges; however, some longer dated swaps that are not cleared will require higher capital. Un-cleared trades like FX options also see tougher capital charges if customers do not post margin.

OTC Derivatives – 80-85% of FX market appears exempt from OTC clearing requirements and another 10-15% may also get a pass. On April 29, 2011, the Treasury issued proposal that would exempt FX swaps and forwards from the definition of “swap” for most Dodd-Frank purposes including registration, clearing and trading. FX swaps and forwards will still be subject to data reporting requirements, but not real-time trade reporting.

Figure 48. FX impact from OTC derivatives mostly limited to NDFs.

FX Estimated Revenue Pool	
Non-Deliverable Fwds (in US)	3%
Impacted Clearing & SEF	3%
G10 FX Options	10%
EM FX Options	5%
Margined Not Cleared	15%
G10 Forwards & Swaps	15%
EM Deliverable Forwards	7%
Derivs exempt from OTC	22%
Total Derivatives	40%
G10 Spot	35%
EM Spot	25%
Total Spot	60%
Total	100%

Source: Citi Investment Research and Analysis

■ **One key reason FX swaps and forwards were exempted is because of the large size of the market and new settlement risks created by clearing.**

Unlike most derivatives markets where trades settle financially based on a net amount owed between parties, FX contracts typically require physical settlement via exchanges of the actual notional currency amounts. This makes the size of FX trade settlements much larger than for other trades – where the only the net cash owed by one party to the other is exchanged, and not the notional amount – and significantly magnifies trade settlement risks from clearing.

■ **Non-Deliverable Forwards (NDFs) however, will be mandated to clear and SEF trade, but revenue contribution at 3% of total pool very small.** Non-deliverable forwards are contracts that settle financially, not physically – typically because the currency is not free floating, but subject to capital controls. Because of these limits on actually delivering the underlying currency, trading for countries like Brazil, India, Korea, Taiwan and Egypt is executed via the non-deliverable forward market. Both CME and LCH both are working toward NDF clearing solutions. Given NDFs are relatively illiquid, there is worry this market will be hurt by the real time SEF trade reporting requirements, as traders will not want to make markets and “show their hand” at the same time – which could hurt bid/offer and volumes. Additionally, because Dodd-Frank derivative rules operate at the legal vehicle level (and do not have global application like the Volcker rule does) we believe *only* NDF’s traded out of US-regulated subsidiaries are certain to be captured by the regulation.

■ **Options cannot be cleared due to lack of regulatory CCP approval for clearing, but must be margined per Dodd-Frank Rules.**

– **Options impact will be margining, but not clearing** – FX Options were mandated to clear under Dodd-Frank, but US regulators seem unlikely to approve CCPs to clear FX options given settlement risks. These trades however will be subject to higher margin requirements. The key difficulty clearing FX options relates to the guaranteeing final settlement on trades at a set date, which would require CCPs to guarantee the transaction under the contract. We understand the liquidity risk of clearing would require CCPs to

have backstops and swap lines established with the world's central banks – a solution not supported by regulators.

- **In the interim, under Dodd-Frank options must be margined.** If no CCP is approved, banks are likely to be required to implement third party margining (i.e. collateralizing bi-lateral un-cleared trades segregated at a third party), but are unlikely to be required to trade on SEFs. This third-party margining cost (for non-exempt corporates) would end up being an incremental liquidity drag/cost to the client vs current practice, but is unlikely to significantly change the economics to the dealers.

Basel 2.5/3.0 Impact on FX

- **Basel impact should be smaller on FX vs other fixed income trading businesses given shorter tenors** – The duration of most FX derivative trades tends to be shorter than 1 year so we see Basel 3 capital impact as lower for FX than other businesses. (Note this excludes cross-currency swaps, which are typically considered to be a Rates product).
- **Basel 3 impact will subject un-cleared FX trades like options and long-dated forwards to higher capital charges** – FX options that are not cleared will be subject to higher Basel 3 CVA charges, though these can be mitigated by counterparty hedging and collateralization. By our best estimation, the FX options business clients tend to be ~70% institutional investors and ~30% from corporate clients – though this may vary from firm to firm. The smaller the corporate segment, the smaller the portion of the business that would be exempt from margin requirements, and thus potentially the smaller the population of trades that would receive higher Basel 3 CVA charges. Long-dated (deliverable) forwards which will be exempt from clearing and are preferred by corporate clients are also likely to see some impact from capital charges.

Volcker Impact on FX

- **60% of product-level revenues are spot and therefore exempt.** Spot FX trading is statutorily exempt from Volcker; however, FX derivatives including forwards and options will be subject to rules.
- **We see FX as less impacted than other businesses given lack of inventories** – Given FX trading does not require dealers to holding currency inventories to make markets, we believe overall the worst-case losses should be less than businesses with cash inventories like credit or mortgage.
- **What is prop in FX is tough to gauge** – As dealers make positive principal P&L in options and forwards from risk transfer from clients to dealers, it is hard to know how strict the interpretation will be. Derivative trades however can stay on the books for sometime – which could cause regulators to view certain positions as proprietary – though where the line will be drawn is tough to tell.
- **We could imagine a scenario where Volcker could trim 10% from FX revenues** – Given the uncertainty of how rules will come out – we cannot rule out a scenario where from a strict rule we could see up to 10% of FX revenues would be deemed proprietary.

Figure 49. Only 40% of FX revenues will be impacted by Volcker rules.

Volcker Exemptions for FX	
G-10 Spot	35%
EM-Spot	25%
Exempt	60%

Source: Citi Investment Research and Analysis

Credit

Figure 50. Credit Revenue pool breakdown

Est Global Credit Rev Pool	
Investment Grade	35%
IG Cash bonds	20%
IG CDS	15%
High Yield	20%
HY Cash bonds	15%
HY CDS	5%
Distressed	15%
Structured Credit	20%
CDOs (Trading & Correlation)	11%
CLOs (Origin. & Correlation)	6%
Total Return Products	3%
Emerging Markets	10%
Total	100%

Source: Citi Investment Research and Analysis

Credit (~25% of FICC revenues) gets “hit from all sides” (est ~20% impact) –

Given the inventory-driven principal-nature of corporate bond trading and our estimate that ~95% of overall credit is subject to Volcker (only loan trading is exempt), we see Volcker as the largest potential impact. Severity will be determined by strictness of limits on principal P&L and hedges. Additionally, given tough tougher Basel 2.5 rules on the produce very high risk weightings for securitization, structured credit, and correlation trading exposures that prohibit the calculation using advanced internal models, Basel 2.5 rules will have an outsized impact on Credit. Lastly, OTC derivative reforms will have significant impact on single-name CDS and Index CDS trading – as these are relatively easily standardized derivative contracts. We see mandatory SEF/exchange trading driving bid/ask compression on Index CDS and more liquid single-name CDS that will be eligible for clearing and exchange trading. Secondly, we also expect some negative impact to volumes for less-liquid CDS and un-cleared products like total return swaps.

Volcker Impact on Credit Trading

Volcker appears to pose the largest potential impact on credit trading, affecting an estimated 95% of revenues (as only loans are exempt). Despite broad implications, our current “base-case” is that regulators will not apply a highly restrictive application of Volcker to protect market liquidity.

The practice of carrying inventory to make markets vital for credit – Credit markets are highly fragmented with ~37K unique corporate bonds outstanding in the US causing market makers to actively intermediate trades by holding inventories to meet demand expectations on behalf of clients. Given the way, credit markets work as a principal rather than a commission/agency basis and the fact that the credit business has the fewest product-level exemptions (only loans are exempt which might equal ~5% of a credit desk’s revenues) the Volcker rule appears to present the largest challenge to credit.

- **A strict reading of Volcker could push credit closer to an agency trading model, damaging revenues...** A move to an agency-leaning trading model would be damaging for credit revenues, as crossing trades currently offers relatively low profitability versus acting as principal.

For example, say a bank looks to execute a large block trade on behalf of a client. This can happen in one of 2 basic ways: 1) the bank can immediately source the other side and “cross” the trade or 2) the bank can act as principal taking the risk into inventory, with pricing typically offered at discount to current bid/ask midpoint depending on size (as exiting will involve time and risk to unload).

Clients today are generally very conscious on minimizing transaction costs (i.e. dealer spread) for scenario 1 – in many instances demanding the broker only make a max of 1/8 point on such a transaction, or up to 1/4 point in instances of very tough liquidity for smaller issues.

Principal risk trades (option 2) have the potential to be more profitable, but add risk for dealers, and are an important source of liquidity in the market today. While bid/asks for IG bonds at intermediate maturities range from 1/4 up to 1/2 point at best in most cases (based on standard 10 bps spreads and various durations) – or about 2x what one could make crossing bonds – though dealer’s final P&L will be impacted by positive or negative market moves. In a strict Volcker rule world – we envision banks being very selective in how they act as

principals, sending bid/ask much wider but significantly reducing volumes and liquidity.

- **...With Volcker raising big questions about what can fairly be considered a hedge...** Given the wide variety of credit assets a significant issue is what will qualify as a permitted hedge, and what level of basis risk is acceptable. Many hedges are imperfect (e.g. on-the-run vs off-the-run bonds, single-name CDS vs index, bond vs CDS, one index vs another index, hedging using different names in the same instrument, etc.) and carry some discretionary risk taking, which may fall foul of Volcker.

Given the illiquid nature of the market, portfolio hedging is also common within credit trading with several trades through the day netting off. As a result banks may take short term hedges during the day to manage risk, with a portfolio hedge put in place at a later time. It remains uncertain as to whether this risk management approach would be viable under Volcker.

- **...However, our base-case expectation is that carrying cash bond inventories for IG and HY trading remains in the spirit of the rule.** Principal risk taken by banks in investment grade and high yield credit is central to their role of acting as a market maker. As a result, our base-case expectation is that trading from inventories would be viable under Volcker and that credit trading will not be heavily restricted under an evolved Volcker rule. This is supported by statutory language in Dodd-Frank permitting market making activities expected to meet near-term client demands.
- **Distressed debt trading may have to adapt to work under Volcker due to position sizes and hold periods** – Given that distressed debt trading historically has involved facilitating clients by building inventory at the bottom of the cycle but also tends to involve a long period of holding bonds, we believe distressed trading is likely to see greater challenges from the rule – given apparent focus on inventory turnover as market making trades must “...*not to exceed the reasonably expected near term demands of clients*...” One fix option for distressed desks to operate (though likely on a reduced level) could be to treat trades as investments, rather than short-term trading positions.

Basel 2.5 impact on Credit Trading

- **Basel 2.5 may be mostly in the 2011 run-rate for credit** – Basel 2.5 rules will have the biggest effect on synthetic CDO correlation trading as a result of the punitive treatment of re-securitizations. While the correlation business was a major contributor to credit revenues before the crisis, the business has since entered wind-down mode and we estimate contributed ~1% of revenues in 2011. Remaining structured credit businesses are relatively efficient under Basel 3. While over 90% of CDS trades are actively margined (reducing actual risk mostly via variation margin collection) ironically we see some potential benefits to volumes from system-wide demand from CVA hedging activity.
- **European adoption of Basel 2.5 is driving some players to sell portfolios to escape punitive RWA charges** – As some European firms prepared for Basel 2.5 beginning in 2012 they looked to sell assets that were subject to punitive RWA treatment. Several US firms have noted opportunities helping EU banks sell structured portfolios through 2011 – though we believe the US

firms are acting more as re-distributors of the portfolios – breaking them up and re-selling them, rather than acting as a buy-and-hold investor.

OTC Derivative Reform impact on Credit Trading

Figure 51. OTC rules may impact ~55% of Credit revenues

Credit Revenue Pool	
IG CDS	20%
HY CDS	15%
Structured Credit	20%
Impacted by OTC	55%
IG Cash	13%
HY Cash	5%
EM Mkts	10%
Distressed	15%
CP/Short-term	2%
Total	100%

Source: Citi Investment Research and Analysis

Uncertainty on OTC derivative rules are hurting volumes already – In CDS markets, uncertainty regarding new market structure coupled with high investor risk aversion – we believe - has already taken a significant toll on volumes driving bid/ask wider.

Impact from SEFs expected to be the largest factor. We see the move to SEFs and the subsequent impact on CDS trading as being the largest OTC derivative reform impact for credit. Long term, the move will push credit towards a SEF-traded, standardized, smaller and more liquid pool of derivatives with trading offering dealers lower bid/ask margins, while non-SEF volumes are likely to decline sharply. Overall we estimate about 35% of industry revenues are CDS related and another 20% relate to structured products – which will have some derivative components.

■ **New higher initial margin requirements for client trades may dampen credit trading volumes** – Given dealer-to-dealer trading of CDS contracts is now widely cleared and subject to initial margin set by the clearing house, the biggest impact from clearing will be from higher initial margin demands for clients. Importantly, OTC clearing rules are prospective in nature – so existing trades will be grandfathered so there will not be a major collateral demand shock when they come into force.

– **One issue is rules for credit derivatives are split between CFTC and SEC, which may restrict margin netting across jurisdictions** – According to the DTCC, there are about \$2.8 trillion of net notional CDS outstanding, about 60% attributable to index and 40% to single names. For margin rules, index CDS fall under the CFTC and single-names fall to the SEC.

– **The result may be certain client trading strategies that depended on netting become less viable.** Index arbitrage trades involve shorting baskets of single-name CDS against credit indices. Currently both trades for a typical hedge fund would be margined by the dealer with collateral determined by the overall risk and size of the portfolio. But in the new world – where CDS would be under SEC netting rules and indices under CFTC rules, margin requirements may need to be posted for two-directional sides of a portfolio, rather than the hedged lower-risk whole – raising client liquidity requirements and most likely reducing the volume of these trades as margin drives returns on some trades too low.

– **The pool of liquid CDS instruments may also shrink hurting volumes.** The move to central clearing for CDS likely to centralize liquidity in standardized tenors (e.g. 5 year CDS) and larger name credits that are index components. While this will likely be a boost for this set of names, we expect liquidity to dry up for other names, reducing the overall CDS volume pool – at least in the outset.

Commodities

Figure 52. Commodity revenue pool breakdown

Est Global Commodity Rev Pool	
Crude Oil & Refined Products	35%
Power and Gas	25%
Metals - Base & Precious	20%
Investor Products (ETFs/Funds)	10%
Niche Businesses / Agriculture	10%
Total	100%

Source: Citi Investment Research and Analysis

Commodities (~8% of FICC revenues) will be hit Volcker, OTC reforms, and Position limits in US driving up to ~20% impact – Like Credit and Mortgage trading, the principal nature of Commodities market-making causes the Volcker rule to put a high proportion of Commodities revenues at risk. We estimate only ~10% of Commodities trading revenues are from exempt products (physical and spot, though physical may be larger at some firms). Among the revenue streams impacted by Volcker, we believe the pieces that are not connected to commercial end-users which include investor products (i.e. passive commodities index products) - and flow trading with financial/non-commercial end-users as most at risk – which we estimate represents ~55% of total revenues.

Derivatives reforms will also have impacts with 80% of Commodities trading revenue from OTC derivatives. Lastly, new commodities position limits enacted by the CFTC appear unlikely to drive revenue losses – but could limit revenue growth from Commodities – particularly in passive Investor Products which can involve a build-up of big non-physical derivatives positions. The rules seek to prevent market manipulation by limiting a given dealers' control of a given commodity market (e.g. silver or heating oil) by capping dealers' spot positions at 25% of deliverable supply. Rules then phase in similar caps on non-spot contracts beginning a year from enactment.

Volcker impact on Commodities Trading

■ **We estimate ~10% of commodity revenues is from spot trading and physical sources and thus explicitly exempt from Volcker, but only 55% of revenues are "more sensitive" to Volcker restrictions.** We admittedly have little data, and note certain firms like GS and MS with large physical operations may be different – our best estimate for the industry is about 10% of revenues are from spot trading and explicitly exempt from Volcker, the remaining 90% may be impacted depending on the level and type of client involvement. In Figure 53 we highlight about 45% of the revenue pool which is directly with structure end-users (e.g. commodity producers like mining operation will often hedge output in order to raise debt financing to complete a new project) or corporate hedgers (e.g. a manufacturer or a food company hedging cost inputs). The remaining 55% of the revenue pool comes from investor trading (those seeking to acquire rather than hedge commodity exposures) and investor products (e.g. passive index funds designed to give investors beta exposure to commodities).

■ **A strict Volcker rule may inhibit commodities hedging as the rule may interpret the banks as taking prop risk** – Given that client driven business is a large component of commodities business flow a large number of deals are relatively customized to meet client requirements. As a result, these OTC trades are often customized to commodities that are not as actively traded (e.g. jet fuel) with the bank hedging its exposure via best efforts, but likely retaining some risk.

– **One concern is that Volcker will restrict the availability of structures to reduce clients risk position.** A significant volume of commodities trades are client initiated, yet there is concern that Volcker may limit bank's abilities to sufficiently hedge the trade to satisfy the rule, resulting in them no longer meeting end-user demand. Instances where this might happen include longer dated trades (as long dated futures are illiquid so alternative hedges are used), trades relating to very specific commodity circumstances e.g. regional power hedging. etc. (where there may be no contract or the contract is very illiquid, requiring hedges instead in more liquid, correlated assets) or where physical delivery is required.

Figure 53. Estimated Commodity Revenue Pool Volcker Sensitivity

Est Commodity Rev Pool	
Structured w/ End Users	30%
Corporate Hedging Flow	15%
"Less" Volcker Sensitive	45%
Trading / Investor Flow	35%
"Investor Products"/Index	20%
"More" Volcker Sensitive	55%

Source: Citi Investment Research and Analysis

- **Banks also build inventory in anticipation of large but lumpy hedging activity, which may conflict with Volcker** – In order to be able to accurately price and efficiently execute hedging transactions for clients, banks may build inventories of hedges over a period of time based on available liquidity while a deal is negotiated, though the trade may not be executed by the client. Banks have expressed a concern that this may be considered proprietary activity rather than market making.

- **Top commodity trading talent may exit banks for less regulated competitors (e.g. Glencore) or hedge funds** – According to Coalition, which tracks bank industry headcount trends, investment banks are already seeing greater turnover in commodities trading divisions amid anticipation of tighter regulations. We note both BAC and JPM have already completely shut proprietary commodities trading units.

OTC Derivatives Reform impact on Commodities Trading

Figure 54. We estimate ~80% of Commodity revenues subject to OTC, though end-user exemptions will reduce impact

Est Commodity Rev Pool	
OTC Deriv's Non-Exempt	30%
Trading w/ Investor (HF) Clients	15%
"Investor Products" / Indices	15%
OTC Deriv's Exempt Clients	50%
Short-dated Corporate Flow	15%
Long-dated Corporate Flow	5%
Structured w/ End Users	30%
Impacted by OTC Rules	80%
Non-Derivative Revenues	20%
Futures	10%
Physical/Spot	10%
Total	100%

Source: Citi Investment Research and Analysis

80% of commodities revenues are impacted by OTC derivative rules, but a large percentage are with exempt end-users. While some firms have larger physical commodities trading businesses (GS, MS and JPM), many others depend primarily on derivative trading which tends to be largely OTC. While we have little direct data, we estimate something like 80% of global revenues for the industry comes from derivatives, though the three big US players above likely have better diversification. Overall, the impact may be partly mitigated by contracts with exempt end users – which will not have to post margin, and thus may be less likely to reduce or change activity levels.

- **Commodities has a large proportion of end-user flow that is unlikely to move to clearing** – We estimate that 50% of revenues are from trades with end-users who would be exempt from Dodd Frank. These deals represent a much smaller proportion of volumes and are more profitable due to often being customized to client requirements and would not be required to clear under the new rules.
- **End-users preferred OTC products over cleared futures due to beneficial margin approach, so may have little incentive to clear** – One reason that commodities end users have chosen OTC derivatives to hedge exposures has been that banks have been willing to accept a lien over the asset instead of margin, unlike cleared products which would require cash margin. The lien is a right-way risk and avoids restricting the client's cash flow – a client hedges the price of its oil production to receive a fixed price; as the price of oil increases, the hedge moves out of the money but the underlying oil asset increases in value.

Basel 2.5/3.0 Impact on Commodities Trading

- **Commodities likely to see slightly lower RWA inflation due to better treatment of physical assets.** Because physical commodities do not have credit spread component, there will be no material incremental risk charge – at least for the physical assets – pointing to an RWA inflation factor closer to 2-3x.

Mortgage

Figure 55. Mortgage revenue breakdown

Est Mortgage Rev Pool	
Non-Agency RMBS	30%
Agency Mortgage	18%
Pass Through	14%
ARM	4%
ABX & Derivatives	5%
RMBS CDO	14%
CMO's	15%
CMBS /Cons. & Other ABS	9%
Non-US Mortgage	9%
Total	100%

Source: Citi Investment Research and Analysis

Mortgage (~8% of FICC revenues) likely hampered by Volcker and stiff Basel 2.5 RWA charges - we see estimate a 15% hit from regulations – Given Mortgage is primarily a cash/inventory business, we see the most significant risk from Volcker limits on trading non-exempt securities like non-agency RMBS, CMBS, RMBS CDOs and non-US RMBS. Overall we estimate only ~20% of the Mortgage revenue pool is from products that will be exempt from Volcker (agency pass throughs). Additionally, Mortgage revenues are at high risk from harsh Basel 2.5 charges which severely penalize low-rated, or high loss-making securitized assets like sub-prime RMBS that caused the credit crisis – even though positions have been significantly marked down from par.

We estimate tough Basel 2.5 rules will drive higher risk weighted assets in products that drive more than 50% of Mortgage and ABS trading revenues. We expect this could drive further revenue losses vs our “normal” estimates, as high capital charges discourage dealers from making markets in these securities. Lastly, given little revenue comes from OTC mortgage derivatives, we see impact from OTC rules as not likely to be significant.

Basel impact on Mortgage Trading

- **Basel 2.5 will have a big impact on mortgage trading** – We estimate non-agency RMBS, CMBS and legacy RMBS CDO represent ~60% of mortgage trading revenues. On the non-agency side, the vast majority (>75%) of the outstanding ~\$850 bil non-agency mortgage market currently falls into the non-investment grade bucket. Under the ratings based approach, this would have implied 100% dollar for dollar capital – and we expect treatment under new rules that do not rely specifically on rating agency categorizations will be equally, if not more punitive.
- **Basel charges equate to roughly 4x the risk-based haircut charged by the market today** – While mortgages such as Alt-A bonds may trade at 70 cents on the dollar (similar to their expected loss given default) and would be subject to a repo haircut of ~25%, Basel 3 would require banks to hold dollar for dollar capital against the bond due to its subordination, or 100% of the bond's purchase price (which could be par or something less). This in many ways seems overly harsh given market-based risk.

Volcker impact on Mortgage Trading

- **Mortgage trading impact from Volcker on market making will suffer from similar challenges expected in cash Corporate bond markets** – Broadly speaking cash non-agency MBS trading works similarly to corporate debt trading with dealers maintaining inventories – trading in generally less liquid markets. For cash mortgage bond trading some of the same concerns regarding the ability for dealers to hold inventory and potential required reductions to avoid P&L driven by price changes in lieu of P&L driven by client-facing trades exist.
- **Volcker may pose difficulties for future securitizations including non-agency mortgage deals given broad definition of prohibited hedge fund/private equity funds.** While non-agency mortgage securitizations are not occurring in any meaningful way at this point – the American Securitization Forum has expressed [concern](#) regarding portions of the Volcker rule, and is seeking more explicit exemptions of securitization activities than spelled out in the current draft. The concern appears to be an overly broad definition of hedge fund or private equity fund. The ASF believes rules as written potentially restrict

of a bank from engaging in a securitization with an issuer fund in which the bank has an equity interest or sponsorship role – if that fund also relies on private placement exemptions from the 1940 Investment Company Act.

OTC Derivative Reform impact on Mortgage Trading

Overall, we expect OTC Derivatives will have minimal impact from derivatives rules. By our understanding cash products (that are sometimes technically considered derivatives) such as CMO's, I/O's, P/O's, Re-REMICs and non-agency CMO's are not synthetic instruments and thus do not fall under new rules.

We estimate only ~5% of mortgage revenues come from OTC derivatives – The main products that could be affected: ABX, CMBX, PrimeX, and the IOS index (an agency index of prepayments) may fall under the new rules; however, given current industry practice of requiring margin and collateral – any anticipated impact from clearing seems unlikely to have much incremental impact. Additionally, volumes on these products have fallen significantly vs pre-crisis levels, further making regulations less of a needle-mover for banks going forward.

In Depth Review of Regulatory Issues

Volcker Rule

The proposed rules – On October 11, 2011, the Treasury/OCC, Federal Reserve, FDIC and SEC issued a 298-page draft of the Volcker Rule requirements prohibiting proprietary trading as set forth in the Dodd-Frank Act. The CFTC released its own separate proposed rule on Jan 2012 which was nearly identical in language to the October proposal. Over 16,500 comment letters were submitted by the delayed 2/13/12 deadline (including form letters) and 386 individual [letters](#).

Recent clarification on implementation – On April 19, the Federal Reserve clarified implementation expectations for the Volcker rule, saying institutions do not have to begin compliance after the rule goes into effect July 2012 and have the full two years to “conformance period” through July 2014 to comply. Regulators also noted their ability to extend the conformance period. Banks however must still make “good-faith” efforts to ensure conformance of all of its activities by the end of the conformance period, including evaluation of activities and investments and develop a conformance plan – and good-faith efforts may include record-keeping and reporting if these are included in the final rules (which are not yet known) and agencies require them.

Intent of the proposal – Broadly speaking the intent of the rule is to limit the size and scope of risks taken by banking institutions by prohibiting institutions from 1) investing or sponsoring, for its own profit, a hedge fund or private equity fund, and 2) from proprietary trading for profit unrelated to serving customers – putting specific limits on market-making – and narrowing the capacity of banks to act as financial intermediaries. In our discussion below we primarily focus on market-making aspect of Volcker, which is the more far-reaching and uncertain portion of the rule.

- **Industry position remains that Volcker as proposed will have significant impact on liquidity...** We view Volcker as the largest potential threat to the current market model, with the proposed form of the rule expected to significantly impact market liquidity. While banks hope that Volcker can be adapted to iron out areas where it would currently restrict banks ability to make markets, the rule remains a major wild-card in how Dodd-Frank will impact market liquidity.
- **...And while regulators recognize there will be incremental impact, some feel that unregulated entities will step up and fill the void...** Fed Governor Tarullo, who leads the Fed's regulatory initiatives, has highlighted his belief that whatever liquidity is lost through Volcker can be replaced by non-banks, noting that “at least one firm has already stated publicly that they see enormous opportunities.” While this may be possible, we would note that hedge fund investors we have heard describing the opportunities from regulation do not typically cite taking market making share from banks, but instead cite: 1) a better ability to reap trading gains given less competition from bank prop desks – especially in equity long-short and distressed investments, 2) less competition from banks for talent, and 3) greater consolidation of AUM within the hedge fund industry given banks are no longer likely to seed new funds.
- **...Though we believe non-bank players like hedge funds are unlikely to provide a similar service.** One liquidity advantage banks provide by acting as market-makers is that they are prepared to bid on less desirable assets, valuing the relationship it has with the client across all businesses. As hedge funds are more return oriented, they are less likely to provide a bid unless they see solid investment potential.

Volcker is a “big deal” for fixed income trading given the principal nature of fixed income trading across most products. Fixed income “flow-trading” involves making markets for clients and holding inventory in the securities bought

and sold. The need to supply balance sheet capacity to clients to facilitate trading liquidity broadly applies across the corporate credit, MBS, CMBS, Consumer ABS, sovereign, as well as in municipal bonds and Treasuries. While US Treasuries, Agency issuance and some municipal bonds are exempt from the draft Volcker rule, it seems likely to have a large impact on the Rates, Credit, Mortgage, and Commodities markets.

- **Definitions of the “Market Making” and “Hedge” exemptions seem relatively strict – though application of final form has yet to be seen.** The severity of impact from Volcker hinges – in part – on the application and strictness of metrics applied when determining the market making and hedge exemptions.

Buy-side Opposition to Volcker

The investment management industry has been relatively consistent in its criticisms of potential negative side-effects to markets and investors from the proposed rule.

Prominent asset managers (e.g. BlackRock and AllianceBernstein) have expressed concern Volcker reduces liquidity, and may help shape a more workable final version of the rule – Concerns from market participants like Blackrock and AllianceBernstein that manage money for “Main Street” pension funds and 401k constituents – and carry much more weight in DC than pleas from the banking industry – are beginning to surface.

“The Volcker Rule is probably a disaster for all investors... fixed income [and] it's just as bad for equity...

...The Volcker Rule – it doesn't necessary prohibit but inhibit how flow trading is considered. Is that prop trading, or is that flow trading?

So far the definition is so narrow; it quite frankly is going to inhibit Wall Street's ability to take on a lot of the positions.

They're going to have to be more of an agent than ever before. So it may not widen our bid-ask spreads dramatically because they may just stand by and act as an agent. And ... if we demand them to be more than an agent there, they're going to charge you a wider bid-ask spread.”

-BlackRock CEO Larry Fink

11/16/ 2011

- **BlackRock's Larry Fink called Volcker a “disaster for all investors”** – Fink noted that Volcker may push the Street to operate more on an agency model, charge more for balance sheet usage, and will inhibit banks' ability to flow trade in fixed income. In equities, Fink noted Volcker have negative impacts on block trading citing as an example the principal trading demands around index rebalancing events for passive equity index funds.
- **Alliance's CEO Peter Kraus believes Volcker will “dramatically reduce market liquidity, increase costs... [and] reduce returns to savers...”** In a Nov 2011 comment letter AB CEO Kraus made a strong case against the Volcker rule noting that Dodd Frank was intended to be implemented in “a manner that does not disrupt the liquidity necessary for functioning securities markets and impose potentially prohibitive costs and burdens on market participants”.

Kraus made the distinction that unlike the equity markets which have a homogenous structure which ensures a steady stream of liquidity, the fixed income markets are less liquid since there are no single, homogenous, tradable units of credit risk for an issuer, and thus it is the responsibility of market makers to bridge the gap to provide the liquidity necessary for the markets to function. He also noted the ability of corporate issuers to place their debt securities in the US capital markets is dependent on the availability of adequate liquidity in order for investors to purchase these securities. He concluded, “We are convinced the proposal will reduce the liquidity of the secondary market...and is likely to have a profound and unintended adverse effect on our capital markets”.

Tarullo: "The distinction between prohibited proprietary trading and permissible market making can be difficult to draw, because these activities share several important characteristics."

Rep Barney Frank: Can Volcker rule be implemented in a way that preserves market making?

Tarullo: "I think it can."

- Fed Governor Daniel Tarullo Testimony at
House Financial Svc Committee Hearing

1/18/ 2012

- **Wellington recently added weight, estimating that Volcker will cost ~\$29 bil annually in lower investment returns for savers** – Wellington Management highlighted concerns that Volcker would consider any principal risk taking as proprietary by default, which may result in a more damaging impact to bond market liquidity, and also that Volcker's impact on banks market-making may result in them providing less liquidity in times of stress, effectively making Volcker pro-cyclical. Wellington estimate Volcker may cost \$29 bil annually in lower investment returns (from an estimated ~10bp wider spreads) and also cost companies \$7-18 bil in higher issuance costs.

Corporate Opposition to Volcker

- **Numerous large corporates have expressed concern Volcker will hurt liquidity and reduce the ability to raise capital for long-term growth.** In February 2012 letter from 26 large US corporates from a variety of industries including energy (Anadarko, Arch Coal, Devon), industrials (Caterpillar, General Electric, Goodrich, Boeing), and a variety of others (Abbott Labs, HCA, DuPont, Qualcomm, Safeway and Macy's). The letter sent in conjunction with the US Chamber of Commerce described the rule "complex and unwieldy," expressed worry that corporate liquidity and the ability to raise capital to fund growth would be impaired, hurting US competitiveness.
- **And reduced liquidity in fixed income markets could significantly increase corporate borrowing costs** – According to Dec 2011 study from Oliver Wyman and SIFMA, various liquidity "shift" scenarios could cause overall long-term corporate issuance costs to rise by \$12-16 billion over 9 years as old debt matures and is replaced at higher spreads. Using the study's "medium" liquidity shift scenario, interest costs could rise by as much as 26 bps for an A-rated company, 35 bps for a BBB rated company and over 70 bps for a high yield company. To put this in perspective, Oliver Wyman estimated this would equate to a ~2% earnings drag on an A-rated company like Caterpillar, a ~9% drag on a BBB company like Harley-Davidson, and a ~12% drag on a high yield company like Delta Airlines.

International Opposition to Volcker

- **Bank of Japan has raised concerns that Volcker may impact Japanese funding and liquidity** – The Bank of Japan (BoJ) and Japan's financial services regulator sent a joint letter on Dec 28, 2011 to US regulators raising concerns that Volcker may have "an adverse impact" on the trading of Japanese government bonds and increase transaction costs for Japanese Banks through extraterritorial application of Volcker.
- **Lack of exemption of non-US Government Bonds may drain liquidity from sovereign debt markets** – The BoJ notes the considerable role played by US banks in market making while taking principal risk in Japanese Government Bonds and other sovereign debt instruments. Given that only US Treasuries are exempt from Volcker there is concern that all other markets will be adversely impacted by the rule. In an extreme case, foreign markets may suffer an even larger drain on liquidity as US Banks downsize or exit the market.

- **US dollar funding may be squeezed through restrictions on FX** – The BoJ highlights that short term foreign exchange swaps – which non-US banks use as a tool to fund their US Bank entities, would fall under Volcker. This could prevent US banks from providing liquidity to non-US banks, potentially creating a funding squeeze and driving asset liquidations.
- **UK and European financial regulators have raised objections as well.** EU Commissioner Michel Barnier has raised public objections to the Volcker rule saying it's too far-reaching and should be globally coordinated, and believes it will damage liquidity in EU sovereign debt markets. Similar concerns voiced by the UK Treasury and the two German regulators the Bundesbank and BaFin.
- **Canadian complaints focus on the different treatment of US and non-US entities** – The issue of how Volcker considers foreign securities and assets raised by Japan and Europe also affects Canada, though given its proximity to the US, the treatment of non-US assets is seen to raise more headaches.
 - **The Canadian regulators also contest that Volcker could block non-US banks from making markets in their domestic sovereign bonds** – One problem with the Volcker rule may be that non-US banks will be restricted from taking principal risk in their own domestic government bonds (e.g. a UK bank trading Gilts). This highlights an issue similar raised by the BoJ, where the Volcker exemption only applied to US Treasuries may distort other financial markets.
 - **Five Canadian banks ask for Canadian and US Public Funds to be considered similarly** – Canadian banks highlighted that US public funds receive an exemption for Volcker which would not apply to Canadian funds, meaning they may have to exclude US investors from the funds or be forced to stop sponsoring and owning fund businesses. This, once again, highlights the unintended competitive consequences.

Long-term Volcker Implications

Market-making impact remains unclear but in a “tough form” could have severe impact on US capital markets liquidity. With numerous data items and ratios to be provided to regulators beginning next year – initial impact will be cost-of-compliance driven. The discretion on regulatory restriction on these measures, however, is impossible to analyze. Given potential negative impacts to liquidity, we would not be surprised to see asset management firms and corporate treasurers lobbying for reasonable final rules Volcker, given the diminished political capital of the banking industry in Washington, DC.

- **Cost of Volcker compliance will be high** – With new reporting requirements covering risk management, sources of revenues, revenues in relationship to risk and customer facing activity – many of which have never been tracked previously – the cost of Volcker compliance has already begun and will expand as systems are built to accommodate final rules.
- **Compliance program requirements** – Banks must establish 1) Written policies and procedures to document describe and monitor activities, 2) Internal controls must be created to continuously monitor non-compliance, 3) Management framework must delineate responsibility of compliance, 4) Controls must be independently tested by outside parties, 5) Training of managers and employees

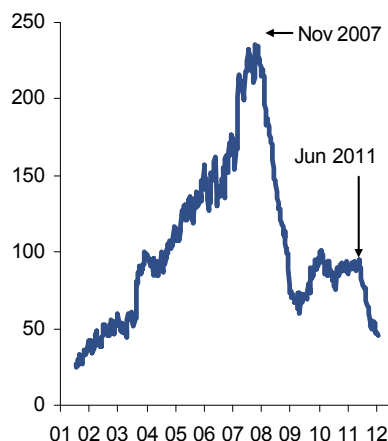
required, and 6) Records demonstrating compliance must be retained for at least 5 years.

Worst-case scenarios envision significant revenue impacts, offset partly by lower costs – In strict interpretation of Volcker – where there were tight restrictions on inventory turnover and holding periods – we could envision scenarios where revenues in business like credit trading could fall significantly, as volumes declined sharply (due to lack of inventories) and spreads widened. This type of scenario would likely have several consequences including 1) driving trading to new venues – either less regulated hedge funds or buy-side-to-buy-side platforms, and 2) significant reduction in trading headcount costs to support lower revenue base.

Volcker Impact on Competitive Dynamics

- **Foreign banks will be significantly impacted, and any “proprietary” activities must not involve any US parties...** Volcker will significantly impact foreign banks to the extent they interact with US clients, or trades are executed via a US-based trading desk. Even for trades booked through a foreign entity with a foreign client, if personnel handling the trades are based in the US, the Volcker rule appears to apply.
- **...But foreign bank trading with foreign customers executed outside of the US is exempt.** The level at which US participation is permitted under Volcker will be key to how much Volcker impacts foreign banks (e.g. whether trades can settle in the US, or if a senior manager in the US can be consulted on a trade).
 - **Foreign banks may move some operations outside the US to minimize impact of Volcker restriction** – For example, many banks currently operate LatAm/EM trading operations within the US, but Volcker may prompt strategic relocation of US-domiciled businesses to minimize the impact from the rule. Even with minimal US operations, the rule implies a high cost of compliance for foreign banks.
 - **Volcker adds to the list of extraterritorial concerns for non-US regulators.** International rule makers have already noted concern about the extraterritorial application of Dodd-Frank rules, with the Volcker rule's effective oversight of trading outside the US adding to the list of concerns.

Figure 56. US Dealer corporate bond and non-agency MBS inventories have fallen back to 2003 levels



Source: Federal Reserve. (\$ bil). Primary dealer bond inventories with >1 year maturities. Data includes corporate bonds and non-agency RMBS, but excludes Treasury and Agency bonds. Data through 4/18/12.

Dealer Inventories Have Already Come Down

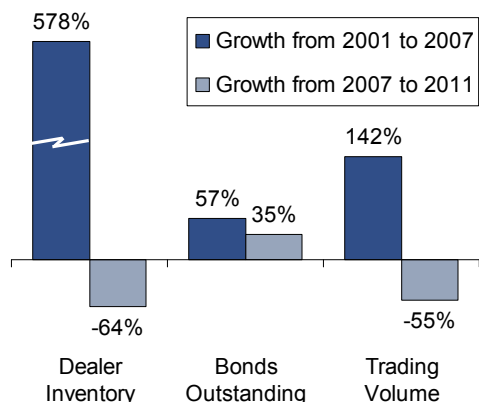
We believe the sharp growth in inventories from '01-'07 was driven by widespread use of "carry trades" ... followed by an exit of risk positions – Bond trading has always been an inventory business, but growth from 2001-2007 appears outsized vs market size and trading volumes. From 2001 to 2007 primary dealers tracked by the Fed grew inventories (including corporate and non-agency mortgage bonds) by nearly 600% vs 60% cumulative growth in the overall bond market and 140% growth in bond trading volume (Figure 57). In the future this inventory boom/bust would likely be prevented by the Volcker rule.

And while drops look big, current inventories appear roughly inline with historical levels vs bond market outstandings and issuance – Dealer inventories over the past 10 years quadrupled from less than 1% of the total bond market outstanding in 2001-2002 to nearly 4% in 2007. Since 2007 this relationship however has fallen back to about 1% of bond market outstandings today (see Figure 58) which we see as more normal. The same abnormal relationship can be seen comparing inventories to annual corporate bond issuance - rising from 4% of issuance in 2001 to ~20% in 2007, before falling to 8% of issuance in 2011.

Nevertheless, with much of the post-crisis positions exited by the beginning of 2011, we view reductions since June as driven more by risk aversion... Dealer inventories fell 45% since the end of June 2011 – which relate to lower client trading volumes and reduced risk taking – given higher volatility and difficulty hedging – rather than in anticipation of Volcker regulation or reduction of "prop" positions.

...And we see room for modest inventory growth in an improving environment. Going forward, we see some room for cyclical rebound in trading inventories as the macro environment improves – given current Wall Street risk levels are at very low levels given fears from a Greek exit or peripheral Europe contagion and client volumes are thin. Even so, higher capital charges on trading inventories and higher repo funding costs for banks will be long-term changes – so the natural "break-even" inventory level is likely to be lower than before the crisis began, before considering risk appetite.

Figure 57. Dealer's inventory growth outpaced growth in corp. bonds outstanding and trading volume



Source: CIRA, Federal Reserve, SIFMA

Figure 58. Dealer corporate bond inventories are now about inline with historical levels relative to total bonds outstanding.



Source: CIRA, Federal Reserve, SIFMA

Figure 59. List of Products currently exempt from the Volcker Rule

Volcker Exempt Products	
Rates	
US Treasuries	
Government Agency Debt	
Mortgages	
Agency MBS	
<i>Ginnie Mae</i>	
<i>Fannie Mae</i>	
<i>Freddie Mac</i>	
<i>Federal Home Loan Bank</i>	
<i>Federal Agricultural Mortgage Corp</i>	
<i>Farm Credit System</i>	
Municipals	
State Revenue bonds*	
State General Obligation bonds	
Foreign Exchange	
Spot FX	
Credit	
Loans	
Commodities	
Spot Commodities	
Physical Commodities	

Source: Citi Investment Research and Analysis

*Note certain State Agency municipal revenue bonds are not explicitly exempt, though this may be reviewed based on comments from SEC Chmn Shapiro.

Technical Details on Volcker Proposal

Volcker's definition of what constitutes a trading account or covered financial instrument is very wide. The proposed rule prohibits a banking entity from taking proprietary risk taking in its "trading account" in instruments deemed "covered financial positions." Covered positions include securities, derivatives including FX derivatives, and commodities futures.

- **Trading accounts are defined via three criteria:** 1) Any account that holds securities subject to Market Risk Capital Rules (aka Basel 2.5) is considered a "trading account." 2) Trading accounts also include any account used by an SEC registered dealer/swap dealer or municipal dealer, government securities dealer, or CFTC registered entity. Accounts of foreign banks with US branches engaged as dealers would also be captured. 3) Just in case there might be an account that did not fall under 1 and 2, there is also a provision applying to any accounts holding any position for 60-days or less that would subject the activity to the rule. Note, while there is a 60-day criteria in the definition of a trading account, the draft rule do not specify limit or condone any explicit inventory holding period that in conjunction with the market exemption.
- **Covered financial positions** - Include all securities, derivatives and commodity futures except for products specifically exempted. Exempt positions include securities issued by: 1) US govt or agency securities, 2) the GSE's, 3) certain debt issued by state and local govt's, 4) spot FX, 5) spot commodities trading and 6) all loans.

Permitted vs Prohibited Activity – Trades in covered positions in trading accounts are deemed proprietary and prohibited unless permitted under very specifically defined exemptions.

- **Exemptions** – With numerous caveats, there are specifically defined exceptions for 1) Market making, 2) Underwriting and 3) Risk mitigating hedging. In addition, secured financing (repos and reverse repos), securities lending and bone-fide asset liability management trades are explicitly exempt.

Given the market making exemption and what qualifies as hedging are two key uncertain areas likely to drive the ultimate impact from Volcker – we review key technical details of the proposal below.

- **Market Making Exemption** – Proposal includes two sets of requirements for a market maker one for liquid positions and one for relatively illiquid positions as well as number of broad requirements for permitted activities
 - **For liquid markets a dealer must:** 1) make continuous 2-side quotes and hold oneself out as willing to buy or sell continuously with quotes at or near the market on both sides, 2) exhibit trading pattern of buys and sells in comparable amounts, and 3) provide widely accessible and broadly disseminated quotes.
 - **For illiquid markets a dealer must:** 1) provide quotes on a regular (but not necessarily continuous) basis, 2) regularly purchasing covered financial positions from, or selling the positions to clients, customers, or counterparties in the secondary market, and 3) have transaction volumes and risk proportionate to historical customer liquidity and investments needs.
 - **We note that no explicit definition of illiquid markets is given** – Instead regulators ask stakeholders whether the proposed factors that should be

used to analyze whether a bank is engaged in market-making activities should be used, eliminated or changed.

- **Market makers will not retain risk in excess of the size and type required for market making.**
 - **Compensation must not reward risk taking.** Compensation structures for traders will be restricted to “primarily” reward for customer revenues and not risk-taking though can take into account ability to produce good risk management results.
 - **Primary source of revenues should be customers vs price movements.** Revenues must come from fees, commissions, bid/ask and not P&L from changes in value of covered positions held. This will be unusual for certain businesses like credit flow trading which typically relies on principal model including P&L from selling positions from inventories.
 - **Market makers should exhibit low earnings volatility under normal market conditions**
- **Hedge Exemption** – To qualify under the hedge exemption a trade must meet two requirements:
- **1) Reduces specific market making risk related to individual or aggregate positions.** (See p. 36 for a discussion of portfolio hedging and issues related to JPMorgan CIO trade).
 - **2) Satisfies criteria applicable to hedging** including: a) meets the specific risk requirement (e.g. market, counterparty, FX) with dynamic hedging allowable, but compliance rules are required to tell traders how and when to hedge, b) provides reasonable correlation to underlying risk to avoid proprietary basis risk bets “disguised” as hedges, and c) prohibits creation of significant new exposures arising from the hedge – with some understanding that many hedges will create counterparty or basis risk.
- **Plus several other key requirements** – Banks must hold hedges only for the same period underlying position is held. To use the hedge exemption, trades must be documented as hedges *at the time the transaction is enacted* and the hedging rationale for certain transactions that present heightened compliance risks.

Volcker Impact on Hedge Funds / Private Equity Funds

Below we summarize bank’s most recent disclosures regarding hedge fund and private equity fund investments. As expected, GS has the largest exposure with over \$16 billion of invested capital, followed by JPM at ~\$8 billion and MS and BAC in the \$4-6 billion range.

Rules cap bank exposure to 3% of Tier 1 capital in “covered” hedge funds and private equity funds and limit ownership to no more than 3% of the funds outstanding interests.

Figure 60. US banks have ~\$45 bil of hedge fund and private equity investments and commitments impacted by Volcker

JPM	4Q11	BAC	4Q11
Publicly Held carrying value	805	Private Equity Investments	1,548
Privately Held carrying value	4,597	Global Real Estate	914
Third Party Inv carrying value	2,283	Global Strategic Capital	1,718
		Legacy / Other Investments	1,447
Subtotal Funded	7,685	Subtotal Funded	5,627
Third Party commitments	789	Unfunded Commitments	709
Total Funded & Unfunded	8,474	Total	6,336
Tier 1 Capital	150,384	Tier 1 Capital	159,232
Funded as % Tier 1 Capital	5%	Funded as % Tier 1 Capital	4%
GS	4Q11	MS	4Q11
Private Equity funds	8,074	Private Equity Funds	1,906
Real Estate and Other funds	1,531	Real Estate Funds	1,188
Hedge Funds	3,165	Hedge Funds	1,167
Private Debt Funds	3,596		
Subtotal Funded	16,366	Subtotal Funded	4,261
Unfunded Commitments	8,695	Unfunded Commitments	1,391
Total	25,061	Total Funded & Unfunded	5,652
Tier 1 Capital	63,262	Tier 1 Capital	52,352
Funded as % Tier 1 Capital	26%	Funded as % Tier 1 Capital	8%

Source: Company reports.

OTC Derivative Reform

Since Dec 21, 2000, after President Clinton signed the Commodities Futures Modernization Act most OTC derivatives have been exempt from regulation by the CFTC under the Commodities Exchange Act or as securities under federal securities laws. Instead derivatives dealings were subject to regulation by banks' prudential regulators. The Dodd-Frank Act and an agreement among G-20 nations will make sweeping changes to the existing regulatory landscape – requiring clearing and exchange trading (with some exceptions) for all standard derivative contracts. Under new rules the CFTC will have increasing regulatory responsibility, regulating OTC derivatives in rates, FX, commodities and index-CDS while the SEC will regulate single-name CDS and security-specific derivatives (Figure 72).

The next 3 sections run through the key pillars of OTC derivative reform:

- 1) Derivatives Clearing** – The move to centralized clearing and its impact on spreads and volumes;
- 2) Margin** – Impact from mandated margin for cleared and un-cleared trades;
- 3) Exchange trading / SEFs** – How swap execution facilities and their prescribed rules may affect trading.

Below we summarize the key rules that have been completed thus far and the major remaining rules to be finalized.

Figure 61. Completed and Pending CFTC Rulemakings

Completed Rules	Completed Date	Effective Date
Swap Dealer Rules		
Swap Dealer / Major Swap Participant definitions	May-12	Jul-12
Swap Dealer / MSP record keeping	Apr-12	Jun-12
Swap Dealer / MSP conduct	Feb-12	Apr-12
Registration of Swap Dealers / MSPs	Jan-12	Mar-12
Swap Data / Other Rules		
Swap data Record Keeping & Reporting requirements	Jan-12	Mar-12
Real Time Reporting of swap data	Jan-12	Mar-12
Commodity Position Limits*	Nov-11	Jan-12
Remaining Rules to be Finalized	Initial Proposal	Comment Ended
Swap Definitions	May-11	Jul-11
Capital Requirements for swap dealers & MSPs	May-11	Jul-11
Margin Requirements for swap dealers, MSPs	Apr-11	Jul-11
Extraterritoriality (part of margin rules)		
End User Exemption	Dec-10	Jun-11
Clearing and Execution requirements	Sep-11	Nov-11
Process for SEF listing of swaps	Dec-11	Feb-12
Block Trade Rule for SEF Exemption	Mar-12	May-12

Source: CIRA, CFTC

I) Derivatives Clearing

The shift to mandatory central clearing in the US will likely begin at end of 2012

We see the US leading the push to Centralized Clearing beginning by the end-2012...

The US will be first to produce clearing rules... US rules appear likely to be finalized over the course of the next 6-7 months and the industry continues to move towards adopting centralized clearing – including early adoption of client clearing. We expect most of the US derivative rules to be finalized by sometime this summer after many rules failed to come through before the CFTC's targeted 4Q11 deadline. Rules were originally supposed to be in place prior to regulation's effective starting date of July 16, 2012, with the CFTC extending the effective date three times. At a conference in May Chairman Gensler stated the CFTC's summer/fall rule finalization target and sees all 20 of the remaining rules required completed in 2012.

■ **Three phase implementation would result in roll out of clearing, which we expect is most likely to occur in 4Q12 and into 1Q13...** Clearing implementation will come in 3 phases with dealers and major swap participants subject to the clearing mandate 90-days after the CFTC. Fund and asset mgrs would fall into phases 2 or 3, with 180 and 270-day lags.

...with Europe following maybe 6-12 months behind

■ **...Followed by Europe and then potentially others** – While the G-20 nations originally committed to having derivatives rules in place by 12/31/12⁶, only the US and Japan seem to be in a position to meet this deadline, with Europe potentially following during 2013 (see p 144). Separately, exchanges in Singapore, Hong Kong, South Korea, Japan and China are already in the process of launching new OTC derivative clearing services.

System and Infrastructure for Central Clearing mostly already in place

Currently, the biggest players in OTC swap clearing are LCH, ICE and CME – LCH has cleared OTC interest rate swaps since 1999 and is the largest OTC clearing platform – almost exclusively from dealer-to-dealer activity. Below we show the major CCPs and cleared products. In addition, in the rates space, Eurex and IDCG compete. The major Asian clearinghouses are the Japan Securities Clearing Corp, the Singapore Exchange and the Hong Kong Exchange. Limits to offsetting margin are likely to encourage investors to consolidate clearing relationships with one CCP. To the extent multi-asset class netting is eventually allowed by regulators, this could pave the way for further CCP consolidation (see Figure 22). We note because clearing houses are not interoperable, even leading players must establish separate localized venues in markets like the US and Europe to compete.

Figure 62. Major Central Clearing Organizations Summary

Rates	Credit	Asia Pacific
LCH.Clearnet Swap Clear US	ICE Trust US	Japan Sec Clearing Corp
CME ClearPort US	CME Group US	Singapore Exchange
LCH.Clearnet Europe	ICE Clear Europe	Hong Kong Exchange
CME Group Europe	CME Group Europe	
Eurex Europe	LCH.Clearnet SA Europe	
Derivatives Clearing Group IDCG	Eurex Credit Clear Europe	

Source: Citi. (Clearing options also exist or for Equity and Commodities and are planned for FX (NDFs).)

⁶ G20 Summits in Pittsburgh (September 2009) and Toronto (June 2010)

- **US dealer community has made significant efforts toward getting systems in place for clearing mandate...** Banks started clearing an estimated 90%+ of inter-dealer trades since late 2009 when the top 15 global dealers collectively committed to regulators in attempt to avoid mandatory clearing.
- **CCP's are already clearing many vanilla rates and credit derivatives** – While every rule is not set and every client is not ready, the CCP's have already geared up a good suite of products rates and credit derivatives to clear.
 - **Rates clearing infrastructure is relatively developed** – Based on aggregated global data from the FSB (disclosed Oct 2011 as of 6/30/11), \$134 trillion notional interest rate swaps had been cleared (or 34% of total IRS outstanding) representing mostly dealer-to-dealer clearing. LCH.Clearnet SwapClear clears interest rate swaps in tenors up to 50 years denominated in USD, EUR and GBP both in the US and Europe, and a variety of other currencies in tenors up to 10-30 years. LCH also clears overnight-index swaps in several major currencies and basis swaps (float vs float trades) live today. CME is live in the US (though w/ fewer currencies) and is rolling out European clearing soon. As of May 1, 2012 SwapClear cleared a total of \$148 trillion of IRS including dealer-to-dealer and client clearing in outstanding notional.
 - **Credit CDS clearing has begun, but is currently Index dominated** – CDS clearing is much smaller at \$3 trillion of notional (11% of outstanding) which is virtually all dealer-to-dealer trades based on FSB data. ICE is clearing CDS Index and some highly liquid single names for dealers in the US and Europe and on combined basis has \$1.6 trillion of open interest in CDS clearing as of April 26. The majority of credit clearing thus far is index clearing, which is regulated by the CFTC. These trades can settle and be margined in the FCM account structure, which is already set up under the CFTC. Conversely, single-name CDS (including sovereign) are not being cleared for clients, primarily because these are security-based swaps under the SEC, which do not have all the appropriate protocols established. Note the industry is currently petitioning the SEC to allow the single name positions to sit in the CFTC regulated futures account (thus the collateral would be subject to CFTC Part 190 segregation—not the SEC's 15c3 protections), which should allow cross margining between single name and index...thus, bringing the initial margin down and making single name clearing more commercial.

Figure 63. High % of electronic confirms on OTC swaps suggests a high % will be clearable...

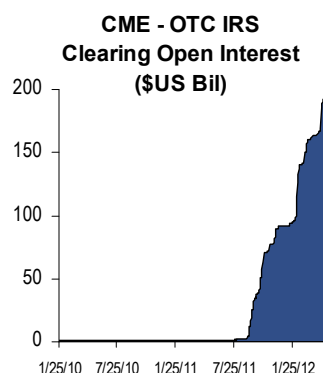
	Electronic Processing of OTC deriv Contracts
Interest rates	84%
Credit	99%
Equity	40%
Commodities-Energy	77%
Commodities-Metals	69%
Commodities-Other	25%
FX-Non Deliverable Forwards	89%
FX-Vanilla Non-Deliverable Options	70%
FX-Simple Exotic Options	23%

Figure 64. ...however, only 35% of outstanding IRS and 11% of outstanding CDS are centrally cleared today.

	Total notional outstanding (USD bil)	Notional outstanding on a CCP (USD bil)	Percentage of total on a CCP
Interest rate derivatives	395,304	134,113	34%
-Interest rate swaps	214,472	104,913	49%
-Basis swaps	19,286	2,405	13%
-Overnight index swaps	50,244	26,796	53%
-Other	111,302	NA	NA
Credit default swaps	27,046	3,107	11%
-Multi name	12,185	1,994	16%
-Single name	14,861	1,113	7%
Equity	5,635	NA	NA
Commodity	2,922	NA	NA
Foreign exchange	57,798	NA	NA

Source: FSB - OTC Derivatives Market Reforms, Progress report on Implementation 10/11/11, data as of 6/30/11. *Electronic processing measures the extent to which the entire population of transactions are confirmed electronically on a flow basis. Note IRS cleared notional of \$134 billion as reported by the FSB is based on TriOptima data reported on a "single-side" equivalent basis. Cleared notional as reported by SwapClear counts both sides of a given trade, inflating cleared notional values by factor of 2.

Figure 65. CME's OTC clearing up sharply in past 6 mos on buy-side activity.



Source: CME through 5/7/12

We see OTC derivative volumes likely to modestly dip during the switch to clearing...

...Plus banks will lose a supplementary revenue source as they move from receiving collateral to posting it.

Dealer-to-Client Clearing is just beginning

- **So far client-clearing is much smaller at less than 1% of the total cleared volume** – Client activity and preparation is growing with large fixed income asset managers BlackRock and PIMCO leading the charge. Client clearing is denominated in the hundreds of *billions* not hundreds of *trillions* worth of notional. On a “single-side equivalent basis” that LCH has cleared a total of \$356 billion in client interest rate swaps through mid-May and CME had cleared about \$200 billion. In CDS, CME has cleared about \$37 billion worth of notional.
- **Open interest in CME \$US OTC interest rate swaps trades shows nascent growth in client clearing** - Figure 65 shows a dramatic increase in swap clearing on the CME in their largest product US\$ OTC interest rate swaps, driven by several large fixed income asset manager. Including non-dollar denominated IRS and CDS, total cumulative CME open interest clearing was \$292 billion of notional at the beginning of May. According to the CME there are 1,800 active OTC clearing customer accounts and 2,500 in testing across 16 clearing firms.

Clearing should have a modest drag on dealer revenues as three effects feed through

Below we walk through some of the potential implications from client clearing of derivatives trades. While we see three modest potential negatives from clearing, we note that clearing will also provide the benefit of reduced client default risk – and may prove to be a lynchpin relationship to cross-sell other bank services. Overall we do not believe the magnitude of any these trends individually is likely to be significantly large or become permanent revenue drags, but discuss each potential impact in turn.

- **Volumes likely to decline initially as the industry recalibrates** – We expect a modest short-term slowdown in volumes in the six months during implementation as clearing seems more likely to take a “switch-flip” to the new operating paradigm vs an evolutionary adoption. However, given sophistication of largest buy-side clients which account for large portion of the volume we are not expecting a major slowdown in volumes.
- **New initial margin requirements will reduce client leverage and may lower clients’ investment returns.** The requirement for non-exempt (non-end user) clients to post initial margin will increase liquidity requirements for certain clients (e.g. levered hedge funds) and may reduce derivative volumes. This may be exacerbated by rules (as proposed by the CFTC) which could limit cross-product netting and portfolio margining agreements (margins that consider both un-cleared and cleared positions).
- **Posting of collateral to CCP’s will eliminate a source (albeit small) of funding for the dealers** – Banks previously benefited from a cash inflow from collateral posting on derivatives, which in some cases could be reinvested. With a CCP now between the two parties, the bank no longer receives client collateral and will also be required to post initial margin if it is acting as the executing broker, moving a cash inflow to an outflow.
 - In the “old world” banks were often in a position to receive collateral from certain clients, especially hedge funds and lower credit quality counterparties... From a dealers perspective, derivative clients that were not the very top-corporate or asset management firms and posed credit risks are

required to post initial margin (albeit less than they likely will under new clearing rules). This collateral in some instances could be rehypothecated (re-used) by the dealer and invested – creating a source of funding or carry revenue. For example, the dealer could enter a 10-year swap with a client, receive initial margin at the inception of the trade that the dealer is entitled to hold for the life of the trade, and invest it in a 10-year treasury and earn the carry. This interest earned could be used to offset the cost of margin loans or other services provided to OTC derivative customers. Note, while OTC dealers are not required to segregate clients' initial margin, some clients have begun to request it, preventing dealers re-hypothecating the assets.

- **...In the “new world” collateral will no longer go to the dealer, but gets stuck at the CCP.** New cleared trades will have initial margin segregated at the CCP, and both the dealer and the client will need to post initial margin, vs only the client (if at all) previously.
- **Mandatory margin requirements will also exist for un-cleared trades – which may need to be segregated at a third-party.** Rules will require margin for un-cleared trades, which depending on client demands, may need to be segregated at a third party.
- **Though the drag will be a progressive change, as old derivative books turn over.** The impact from CCP margin will accumulate overtime as the derivative book steadily turns over, with old collateral held by the bank returned on old trades with the replacement trades through the CCP. While the effect on derivative pricing should be immediate, the overall funding impact on banks will build over the course of 2-3 years.

Buy-Side Is Unlikely to Side-Step Banks and Become Clearing Members

- **Buy-side appears likely to clear through banks rather than become clearing house members** – While it is feasible that large buy-side firms could become clearing house members themselves, we see this as unlikely. Both the cost of clearing and contributing to central clearing default fund are deterrents; however, we believe the main barrier the added principal risk created by the requirement that members “step into” trades of another defaulted member. Most buy-side firms do not have the trading desks or the willingness to take on such risks – which are clearly real given examples of Lehman and MF Global.
- **Though Trust Banks may compete to gain share due to position as existing holder of clients' collateral** – Both Bank of New York Mellon and State Street have registered as to be clearing members, citing client demand as the driving factor, with State Street developing also developing a SEF. Given that the trust banks hold large amounts of clearing house eligible collateral for market participants, they may be well positioned to gain share in clearing as both an easy solution and trusted fiduciary as a cash manager.

II) Margin

Figure 66. OTC derivative collateralization levels vary by client, so impact of clearing will vary.

	Average % Credit Risk Collateralized
Hedge Funds	178%
Banks / Brokers	89%
Mutual/Pension Funds	76%
Insurers	66%
GSEs	53%
Non-Fin. Corporates	43%
Commodities / Energy	37%
Sovereign Govt	14%
Regional Govt	10%
Supranationals	0%
All OTC	72%

Source: ISDA Margin Survey 2011.

Collateral reflects variation margin and initial margin (if any) posted by clients.

Credit risk is gross amount owed by clients to dealers on OTC trades ("out-of-the-moneyness").

Ratio reflects the % of dealers' credit exposure covered by collateral.

Margin requirements from Dodd Frank and Basel will place increased demands for more and higher quality collateral.

The goal of shifting the OTC derivatives market to clear through CCPs is to reduce bilateral counterparty risk, but in order to make the system safer this will require the CCPs to receive very large amounts of highly liquid collateral. CCPs only accept cash for variation margin, and usually only accept cash and government securities for initial margin. The issue is that the amount of collateral that will be required dwarfs the amount of liquid assets held by the buy side.

Dodd-Frank mandates that prospective cleared and un-cleared swaps will be subject to initial and variation margin requirements set by regulators. Given most clients are not fully collateralized with initial margin, non-cash rich clients such as leveraged hedge funds may experience some pressure from the change.

One potential opportunity for banks is to offer "collateral transformation" services to clients. This service would let clients post non-eligible assets with the dealer, which could be swapped into cash via the repo market, and then the dealer would post the cash to the CCP on behalf of the client.

Few clients are subject to initial margin

Existing OTC derivatives agreements between dealers and their highest quality asset management and end-user counterparties typically do not require clients to post initial margin. Hedge funds or clients viewed to pose greater counterparty risk, however, often are subject to initial margin based on bi-lateral agreements.

In Figure 66 we show the varying levels of collateralization (initial + variation margin) by client-type relative to the client's gross credit exposure (total dollars the client is out-of-the-money). Note that hedge funds rank well over 100% reflecting initial margin plus variation, while banks and brokers are at 89% reflecting no initial margin but regular posting of variation margin. Corporate clients sit at less than 50% - reflecting lack of initial margin and the uncollateralized credit risk from contracts moving out-of-the money.

Dodd-Frank moves OTC margining from a negotiated-basis to a mandated-basis

Dodd-Frank mandates that prospective cleared and un-cleared swaps will be subject to initial and variation margin requirements set by regulators. Existing trades will be grandfathered. The Fed, SEC and prudential federal regulators have proposed margin rules for entities they regulate (banks and dealers) and the CFTC has proposed rules for non-bank swap dealers and major swap market participants.

- **Initial margin and variation margin will be collected by banks and posted to CCPs** – For cleared trades, banks must collect initial and variation margin from counterparties and post the margin to the CCP. For un-cleared non-standardized trades (with non-exempt parties) banks will still need to collect initial margin based on standard tables or approved internal models which may provide diversification benefits within asset classes (i.e. within CDS), but not across asset classes (e.g. between rates and CDS).
- **For example, initial margin will increase from 0% to ~5.5% of notional for a hypothetical top-client interest rates swap** – Dealers currently charge initial margin to some clients, with the level held based on a counterparty quality

assessment considering credit, capitalization and the relationship held with the client. Even so, the majority of clients will experience an increase in initial margin levels as dealers currently 'subsidize' this cost (see Figure 67).

- **For example, a top credit-quality investor (non-exempt) client hedging \$10 mil of fixed rate debt would now post \$540k vs nothing previously,** a medium quality client would need to post \$340k more than before and a lower-credit quality client would be about the same.
- **The same swap if executed in un-cleared bi-lateral format will require higher ~7.6% of notional initial margin.** Draft initial margin rules require 40% more margin for on un-cleared derivatives versus cleared (10-day 99% VaR vs 5-day 99% VaR). We expect that customers may gravitate towards more competitively priced, centrally cleared products where possible given the extra cost of margin on un-cleared trades.

Figure 67. Initial Margins Today vs New World: Top IRS investors could see margin go from 0% to >5% of notional.

Initial Margin as % notional for \$10 mil, 10 Year Pay Fix IR swap

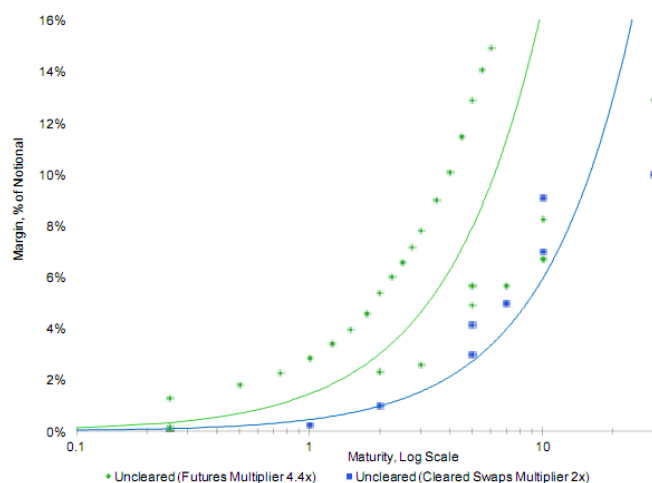
	Current IM		Post-Dodd Frank Adoption		Not Cleared vs Cleared
	Cleared	Not-Cleared	LCH Cleared	Not-Cleared	
Dealer to Dealer Client	5.4%	0%	5.4%	7.6%	5.4%
Top Credit Quality	NA	0%	5.4%	7.6%	5.4%
High Credit Quality	NA	2%	5.4%	7.6%	3.4%
Lower Credit Quality	NA	5.4%	5.4%	7.6%	0.0%
End User	NA	0.0%	5.4%	High Basel 3 charge	5.4%

Source: Citi Investment Research and Analysis, Using CFTC VaR based Initial Margin rules of 5-day 99% VaR (Cleared) and 10-day 99% VaR (Uncleared)

- **Variation margin will also increase depending on the client – with impact greatest for the highest quality clients that no longer receive preferential treatment** – For major clients, ISDA credit terms typically only require variation margin when the amount owed by the client exceeds agreed thresholds, for example, posting would be required only when the trade is over \$5 million out of the money. Variation margin levels at clearing houses, as proposed would set all variation margin thresholds at zero, meaning clients would be required to post more margin more frequently and as soon as trades move against them.
- **Longer Maturity derivatives are subject to rapidly increasing levels of initial margin** – As initial margin is calculated as a function of volatility and risk, it follows that longer dated trades are subject to rapidly increasing margin as price changes have a magnified impact on the value of the trade. As interest rate swaps are often longer dated derivatives, these are likely to be more impacted.
- **Initial margin for un-cleared swaps can also be calculated on a multiple basis, which increases exponentially as duration/maturity rises** – For un-cleared derivatives, the CFTC also proposed alternative methods to the VaR approach of calculating margin, allowing initial margin to be calculated simply by taking a multiple of 2x the initial margin for the nearest comparable swap or 4.4x the most similar cleared future. Figure 68 shows that using this approach, initial margin would increase from less than 1% of notional for a 1yr trade to 6% for a 10-year trade (based on the '2x comparable clearable swap' method), and in excess of 15% of the notional (using the '4.4x comparable futures' method).

- **Initial margin will still differ by product, but will be substantially higher in nearly all cases with higher risk products like High Yield CDS most impacted** – Depending on product type and its risk characteristics, initial margin demands under clearing will vary between products, with lower risk products subject to less margin. This can be seen in Figure 69, with initial margin on selling 5-year protection against the high-yield CDX is 5x the level required to sell protection against the investment grade index. For example, if you are a top quality asset manager client and wanted to purchase a CDS contract to hedge \$10 million of notional credit exposure against the default of a single-B+ rated company would require \$370K of initial margin vs none previously. To act as the seller of protection (and potentially be on the hook for the payout) on the same B+ credit would require \$790K initial margin vs \$400K today in a bilateral world.
- **Un-cleared dealer-to-dealer trades will see also very tough margin requirements, raising funding costs** – Un-clearable dealer-to-dealer trades potentially will require margins calculated at 10-day 99% confidence interval VAR – a level we see as a significant impediment to new inter-dealer trades. Again margin rules are prospective, so primary impact of un-cleared existing swaps will come from capital rules. The intensity of margin costs however may decline somewhat as dealers clear more and more swaps – See Figure 21.

Figure 68. For un-cleared swaps initial margin rapidly increases as the duration increases



Source: TABB Group, CME, LCH

Figure 69. Margin costs will vary across asset classes – with higher initial margin for higher risk assets

Initial Margin as % notional for \$10 mil

	Bi-Lateral Un-cleared OTC Trade	Cleared OTC Trade	Diff
Interest Rates			
Pay Fix 10yr swap*	2%	5.4%	3.4%
IG CDS			
Buy 5yr CDX protection	0%	1.4%	1.4%
Sell 5yr CDX protection	1%	1.8%	0.8%
HY CDS			
Buy 5yr B+ single name	0%	3.7%	3.7%
Sell 5yr B+ single name	4%	7.9%	3.9%
Buy 5yr CDX HY	2%	6.1%	4.1%
Sell 5yr CDX HY	5%	5.9%	0.9%

Source: Citi. Cleared margin for CME trades except where denoted* where LCH Margin is used. All initial margin levels assumed for top credit quality non-exempt client. Comparisons reflect existing margin requirements as common from a broker dealer or under clearinghouse rules.

III) Swap Execution Facilities (SEFs) and Exchange Trading of Derivatives

What is a swap execution facility (SEF)? Under Dodd-Frank, standardized derivatives capable of being cleared must also be traded on exchange or “swap execution facilities”. Trading of standardized derivatives on newly conceived SEF platforms are a subject of significant uncertainty – as the final outcome has the potential to meaningfully impact volumes, dealer bid/ask spreads and profits.

SEFs fall under CFTC or SEC rulemaking depending on product type – Both the CFTC and SEC have separate jurisdictions over SEFs, covering different products sets (see Figure 72 for product breakdown), leaving the potential for different rules from each regulator, though we consider this unlikely. In April the CFTC finalized its rules for who must register as a “swap dealer” and all large banking players are captured – with the threshold set at firms that trade \$8 billion in gross notional value of swaps annually, a threshold set to fall to \$3 billion after 5 years, if not adjusted.

Rules expected to be finalized in by mid-2012, with move to SEFs coming shortly after clearing regulations are final. Despite repeated delays, we expect clearing and SEF rules to be finalized over the course of the next 3-6 months. Once separate clearing rules are finalized, it is expected that SEF compliance will be mandated very shortly after.

■ **The biggest questions are 1) How SEFs will be defined and 2) If request-for-quotes (RFQ) minimums are required** – Broadly the exact definition of what qualifies as SEF has yet to be decided. An important distinction between the CFTC and SEC definitions of SEFs is the minimum number of quotes required before executing a trade. The CFTC mandates that clients contact 5 dealers, while the SEC gives clients the option to send only one RFQ provided the SEF has functionality for clients to submit multiple requests. Given economic risks dealers take to fill the quotes and the number of major players in some markets, there is a concern that the CFTC proposal would share too much pre-trade information with the market, putting dealers at risk of loss, hurting liquidity and ultimately driving up prices for clients.

- **Voice broking and single-dealer platforms appear likely to be prohibited or significantly curtailed for “standard” swaps trading** – As proposed a SEF must be able to “execute or trade swaps by accepting bids and offers made by multiple participants” so single-dealer platforms and one-to-one voice brokering would not qualify. Under CFTC proposed rules voice would be allowable only for un-clearable and bespoke trades or trades that meet the block trade exemption. Non-standard and un-cleared trades however could still trade under current practices like bi-lateral voice.
- **The proposed rules point towards SEFs operating as multi-dealer execution platforms** – Given the difference in rules proposed by the CFTC and the SEC, in Figure 71 we illustrate how SEFs might look if the two agencies were to meet in the middle. The diagram illustrates a 3-RFQ model, with the client selecting the three dealers from which it will receive quotes.
- **Multiple RFQ’s mean that more industry participants know a deal was booked away before it prints on the tape** – The current SEF rules require dealers to disclose trades to the tape within 30-minutes (reducing to 15-minutes over time). A 3-RFQ model means that two dealers are aware a trade may have booked before it hits the tape. This would allow them to position themselves for the winning dealer to offload their risk to the market.

- **Bank / swap dealer ownership of SEFs is also restricted** – The CFTC rule restricts individual member ownership in a SEF to 20% of voting equity, though does not limit the aggregate share held by members, allowing potential joint-owned, industry SEFs.

Current market structure favors large bank dealers, but will change under new rules. The current primary trading models are bilateral voice and single-dealer electronic, which provide customized service to clients, but not much price transparency. This is likely to change – especially in the US – as the market adapts to new regulations. Volume is expected to shift to electronic-RFQ style systems where multiple dealers “plug-in” and provide liquidity. Competing players may also introduce central limit order book style markets, which could have significant impact on dealer profitability. In Figure 70 we show the four main types of market structures for trading OTC derivatives (excluding dealer-to-dealer via interdealer brokers) and discuss each type below.

- **Bilateral OTC voice trading** - The OTC derivatives markets offer clients high customization and deep liquidity to execute large trades with a phone call. Trades are done bilaterally and the dealers act as principals using balance sheet and thus, it has been a good source of revenue/return for the industry. Bi-lateral voice trading will not qualify as a “SEF” under the new rules, with the only exceptions being trades that are exempted under block trade rules.
- **Futures** - Futures are exchange traded derivative contracts, which offers very fewer but standard contracts types, small ticket sizes and relatively lower volumes. For futures, when dealers act on behalf of clients, they act as agents to the exchange, rather than as a principal counterparty. Dealer revenue from futures is very small though, since the exchanges have been unable to take share from the OTC markets since futures cannot offer the customization and large block executions that clients get in OTC markets. Often dealers are thought to “pay” rather than “earn” futures commissions, as this is one market used to lay off risk acquired via their larger volume of client OTC trades.
- **Electronic OTC trading** – Currently electronic trading is conducted via two main types of platforms, single-dealer and multi-dealer. Existing single-dealer platforms can include either request-for quote architecture (i.e. a client electronically sends a request for quote for a specific trade order to a dealer and the dealer responds electronically with an executable price) or executable streaming quotes (i.e. screens which flash tradable quotes of a given product at “X” price up to “Y” trade size). Multi-dealer electronic platforms are typically request-for-quote structures, though players have been experimenting with new structures.
 - **Single dealer electronic platforms** – Single dealer platforms like Autobahn or BARX offer clients ability to execute via limited streaming quotes or via one-to-one electronic request-for-quote basis. These platforms however appear unlikely to be allowed under SEF definitions in the US.
 - **Multi-dealer electronic platforms** – Existing platforms include Bloomberg, TradeWeb and MarketAxess. These electronic systems allow clients to electronically request quotes and execute trades via multiple dealers. Interfaces are in transition and are not totally integrated; yet, for example, on Bloomberg, clients have the option to go to each dealer’s “page” on the Bloomberg terminal (called single-dealer pages) or via an electronic request for quote system. Electronic CDS is tradeable via single dealer pages for single name, index and sovereign CDS today. Electronic IRS can be executed via single-dealer pages or electronic quotes today. Soon, Bloomberg plans

launch aggregated electronic SEF trading where clients can electronically trade or request a quote via a single aggregated screen which will show firm prices and the liquidity stack from multiple named dealers.

One issue with multi-dealer platforms will be the extent of pre-trade transparency created by minimum request for quote rules (5 as proposed by the CFTC). The greater pre-trade transparency, the greater the risk to the dealer winning the trade as markets may move against the dealer in anticipation of risk needing to be laid off into the market.

We believe multi-dealer electronic RFQ platforms are likely to be the initial dominant SEF style venue, though competition may erode this overtime. The level set by regulators on block trade exemptions – which would exempt a large trade from required SEF trading and could instead be executed via bilateral voice – will also be important factor on the size of multi-dealer RFQ platforms. The higher (tougher) the block trade exception threshold, the more volume that will get pushed to SEF/RFQs style trading.

- **Central Limit Order Book (CLOB)** - A CLOB works like a centralized exchange of all outstanding firm executable quotes. Quotes are fully visible to all parties. The quote provider on a CLOB has anonymity and fully commoditizes pricing vs prior relationship based models. The challenge will be for these venues to gather liquidity as dealers are unlikely to offer significant liquidity on these platforms, given narrower bid/asks and inability to control the interaction with the client.

Structure of the dominant SEF platforms will have significant impacts on bid/ask and liquidity. As shown in Figure 70 we see differing platforms capable of providing varying liquidity and bid/ask implications.

- **Multi-dealer electronic trading venues (RFQ systems) supported by bank liquidity providers will compete w/ central limit order book markets** – While voice and RFQ systems meet the demands of large clients that prefer to be known to their dealers, high frequency electronic traders / market makers would likely prefer to execute on central limit order books, which provide greater anonymity and operate with significantly lower bid/ask. The key issue is these new high-frequency traders which add volume – really act as new market making liquidity providers, in competition with liquidity provided by dealers, rather serving as a new meaningful source of volume and customer revenue for the banks.
- **Dealers likely to resist CLOB markets due to thinner spreads and prefer RFQ-style models that preserve relationships** – Given banks have the liquidity to execute larger orders, there is likely to be significant resistance to switching this liquidity over to central limit order book trading models where relationships can not be preserved given anonymity of posted quotes. RFQ models may allow dealers to maintain bid/ask spreads for small to medium sized trades modestly wider and maintain closer contact with clients. Central limit order books are likely to have much tighter bid/asks especially for the smallest trades, which we expect will exert downward pressure on the pricing of all swaps across all platforms. Additionally, for smaller trades, dealers could lose share to new central limit order book market structures. In order to avoid seeing volumes exit to new platforms where dealers have no participation, we could envision dealers eventually trading on central limit order books as well, in addition to offering liquidity on existing platforms.

Comparing OTC Derivative Trading Structures

Figure 70. New OTC derivative market structures will shift volumes to multi-dealer, electronic, and lower profit venues.

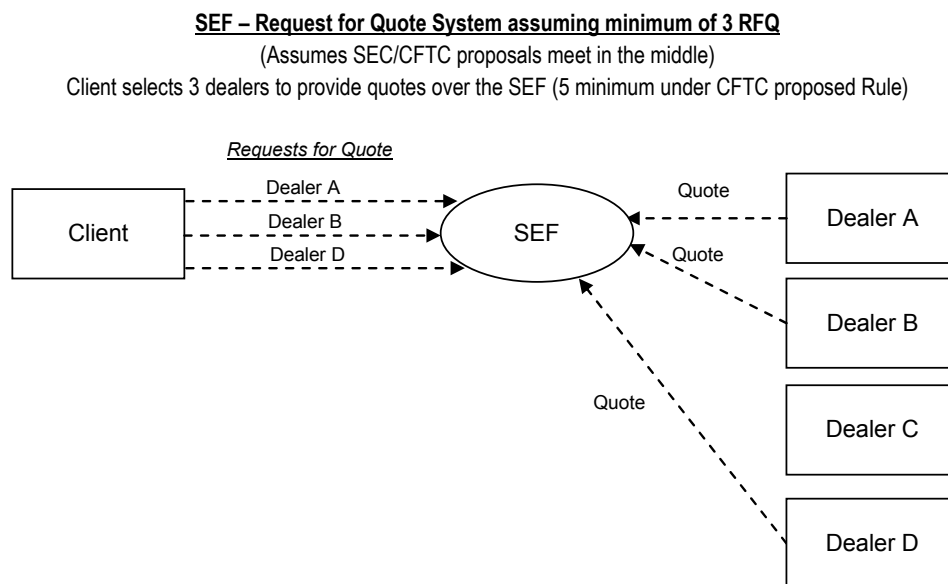
As the industry volumes shift farther to the right, the greater challenge to bank profitability...
...Plus overall profitability across all trading methods compresses on lower electronic bid/ask

Method	Bi-Lateral Voice Trading	Single-Dealer Electronic	Multi-Dealer Electronic	Central Limit Order Book
Est Dealer Profitability	High	Medium	Medium	Very Low
Qualify as SEF?	No	No	Yes (First method likely to gain sizeable amount of tradable volume)	Yes (May struggle to attract liquidity)
Dominant Trading Method Used/Expected	Dealer to client direct Voice call (bi-lateral)	Dealer to client via platform Streaming Quote System (Quote for X price up to Y size, w/ right of "last look" to refuse trade)	Dealer to client via platform Electronic-RFQ systems Not Anonomous Trading	Any to any via platform Central book of resting quotes Firm executable quotes Anonomous Trading
Platform Sponsor	Banks/Dealers	Deutsche Bank's Autobahn Barclay's BARX, or bank "single-dealer" page on platforms like Bloomberg	Bloomberg, Tradeweb, MarketAxess and Interdealer Brokers	Intedealer Brokers/ New Entrants Existing multi-dealer SEFS & New/Existing Exchanges
Liquidity Sponsor	Banks/Dealers	Banks/Dealers	Banks/Dealers	Anyone w/ access, clients banks/dealers, electronic-only market makers
Usage today	Dominant trading method	Significant 0-15% of overall flow (ranges widely dependent on given bank's platform)	Credit - Rapidly growing volume for index CDS (~40% of customer flow on DTCC traded on Bloomberg today) Rates - Bloomberg & Tradeweb 5-10% of flow in Rates - plain vanilla swaps in € and \$ at benchmark tenors	Not widely used but some upstarts No major interest rate swap or index CDS CLOB today May struggle to attract liquidity Some interdealer brokers have systems that "resemble" CLOBs but do not offer firm quotes
Clients	Asset Mgrs, Ins Cos GSE's, Pensions, Banks Gov'ts, Corporates, Hedge Funds	Asset Mgrs, Banks, Internal trading desks at banks (e.g. correlation hedging) Hedge Funds	Asset Mgrs, Ins Cos Pensions, Banks Hedge Funds & Internal trading/ hedging desks at banks	Initial participants likley smaller algorithmic or high-freq traders, eventually followed by clients from bi-lateral voice or multi-dealer electronic
Market Structure	Principal	Principal	Principal	Agency
Trade Size	Full Spectrum - Small to Very Large	Small to Medium	Small to Medium	Likely Very Small to Start
Bid/Ask	Same for small & medium sized trades, & little wider for very large trades	Same for small & medium sized trades, & little wider for very large trades	Same for small & medium sized trades, but reasonably wider for very large trades	Incredibly tight for smaller trades, but widens faster and much more for med & large trades
Bid/ask across all platforms likely to be compressed by electronic trading				
Liquidity	Very Deep, non-continuous trading	Relatively deep Continous pricing	Relatively deep Continous pricing	Very thin - expected initially Allows frequent small trading
Price Transparency	Low	Medium	Medium	High

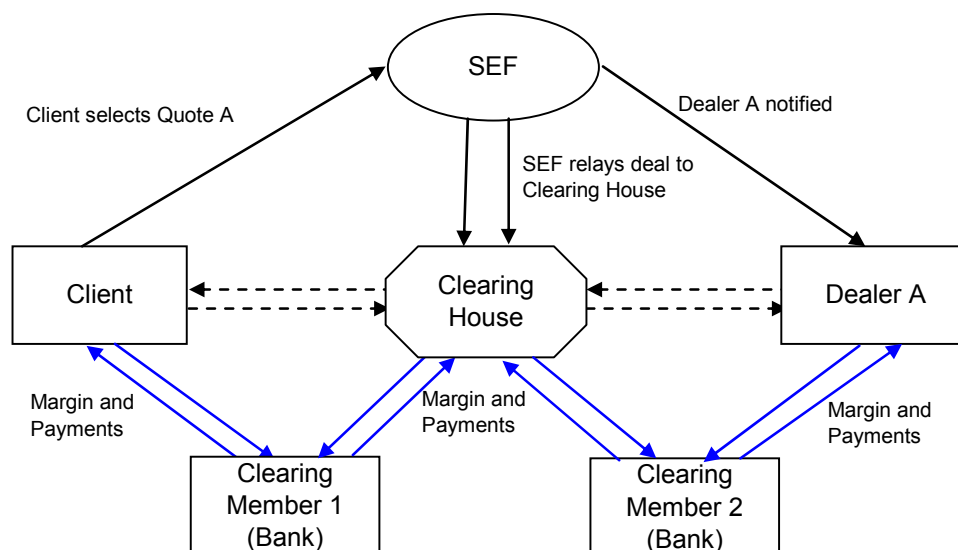
Source: Citi Investment Research and Analysis

Potential Swap Execution Facility Structure

Figure 71. Potential SEF structure and operation post Dodd Frank implementation



- SEF – Trade Execution w/ Non-Bank Dealer A**
- 1) Client selects quote from Dealer A.
 - 2) SEF relays the deal to the clearing house, which checks with Clearing Broker on limits.
 - 3) Dealer A sends Margin to its Clearing Member (Bank), which sits in front of the Clearing House.
 - 4) Note that Dealer A and the Clearing Member may be the same party (e.g. Bank)



Source: Citi Investment Research and Analysis

Outcome of harmonizing SEC and CFTC rules is a key unknown

Exchange Trading implications still uncertain given proposed rules from the CFTC and SEC not yet harmonized – Once derivative clearing mandates are set, standardized derivatives that are capable of being cleared must also be traded on exchanges or swap execution facilities (SEFs) which have yet to be fully defined.

- **CFTC and SEC rules are separated on whether swaps should be principal or agency business** - The SEC definition of SEF's would keep the cleared swap market closer in line with the principal model for broker dealers, placing value on relationships and services, versus the CFTC's rule that would move the market closer to a central order book (similar to the futures market) or an agency-execution request for quote style-market. The differences between the proposals are summarized in Figure 72.

Figure 72. Summary of key differences between CFTC and SEC proposals for SEFs

	CFTC Proposal	SEC Proposal
	<i>Agency-leaning Model</i>	<i>Principal-leaning Model</i>
Draft Rule	Dec-10	Feb-11
SEF	Centralized Book or multiple RFQ system	RFQ system (multiple to multiple)
Quotes	5 Req for Quote <u>minimum</u>	1 Req for Quote allowed
Public Trade Dissemination	30 min after trade completion in Year 1 and 15 min after. (Rule Final)	N/A
Required Trades (Non Block, non-exempt)	15 Second delay	No delay
Permitted Trades	Very high threshold to get block trade exemption from SEF trading	N/A
Coverage Universe	Rates Credit Indices, Commodities Interest rate swaps non-exempt FX	Single name CDS Security-based swaps

Source: Citi Investment Research and Analysis

- **Agency-like SEF model could be damaging to revenues, with spreads squeezed long-term...** Should the most restrictive version of mandatory exchange/swap execution facility trading as proposed by the CFTC go through, it is likely to push the business closer to an agency model over the long-term. We see this driving bid/ask tighter on more liquid products (e.g. on the run interest rate swaps) - hurting revenues assuming volumes remain similar to current levels.
- **...But, initially we could envision a period of very low liquidity with wide bid/ask for large block trades hurting execution costs for clients...** In our

view the shift to tight bid/ask spreads under an electronic model is unlikely to happen overnight. Under the CFTC proposal, if clients are forced to show quotes to numerous market participants, dealers may increase bid/ask to accommodate greater risk taken – as more market participants could “pick off” trades and move the market against dealers. This coupled with greater post trade transparency could see very challenged dealer revenues as benefits of wider pricing are overwhelmed by lower volumes.

- **...And less liquid products may find the market freezes as few banks wish to take on risk** – As dealers find there is less incentive to take principal risk, the market for profitable, less liquid products will become more challenging to get pricing, and may freeze.
- **Market structure will likely migrate to RFQ-systems as existing single-dealer platforms will no longer be allowed** – Unlike an exchange model which operates under a centralized order book, SEFs seem most likely to operate under request-for-quote (RFQ) approach, though central order book structure is allowed. A central order book functions like a database centralizing all firm outstanding orders in single place.
 - **Central limit order book is allowed by CFTC but seems unlikely to be widely used by bank dealers** – This type of market functions like a database centralizing all firm outstanding orders in single place. Central Limit Order Books provide both a hard price and specific quantity at each price, which is beneficial in many liquid markets, which typically use the approach (e.g. equities, FX). We expect that some SEFs will offer this approach in an attempt to attract new automated and high-frequency traders.
 - **Request for Quote model seems most likely for SEFs... the question remains what is the minimum RFQ requirement** – In an RFQ model requests for prices are placed in decentralized fashion by clients either by one-to-one requests or via a central system which forwards quotes to dealers. Under the CFTC proposal clients would be required to send a quote request to a minimum of 5-dealers, while the SEC model proposes single dealer requests should be allowed.
 - **If more than 1 RFQ is required for trades the size required for the block exemption is important for banks** – If the CFTC does not back down and follow the SEC approach of a minimum of one quote through a SEF, banks will be highly sensitive to the size at which the block trade exemption applies (where off-SEF trading would be permitted). The block trade exemption will allow dealers a much longer window before public dissemination of the trade details than the 30 minutes for non-block trades. As a result, a lower size limit for block trades would be beneficial to dealers.
 - **CFTC’s block trade level has moved lower in recent proposals** – On February 23 the CFTC proposed block trade limits across five asset classes be set at 67% of notional size based on 12 months of data, though is said to have considered lower thresholds. By way of comparison, the original draft rule had set the notional level at 95%, combined with a second ‘multiple’ test. Within asset classes the rule will be broken into further categories by tenor and also by currency (interest rates) and spread (Credit), creating 24 interest rate categories and 18 credit categories. While the change is a positive development and offers tangible evidence that the regulators listening to feedback from the banks, we note that at the 67th percentile only 6% of

interest rate swaps and credit swaps are expected to be block trades based on current market data.

- **Significant dealer opposition to the CFTC SEF proposal with concern that too much transparency will hurt market making** – The CFTC proposal for 5 RFQs has been highly opposed by dealers for fear that it would expose the size, price and side of a positions to other traders. Combined with a requirement for the trade to print on the consolidated tape within 30 minutes, this creates a risk of loss to market makers as other traders would immediately position against a known large position holder.
- **Though some models pushing towards a Central Order Limit Book approach over time seem likely** – While we expect that the industry will look to remain on an RFQ model, demand from high frequency and algorithmic traders entering the business will drive the creation of some CLOB SEF's. Due to the tight pricing on small trade lots, it is possible that the central limit order book model will gradually attract increasing liquidity over time.
- **A further question is will the higher volumes from electronic trading be seen in OTC dominated markets like interest rates?** According to the Feb 2011 IOSCO report in OTC markets 69% of Rates contracts 63% of Credit contracts and 83% of Equity contracts are traded bi-laterally – either via voice, email, instant message or on single-market maker platforms, with the remainder traded on multi-lateral OTC platforms. Given these levels, it is not surprising that OTC markets have also yet to adopt much electronic trading with 88% of rates, 83% of credit and 86% of equity OTC derivative trades executed by voice vs electronic execution (including single-dealer and multi-lateral platforms).

Figure 73. OTC Derivatives market has significant differences vs Listed Futures

Characteristic	OTC Swaps	Listed Futures
Trading Counterparties	<1,000	>>100,000
Retail Participation	None	Significant
Daily Trades	<20,000	>1,000,000
Tradable Instruments	>>100,000	<1,000
Trade Size	Very Large	Small
Market Structure	Bilateral (OTC)	Exchange

Source: ISDA

Final verdict on Single-Dealer platforms will have a significant effect on some players

Single-dealer platforms have become strong captive revenue sources for some banks – Strong single-dealer trading platforms have become a clear competitive advantage for some market participants, enabling them to gather a large amount of client flow and to differentiate themselves from competitors. If the final SEF rules in the US disallow single dealer platforms, or if final OTF rules in EU

prohibit the use of dealer's own capital on European OTF platforms, this could significantly hurt the revenues of firms with the more dominant single-dealer platforms such as Barclays (BARX), Deutsche Bank (Autobahn), or Goldman's multi-product electronic trading platform.

- **Single-dealer models are not included in US proposals** – Under the CFTC's proposed rules for the US markets, many of the trading platforms prevalent today would not qualify as SEFs as they are not seen as able to trade swaps by accepting bids from multiple participants. Non-qualifying methods include single-dealer systems such as: 1) an electronic order platform where multiple clients trade with a single-dealer or 2) bi-lateral phone/email/instant message transactions between clients and one dealer. Under the SEC proposal a bilateral voice trade also appears to be prohibited – though a client could choose to request a quote from a single-dealer through an RFQ system if that system allows access to multiple dealers.
- **Dealers believe that single-dealer platforms can be re-configured to interact with SEFs...** It was reported that Deutsche Bank had considered the spin-off of its successful Autobahn platform before concluding it would instead compete directly with multi-dealer platforms like Tradeweb. More recently GS has been reported to be preparing to spin off its REDI electronic trading software unit to allow multi-dealer capabilities. Dealers are also looking to turn their electronic platforms, in which they have invested hundreds of millions, into SEF aggregators that will operate on a commission basis. In theory a SEF aggregator would be a dealer-run portal that provides electronic access and trading across a variety of SEF or OTF platforms.
- **...Or remain hopeful that single-dealer platforms will still be allowed in certain jurisdictions like Europe** – OTC derivative trading rules in Europe seem to point to less prescriptive rules than in the US, but nothing yet can be said for certain. European rules are still at a very early stage and subject to negotiations between legislators and market participants. Below we highlight two key observations.
 - **In Europe, there are significant questions regarding the proposed restriction on the use of banks' own capital** – A key uncertainty in Europe are proposed restrictions that would prohibit an OTF provider from using their own capital to execute trades. In this event, bank operators of single-dealer OTF platforms – even if technically allowed - could face new prohibitions on committing capital to transactions, which could effectively eliminate single-dealer platform viability. This has led some banks to consider converting existing single-dealer platforms into aggregators of third-party run OTFs.
 - **EU may allow greater discretion over execution methods vs the US, including voice brokerage** - The European rules may allow European banks to continue traditional bi-lateral voice trading as long as a broadly defined measure of best-execution is met, requiring banks to then clear voice trades on the back-end. This discretionary matching could help EU banks preserve client relationships and bid-ask spreads, and may give European firms some competitive advantages when dealing with non-US clients. This contrasts to the more restrictive execution methods for SEFs, requiring RFQ or CLOB venues for non-block trades, the former of which could lead to more pre-trade information leakage, and the latter of which would make trading more anonymous.

SEF and CCP Ownership and Control by Banks will be Limited in the US

SEF and Clearinghouse ownership and control rules - In the US, bank ownership restrictions of SEFs and exchanges will be determined by rule-makings from the SEC and CFTC, as they were not specified in law under Dodd Frank. Rules will set forth limits on ownership/control (defined as voting equity ownership) of SEFs, exchanges and clearinghouses as well as minimum levels of board independence.

- **Ownership of SEFs (based on proposed rules) capped at 20% per bank** - For SEFs and exchanges, the CFTC and SEC have proposed consistent rules capping *individual* firm ownership of SEFs and exchanges at 20% by any member or participant. Importantly, there is no proposed aggregate bank SEF ownership limit, so theoretically five or more banks could share economic ownership of a SEF or exchange.
 - **SEF independence rules.** Aggregate bank control of voting rights for SEFs or exchanges, however, would be limited by independence requirements for the Board of Directors, which require at least 35% of SEF/exchange board composition to be independent, public directors.
 - **Industry comment letters show opposition to 20% individual firm limit on SEF ownership** – In a Dec 2010 comment letter filed with US regulators signed by 13 of the largest global securities dealers, the group opposed the individual ownership limits on SEFs which would “impede innovation and competition in the emerging marketplace for swap execution.”
- **Clearinghouse ownership rules tighter** – Proposed rules limiting participant (e.g. bank) ownership and control of clearinghouses are stricter than those set forth for SEF/exchanges as clearinghouses participants will have both individual and aggregate limits. As proposed by the CFTC and SEC, there are two possible regimes: 1) Individual member (i.e. bank) ownership of clearinghouses capped at 20%, and aggregate bank ownership capped at 40%; or 2) Individual member ownership capped at 5% with no aggregate threshold.

CFTC and SEC swap execution facility rules

CFTC proposal, issued Dec 2010, would require significant changes to how dealers to business today.

CFTC proposal – Rules would require participants trading on request for quote systems to transmit orders to a minimum of 5 possible counterparties.

- **Block trade exemptions under CFTC method determined on two trade types**
1) “Required” trades and 2) “Permitted” trades – Required trades would be mandated for clearing and execution, while permitted trades would include block trades, exempt end-user trades and illiquid or non-SEF eligible bespoke trades.
- **“Required” trades mandate that SEF dealers are subject to a 15-second delay on offsetting trades.** This rule has also caused significant concern among dealers worried how such a delay would impact the market when combined with the 5-RFQ minimum. The concern is that this would expose dealers to price risk as other traders could recognize and position against the trade, particularly on liquid products. This could have the impact of creating worse pricing for investors.
- **Block trades exemptions not yet set, but appear too low to protect exempt much activity generally considered block trading** – Block trades are not

defined in the CFTC rules, but based on proposed rules appear only to apply to very small portion of swaps traded, so the exemption to SEF rules appears small. The CFTC recently postponed its block trade definition based on industry feedback, with the intention of setting different limits for different asset classes.

CFTC rules on trade disclosure

- **Within 2 years cleared trades must be publicly reported within 15 min – which may reduce dealers' ability to hedge.** In Jan 2012 the CFTC adopted rules regarding mandatory time frames for public disclosure of the primary economic terms of swap trades. Mandatory cleared trades will be subject to 30 minute disclosure in the first year – which shortens to 15 min in year two. Uncleared trades where one party is a swap dealer or major swap market participant will be subject to an hour for most asset types, while commodities get 4 hours in the first year of adoption. These times are then cut to 30 min and 2 hrs in year 2 and beyond. Where no party is a dealer or major participant the requirement varies between 24 and 48 hours in year 1 depending on product and drops two 30 min and 2 hours over 3 years. The key question that remains is if in practice this disclosure puts dealers who execute a large trade at a disadvantage to market participants when exiting/hedging the position. To the extent this is true – it could hurt market liquidity.

SEC proposal issued Feb 2011, would drive changes, but appears less disruptive vs current business practices than CFTC proposal.

SEC proposal

- **SEC definition of SEF only requires minimum of one request for quote –** Under the SEC proposal a SEF is defined as a platform where participants can send multiple requests for quotes to multiple liquidity providers – but the client would also have the option of sending a quote to only one liquidity provider. Note traditional bilateral negotiation would not qualify as a SEF, nor would an aggregated single-dealer platform where participants could only request a single provider quote one-at-a-time.
- **No 15-second trading pause or Block Trade Exemptions requirement.** The SEC proposal does not include any required delay between trades or offer exceptions for permitted block trades.
- **SEC proposal also includes similar 15 minute trade disclosure requirements.** – While the SEC has not specified a time within which trades should be disclosed, it notes that rules for less complex securities such as municipal bonds are subject to a 15 minute lag.

Basel 2.5 – Market Risk Rules

Figure 74. Basel 2.5 impact will be the larger driver of higher RWAs for big banks than Basel 3 – as JPM forecasts show

JPM RWA inflation Basel 2.5 vs Basel 3		
	RWA Inflation	
	\$	%
Basel 2.5 RWA impacts	410	37%
Mkt Risk Impact	180	16%
Risk Weights at 1250%	140	13%
Basel 3 RWA Impact	60	5%
CVA	30	3%
Other Basel 3	30	3%
Total	470	43%
Basel 1 RWA	1,100	

Source: JPM. (Estimates as of 2Q10 estimates shown due to greater granularity of RWA gross up).

What is Basel 2.5? “Basel 2.5” in simple terms is a new capital framework for banks’ trading portfolios which broadly falls under the umbrella of market risk. Basel 2.5 was first proposed on July 13, 2009 via the “Market Risk Framework” which adds new methods to calculate risk capital required including Stressed VaR, Incremental Risk Charges and re-securitization charges. The rules build upon Basel 2 – which at the time of announcement was in practice only in Europe, as the US was and still remains under Basel I.

US Banks could jump from Basel 1 to Basel 2.5 rules as soon as early 2013 –

The US was supposed to move to Basel 2.5 on Jan 1, 2012 alongside Europe; however, the US has been delayed. With the revised notice of proposed rule making arriving late Dec 2011, and a comment period due in early-Feb, required time for regulators to digest comments and issue final rules, plus minimum 60-day window from when rules go live after they are published in the Federal Register, plus added time banks will need to modify processes and comply – we see banks going live with Basel 2.5 on Jan 1, 2013, if not slightly after that.

- **Using JPM as an example, one can see that the impact for Basel 2.5 is significant.** In Figure 74 we show the estimated increase in RWA from Basel 2.5 and 3 for JPM (before mitigation). JPM estimates that Basel 2.5 will drive a 37% increase in RWA, vs the current Basel 1 rules, broadly evenly split between market risk impact and the dollar-for-dollar 1250% weight. In comparison, Basel 3 is only expected to increase RWA by 5%.

Basel 2.5 will drive higher RWAs across banks’ trading portfolio

Compared to the Basel 1 framework used by US Banks, Basel 2.5 will bring increase in capital charges through including higher market risk stresses (stressed-VaR), incremental risk charges that vary across products and aligning rules for the trading book and banking book for securitization. Under the initial Basel 2.5 proposal, lower rated tranches of securitizations and re-securitizations receive particularly punitive treatment

Below we discuss how the original proposal will impact banks globally and then address unique implications of US implementation in point 2 – which impacts three areas of the trading book 1) non-securitization positions, 2) correlation trading books and 3) securitizations.

- **Non-securitization positions (e.g. cash bonds, spot FX and commodities) will see a very material increase in RWA of 3-4x compared to prior rules.** Basel 2.5 says “non-securitization” trading assets will get risk weightings based on risk as measured by 3 main factors: 1) VAR measure to cover asset specific volatility, plus 2) a stressed VAR calculation that uses a 12 month period of market turmoil to cover risk above the 99% confidence interval used for standard VAR, as well as 3) an Incremental Risk Charge to cover potential losses from downgrade or default for credit dependent instruments like bonds or CDS. Since physical commodities do not have credit default risk they do not receive the IRC (incremental credit risk) charge component of RWA. Consequently, the RWA for commodities will increase approximately by a factor of 2-3x relative to the current standards (assuming a bank has approval to use an internal model) instead of the 3-4x that would occur overall for the non-securitization portfolio.

- **“Correlation trading” – where RWA will increase even more.** Correlation trading as defined by Basel rules is a relatively broad concept applying to

securitizations on corporate debt. This includes Collateralized Loan Obligations (CLOs) where banks buy corporate loans, securitize them and sell the packaged security to investors. It also applies to Correlation trading, which is tranching-credit trading via portfolios of derivatives. A typical correlation trade could involve providing a client exposure to a first-loss piece of an IG credit index via a customized swap – a trade the bank would hedge its exposure from a pool with various other credit risks.

Basel capital calculations for correlation trading use the same methods applied to all trading assets, but add an extra charge for changes in the correlations of assets and the basis risk from hedging strategies. This is accomplished via the added CRM “comprehensive risk model” charge. But the calculation is subject to a minimum floor of 8% based on the more onerous standard method – which tends to considerably limit the benefits using internal advance models – as the large CRM charge dominates the calculation.

- **Securitization Exposures rules are very punitive with non-IG bonds requiring dollar-for-dollar capital.** Initial Basel 2.5 proposals allocated charges for securitized exposures based on the ratings - with the most severe weights for securitization tranches that are unrated or rate BB- or below (assigned 1250% risk weight).
 - **This is especially tough for legacy positions such as former AAA-rated CDOs that are now low/junk rated** – even if the securities have been significantly marked down to market value.
 - **For SIFI/G-SIB firms capital charges could exceed exposure amounts** – Note that for banks that are deemed systemically important and require capital buffers pushing minimum Tier 1 common ratios over 8%, a 1250% RWA is equivalent to capital charge that is greater than the total exposure value. Even so, we would expect this penalty could be adjusted down post comment period to a dollar-for-dollar capital given changes in regulatory language seemed to be an unexpected side effect of a convention change vs a new requirement.

The US version of B2.5 will use a unique set rules that do not rely on credit ratings

The recent “NPR” on B2.5 appears to more harshly calculate RWA vs prior global BIS rules for corporate debt and high grade securitizations, and may disadvantage US banks vs int’l peers

US rules will be different as regulators try to “fix the ratings issue” – Dodd-Frank Act prohibits US regulations from requiring banks to use of rating agency ratings, causing US bank implementation of Basel 2.5 to rely on a totally different methodology than global peers. Under Section 939 of Dodd-Frank US banks must move away from using capital calculation methodologies that rely on external rating agencies such as S&P or Moody’s. This provision conflicted with BIS methods under Basel 2 and Basel 2.5 that require greater capital allocation for credit securitization exposures that have lower ratings.

On December 6th, the US regulators published a Notice of Proposed Rulemaking (NPR) that provides guidelines for estimating the capital charge for market risk in the US. The NPR is currently open for comment through Feb 2, 2012 and will likely take 6 months or more before it is finalized.

Overall the NPR will impact the same 3 areas of the trading book as the original Basel 2.5 international rule set: 1) Non-Securitization trading books, (Corporate bonds with special treatment for financial institution exposures and Sovereigns). 2) Securitization positions and 3) Correlation trading books.

- **Corporates, FIG and Sovereigns calculated under the ‘standard approach’ will see somewhat tougher rules** – Assuming RWA for these positions are not calculated the advanced VaR model-based approach – the new rules look more onerous vs internationally ratings-based methods. For example, corporate exposure under the US NPR would result in many investment grade positions treated similarly to non-investment grade bonds under international rules due to onerous debt-to-asset ratio tests. This would effectively treat 80% of the CDX IG index as non-investment grade, raising risk weights on these positions from ~20% to ~100% and as high as 150% in some cases. Prior expectations under the original Basel 2.5 proposal likely assumed stable risk weightings.
 - **...But most banks will eventually shift to advanced models so problems with the standard approach for these exposures are temporary issues.** Importantly – the US rules discussed above for Corporates, Financials and Sovereigns only apply when banks are using the standard approach. For firms using model-based methods – which is expected for most large US banks – this punitive treatment will not likely create long-term disadvantages.
- **Securitizations under the US Basel 2.5 NPR get calculated under the “Simplified Supervisory Formula Approach” which appears tougher than international rules** – The Simplified Supervisory Formula Approach (SSFA) method measures RWA using several components: 1) A “look-through” to the underlying assets securitized and then a weighted average calculation of the capital required under Basel 1; 2) Tranche attachment and detachment points, and 3) Cum losses already suffered on actual outstanding securities.
 - **Punitive treatment of securitizations in the US has been one of the banks’ greatest competitive concerns with the B2.5 NPR** – Given securitizations are not eligible for model-based RWA calculation, and differences in rules are likely to create competitive differences, this is the area under Basel 2.5 that industry experts have been most concerned about.
 - **Under the Fed’s NPR the minimum RWA “floor” for lower-risk securitizations will be 20% vs 7% for global competitors...** For senior securitization positions under the old rules banks could have a minimum 7% weighting for AAA-rated security or 12% for single-A rated securities. But, under new rules the lowest securitization risk weight is 20% – implying up to a 3x increase in RWA’s for higher quality securitizations. This means banks’ higher-rated securitization portfolios could see larger impact from US NPR versus international rules.
 - **...But note that international rules may be stiffened to meet the new US 20% floor.** According to recent FT report, this difference may be ironed out as the Basel group adjusts weightings in international rules.
- **Correlation trading – Key issue remains international alignment of floor-based charges vs US surcharge method** – For correlation trading portfolios international banks are will use a comprehensive risk measure (CRM) to calculate charges for correlation trading – with a model-based alternative to the standard approach likely to be less punitive. The international model based-method however is subject to a minimum floor calculated as 8% of the standardized charges. This floor is expected to typically dominate the calculation, overriding much of the benefit from models. US firms will however, will be subject to a different methodology which appears tougher than the international version. The US B2.5 NPR uses a CRM model plus a 15% surcharge (based on the standardized charges), rather than the floor.

In summary, the impact from the US NPR implementing Basel 2.5 appears to be worse than international Basel 2.5 rules in several ways:

- **Higher quality securitizations** - get new higher minimum capital requirements of 20% vs 7% prior, while low quality securitizations still receive punitive 1250% weights. We see this as the biggest negative from the NPR.
- **Corporate positions** - get more punitive treatment due to more securities getting treated in similar fashion to below investment grade rated positions due to tough debt-to-asset tests – but only under the standard method, so this issue goes away as firms switch to models.
- **Sovereign and financial positions** - may also be more punitively treated, but final rules have not been calibrated, so it is difficult to say. Additionally, this applies only under the standard method, and goes away as firms switch to models.

Varying progress toward using internal RWA modeling may produce advantages for some

US banks will have the option to calculate market risk assets via the Advanced Approach (with internal models) or via the Standard approach. To understand the impact of Basel 2.5 and the new NPR one must also consider how RWAs are currently calculated – either via models or via the standard approach.

- **VaR models can be used in place of the more onerous Standard Approach for all assets except securitizations** – With approval from regulators, banks can calculate market-risk capital charges using internal VaR models – which broadly speaking allow for banks to more accurately reflect economic risks and thus justify lower capital charges than more crude rule-based methods. Models operate on an asset class or trading desk basis – so a firm with 50 different trading desks could have many desks/assets calculating capital charges by models while many others would be under standard rule-based methods.
- **All else equal, firms currently calculating a greater portion of their RWA under models will see smaller negative impact from the new US NPR than firms using the standard approach.** Assuming existing models once updated for new incremental risk charges and stressed VaR charges are approved, these firms will have at the least a first-mover advantage vs firms on the tougher standard approach. This is because the NPR does not supersede model based calculations, except for securitizations, assuming existing models can be updated and approved for future use.
- **Importantly, balance sheet composition is likely to be the biggest driver of RWA inflation from Basel 2.5** – More than the extent models are in use or not – the composition of the balance sheet and size of low-rated securitization exposures – given their extraordinary risk weight – is likely to be the biggest single factor determining which firm sees large RWA inflation from Basel 2.5.

Faster approval for internal modeling may be a near-term advantage, but proper economic risk pricing will determine long-term winners

“The Basel Committee leadership has acknowledged that failing to implement Basel III in a globally consistent manner could lead to a competitive race to the bottom and increase risks to the global financial system...[and] must develop a mechanism to validate the actual risk-weighted assets calculated by individual banks under international capital standards”

-Federal Reserve Gov Daniel K. Tarullo

6/16/2011

Greater approval to use internal VaR-based modeling may be advantageous in the short term, but real differences in risk management can only be seen long term – Internal models approach to RWA calculations allow banks to use more refined measures in their risk assessments, and in many cases offers significantly lower capital demands vs the standard approach. Greater regulatory approval for use of internal models vs peers may also create competitive advantages between firms to the extent they will allow the better pricing and management of risk, though this advantage will only be seen through-the-cycle as losses materialize.

■ **The advanced model approach will benefit banks by considering the risk in individual positions** – Models are able to consider multiple factors to decide the risk-weighting and capital for each an asset. This approach will benefit banks by using a risk weight that more accurately reflecting risks in individual securities, rather than applying a standard weight based on high-level categories as in the standardized approach.

– **And the best internal models may not mean the best pricing...** Developing the most advanced risk models will be a long-term benefit to banks, but will not necessarily be a driver for share gains or higher revenues. The best models will allow a bank to price risk more accurately creating an advantage through-the-cycle, with risk modeling more of a long-term advantage in making better informed decisions.

– **...While more aggressive models may allow banks to “buy” market share near term at mis-priced risks** – In fact, short-term gains in share may reflect more ‘aggressive’ models that overlook certain risk factors, with those banks giving-back share as they incur losses over a longer time horizon.

■ **So far, we believe some banks have made greater investments in RWA modeling than others...** Broadly speaking we expect firms will build risk models on top of existing models approved under Basel 1. Because former broker-dealers previously were regulated by the SEC, overall we believe these firms may have fewer model approvals than banks like JPM.

– **JPM and GS most heavily invested in modeling** – According to experts we’ve spoken with, we believe JPM and GS have invested the most in RWA modeling, though GS could see longer delays in approval process as they likely have hundreds of model approval requests pending – a process we believe could take several years to complete. Note because BAC had much smaller trading platform than Merrill, is now using much of Merrill’s infrastructure, and Merrill was also regulated under the SEC, we believe BAC started out behind peers like JPM in 2009 – so may still have significant opportunity to improve its use of internal modeling. And the sooner banks get approval for use of models, the sooner they can actively use models to mitigate RWA impacts.

Basel 3 – Counterparty Risk

What is Basel 3.0? Basel 3 includes an introduction of a new definition of regulatory capital (Tier 1 common), adds a new measure of counterparty risk to risk weighted asset calculations, called the credit value adjustment or “CVA”, and requires banks meet two new liquidity standards – one short-term liquidity ratio and one long-term funding ratio.

- **The new definitions of capital and new capital requirements begin phase-ins in 2013...** The other piece of Basel 3 is related to capital, which lays out a new definition of capital as well as capital requirements. Note that the changes in the definition of capital (including the limits on how much various items such as MSRs can count towards Tier 1 common) as well as the capital requirements will be phased in from 2013 through 2020.
- **....But the changes to counterparty risk exposure will be effective immediately during 2013.** Banks will need to account for new counterparty risk capital charges under Basel 3 related to trading counterparties. As credit spreads on the counterparties widen, the CVA charge increases which raises capital requirements, which can be minimized if banks hedge their CVA risk (e.g. buying CDS). The biggest driver of counterparty risk is from derivatives, and trades that are not margined (i.e. those done outside of central clearing) will see the harshest CVA charges.

Banks will see higher capital requirements for counterparty risk under Basel 3

- **Counterparty risk is reflected under US GAAP fair value accounting (FAS 157/159 and IAS 39) with hedging reducing P&L volatility...** Banks treat counterparty credit risk as a form of market risk by marking to market their bilateral CVA. The CVA charge is the reduction (increase) in the marked to market value of each derivative portfolio, by counterparty, as a result of counterparty's credit risk. Marking to market the CVA has introduced significant P&L volatility, which can be reduced by hedging of both 1) the sensitivity of the CVA to CDS spreads, and 2) the sensitivity of the exposure profiles to changes in market rates.
- **...And Basel 3 adds a further capital incentive to hedge counterparty risk.** Under Basel 3, counterparty credit risk will be captured in capital requirements, with an RWA charge added based on default risk and P&L volatility for counterparties (using VaR and stressed VaR). The change aims create an incentive for hedging counterparty risk, which had no capital benefit for hedging under Basel 1 and was treated similar to wholesale lending exposure.
 - **One downfall to the Basel 3 counterparty risk methodology is it does not appropriately reduce RWA for economic risk-reducing CVA hedges.** Under US GAAP, CVA volatility is created by four pieces, 1) changes in fair value of derivative assets, 2) counterparty credit spreads, 3) fair value of derivative liabilities and 4) a banks' own credit spread. Typically banks that actively hedge the economic impact will hedge components 1, 2 and 3, and may hedge 4 via a CDS index. Under Basel 3, RWA is only assigned to item 2 – the counterparty credit spread, and thus only hedges for the counterparty credit spread are counted as RWA offsets. Ironically, economic hedges for the other items (#1 changes in the derivative asset or #3 changes in liability values) are actually considered additive to market risk, and not CVA reducing – thus increasing RWA. This creates the paradox of whether banks should hedge for the economic exposure, or hedge for the lowest RWA.

- **CVA charges also can make hedging pro-cyclical** – Given the calculation of CVA uses market inputs, wider CDS spreads increase the need for CVA hedging by banks. As a result, as counterparty risk increases on an uncollateralized trade, say with a sovereign, it will drive greater need for CVA hedging and buying of increased CDS protection, driving spreads even wider.
- **Global differences in CVA exemptions may create un-level playing field** – To avoid pro-cyclical effects, EU regulators appear to be moving to deviate from international Basel 3 rules and exempt sovereign counterparties from CVA capital charges (with the March 2012 draft of the European Council's CRD IV adding an exemption for derivative trades with sovereign counterparties). In the US we still have not seen the official "NPR" proposal for Basel 3 (the rule-making equivalent of the EU's CRD IV draft), but a CVA counterparty exemption for sovereign counterparties is not expected by industry experts. Europeans regulators have also added proposed CVA exemptions for corporate end-users and pension funds into draft rules. To the extent certain jurisdictions exempt various counterparties like sovereign or state governments, pension funds or corporates, local champions may have advantage over international competitors.
- **Overall we estimate CVA charges will drive a 2-3x increase in credit risk RWA.** Note that RWA inflation from CVA charges are expected to be a much smaller component of total RWA – versus impacts from the recalculation of risk weightings for trading assets broadly (i.e. the market risk measure from Basel 2.5 as shown in Figure 74).
 - **CVA charges will increase most for transactions without margin** – Uncollateralized trades, which are typical corporate end-user transactions get the highest CVA charges under the rules – though corporate counterparties may be exempt in jurisdictions like Europe if proposed softening of rules goes through.
 - **Impact is largest for longer-dated un-cleared trades, with lower-rated counterparties...** Given how longer dated products are more sensitive to underlying price volatility, CVA is intuitively higher on longer-dated trades and for more volatile, lower-rated credits.

Higher capital charges will have implications for pricing un-cleared derivatives...

- **Basel 3 will make capital for un-cleared derivatives very punitive and should be reflected in pricing.** Unless banks are willing to accept significantly lower returns on the business, we would expect to see a significant impact on pricing for unsecured derivatives. *See Figure 79 for summary of the end-users decisions, under and implications for trade pricing, margins and dealer profitability.*
- **Capital charges on un-cleared trades will significantly impact corporate customers** – While corporate end users are exempt from initial margin requirements under Dodd-Frank, Basel 3 requires banks to hold increased capital against un-cleared trades, with incentives for hedging counterparty risk and collateralizing the trade (holding margin).
- **Assuming dealer can only partially hedge its corporate client counterparty risk, pricing would need to increase 3-4x (see Scenario 1)** – As shown in

Figure 75, for un-cleared derivative trades with exempt corporate end-users assuming: 1) no initial or variation margin and 2) banks could only hedge half of their counterparty risk via a CDS index as would be likely for a non-financial or middle-market corporate, then spreads for a 5-year interest rate swap with a A-rated counterparty would rise over 3x, or equal to about \$27K/yr higher cost on a \$100 million notional swap. (Note that these annual costs are embedded in the swap price via adjustment of the swap rate and are not a hard-dollar premium or fee paid).

- **This impact, however, falls significantly if banks can better hedge counterparty risk or if the client posts margin.** In scenario 2 in Figure 76 we show that prices would only rise about 35-55% (depending on the term) if banks can hedge client CVA risk with client-specific CDS. For 5-year interest rate swap with a A-rated counterparty the cost would rise by about \$10K/yr cost on a \$100 million notional swap.

Figure 75. Case Study Part 1: B3 rules on un-cleared derivatives for Corp End-User would cause prices to rise ~3x...

Price for Int Rate Swaps - Uncleared - Index Hedge			
	Current IRS Pay-Fixed Spreads (bps)	Scenario 1 Spreads Under Basel 3 Index CDS Hedging (bps)	Chg vs Current
5-Year	2.1	5.8	2.7x
10-Year	7.5	24.9	3.3x
30-Year	21.0	74.5	3.5x
\$100 mil 5-Yr \$/annum	21,250	58,000	
\$100 mil 10-Yr \$/annum	75,000	249,000	
\$100 mil 30-Yr \$/annum	210,000	745,000	

Source: Citi. Scenario 1 - Index hedging assumes CVA risk could be 50% hedged. Assumes banks need to earn 10% return on capital.

Figure 76. Case Study Part 2: ...But impact falls to 1.5x if CDS hedging used

Price for Int Rate Swaps - Uncleared - CDS Hedge			
	Current IRS Pay-Fixed Spreads (bps)	Scenario 2 Spreads Under Basel 3 Client-specific CDS Hedging (bps)	Chg vs Current
5-Year	2.1	3.1	1.5x
10-Year	7.5	11.5	1.5x
30-Year	21.0	28.7	1.4x
\$100 mil 5-Yr \$/annum	21,250	31,000	
\$100 mil 10-Yr \$/annum	75,000	115,000	
\$100 mil 30-Yr \$/annum	210,000	287,000	

Source: Citi. Scenario 2 - client specific CDS hedging assumes client CVA could be 100% hedged.

...Which may drive more flow to CCPs

The new Basel 3 rules are expected to encourage banks to execute new trades via central clearing given lower risk weightings and lower CVA charges, offset by a new but smaller charge for exposure to the CCP. While capital calculations for cleared transactions are subject to numerous technicalities, at the current stage proposed rules seem give greater weight to the extent of collateralization rather than clearing vs not clearing when determining capital – that make the greatest difference in how much capital must be held. Nevertheless, our view is regulators will ultimately calibrate rules to significantly encourage the clearing of products that can be cleared

- **Dealer revenues may get hurt as volumes shift away from higher-return, custom derivative products...** As capital requirements increase the cost of providing un-cleared, custom derivative solutions, alongside steep margin requirements for many customers, banks are likely to see lower demand for a service that historically provided strong returns.
 - **Alternatives for clients to achieve lower prices include corporate end-users opting to post margin for un-cleared trades** – In this scenario, clients would be able to receive better pricing, would have the benefits of customization, but also be subject to the liquidity costs of margin.
 - **Substitution in listed futures or cleared derivatives will be another option, driving a mix shift.** Substitution of custom hedges for cheaper listed hedging options such as interest rate futures may drive mix shift. But for dealers, these trades tend to be much lower margin agency trades. This may be somewhat difficult, however, given strict matching requirements to receive hedge accounting treatment.
 - **Alternatively, some corporates may chose to no longer hedge risks such as interest rates.** In the end, lower derivative trading volumes from some portion of the corporate end user population seems likely, as the costs related to margin or higher trade costs push some users out of the market.
- **And prices to clients could even decline (and dealer margins could improve) if clients are willing to post daily margin.** If the exempt corporate client in our example was willing to post daily variation margin as shown in scenario 3 in Figure 77, spreads could even fall dramatically – although it remains unclear whether most corporate clients are likely to be able or desire to post daily margin. One positive indicator that corporates might is the fact that cash on corporate balance sheets, at least in the US remain very high relative to history.

Figure 77. Case Study Part 3: ...and pricing actually improves with CDS hedging and if client posts margin

Price for Int Rate Swaps - Uncleared -Hedge & Margin			
	Current IRS Pay-Fixed Spreads (bps)	Scenario 3 Spreads Under Basel 3 w/ Margining & CDS Hedging (bps)	Chg vs Current
5-Year	2.1	0.3	0.14x
10-Year	7.5	0.9	0.12x
30-Year	21.0	2.1	0.10x
\$100 mil 5-Yr \$/annum	21,250	3,000	
\$100 mil 10-Yr \$/annum	75,000	9,000	
\$100 mil 30-Yr \$/annum	210,000	21,000	

Source: Citi, Scenario 3 - Assumes both client specific risk could be 100% hedged and the client agrees to daily variation margining agreement.

... And recent capital requirements for CCP cleared trades call into question the size of capital relief from clearing

Capital impacts from clearing are complex and depend on variety of factors including which role a bank plays in the transaction. While consensus sees clearing as source of capital relief, the offsets may be smaller than some envision depending on final formulation of new Basel 3 rules surrounding CCPs – as well as on your point of comparison. While a margined and cleared trade will have a much lower capital charge than an uncollateralized and un-cleared trade – it is not entirely clear that a margined cleared trade will have lower capital than a margined un-cleared trade.

Clearing Example – Through a simple example, we walk through the variety of capital charges. In Figure 78 we show a hypothetical cleared CDS derivative trade. Here we assign XYZ Capital as the client and GS is the executing broker. XYZ Capital, however, uses JPM as its clearing agent, which faces the CCP on its behalf. This cleared trade can be represented by three legs: 1) JPM facing XYZ as its clearing broker, 2) JPM facing the CCP on behalf of XYZ, and 3) GS facing the CCP. Capital charges are associated with each leg of the transaction for the banks involved.

Cleared capital rules put greater burden on the party facing the client than if they faced the client in a margined trade bi-laterally. The first component of the capital calculation in this trade is for JPM's exposure to XYZ Capital (client), which is calculated on a jump-to-default model plus a CVA charge (leg 1) which should be relatively low given margin contributions. This method is actually the same as if JPM were to have an un-cleared margined bi-lateral trade with XYZ Capital. In addition, JPM must hold capital for its exposure to the CCP for its contribution to the default fund (leg 2)⁷. Lastly the third leg of the trade between GS and the CCP has GS

⁷ Note: As originally proposed by Basel JPM would also need to hold an added "trade exposure" to the CCP at 2% risk weight – but we believe guidance from the FSA points to this somewhat contentious charge as being dropped as long as JPM does not guarantee the performance of the CCP to XYZ Capital, which is not a typical arrangement.

responsible for its trade exposure to the CCP plus its default fund contribution. It is also possible for JPM to be the executing broker and the clearing agent, which would tack on the 2% trade exposure to the CCP charge to its prior charges as just the clearing agent.

One key point is “agent-only” cleared trades produce higher capital requirements than trades where bank executes bi-laterally with the client (assuming both are equally margined) – reducing incentives to clear. One of the most ironic parts of the rules is that clearing banks see higher capital charges to clients who clear a trade with them than if the trade was bi-lateral, un-cleared and fully margined.

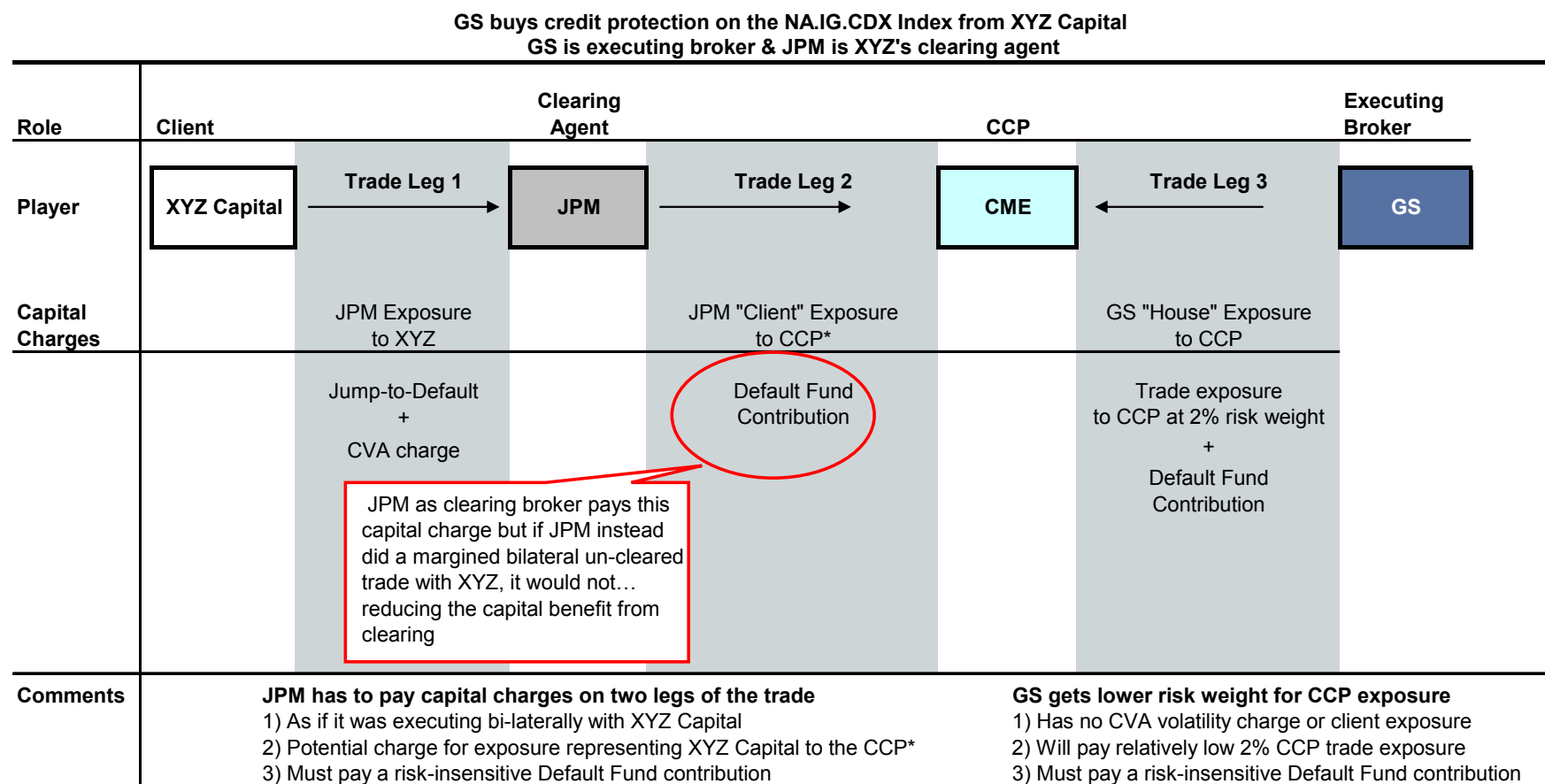
Capital charges for exposures to the Central Clearing Houses are new though relatively low at 2% risk weight. In November 2011, the Basel Committee issued a consultative document on central counterparty exposure that proposes the risk weighting for qualifying CCP will increase to a 2% risk weight, from zero under the Basel 2 requirements. On very rough basis we estimate the 2% RWA could apply to ~1.5% of notional values for trades over 5-years, though this could be reduced by diversification benefits of the portfolio.

Banks also will see new “default fund” capital charges to CCPs which are not risk-sensitive and may grow to large capital burdens overtime – Default fund capital charges use a crude notional-based method that risks producing large cumulative capital requirements overtime. The CCP default fund is designed to mutualize losses in the event of a CCP member default and the formula will be calculated by the CCPs and disseminated to the banks – however, final calculations have not been made, so it is tough to see exactly how severe this piece will be. As the current calculation takes net market value of the asset and adds on top a non-risk-adjusted notional-based figure, banks worry that over-time increasing outstanding swap trades (that could offset to near flat on an economic risk basis) will build up overtime, making this charge cumulatively significant.

Capital charges from client exposure from Jump-to-Default + CVA exposures are largely mitigated by initial margins – Client cleared trades still include a capital charge for the clearing agent banks in the event of client failure where the clearing agent would need to step-in. The calculation is based on a bi-lateral style model based on estimate of client’s potential jump to default times an obligor-specific risk weight plus CVA volatility – however, the impact is not likely to be very punitive because margin significantly reduces the CVA impact.

Capital Charges for Clearing Embed Disincentives vs Bi-Lateral Margined Uncleared Trades

Figure 78. Clearing can require more capital vs executing a bi-lateral un-cleared and margined trade

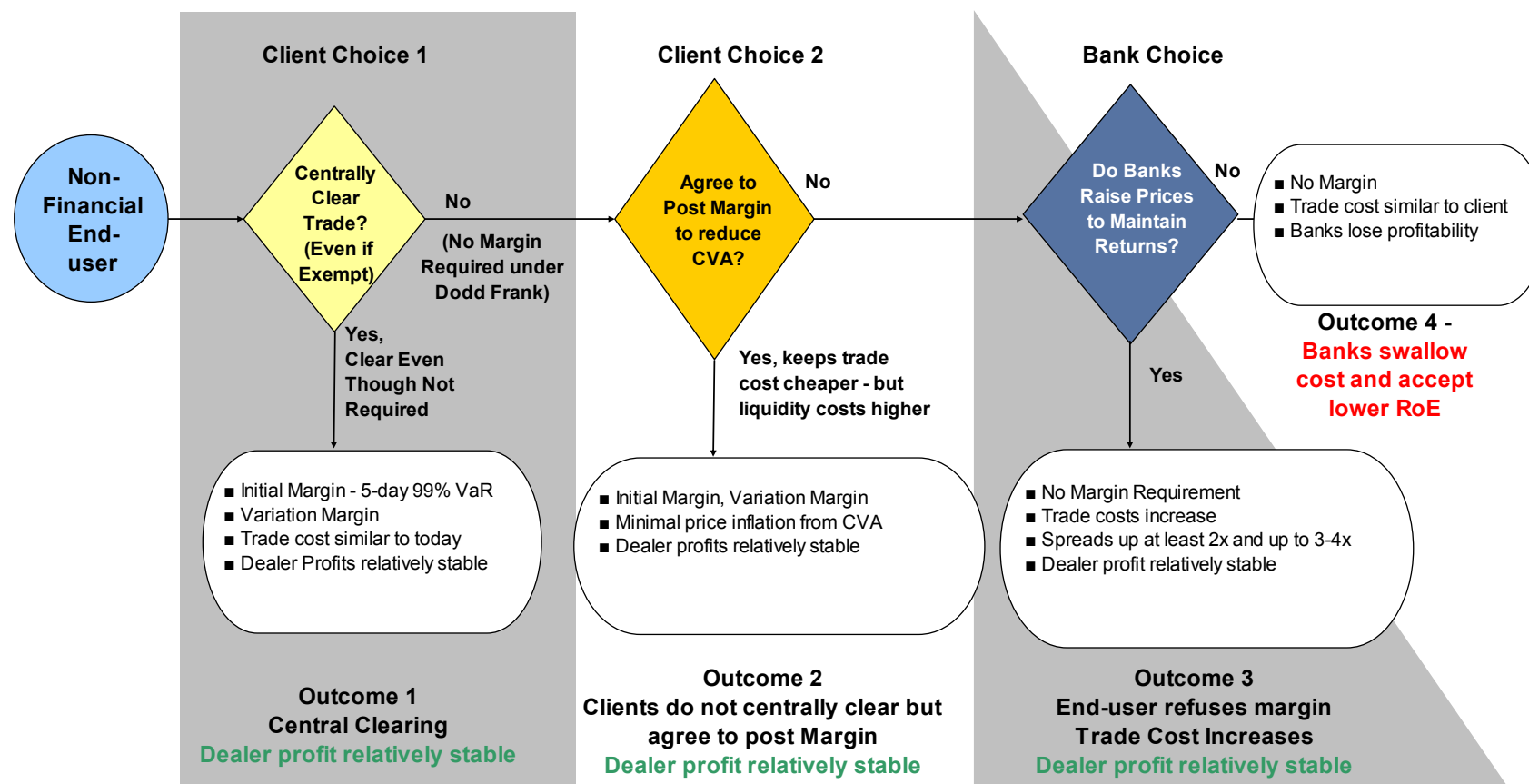


Source: Citi Investment Research and Analysis.

*This charge originally proposed may not be relevant if JPM does not guarantee the performance of the CCP to XYZ Capital, which is not a typical arrangement.

Outcomes for Dealer Profits Depend on Margin and If Banks Change Pricing

Figure 79. Clients can either post margin, or dealers can raise prices to maintain derivative trading profits



Source: Citi Investment Research and Analysis

Swaps Push-Out

Swaps Push-Out rules apply to US firms only and force banks to shift derivatives for non-approved asset classes out of the FDIC-insured banking subsidiary and into a separate legal entity.

Swap Push-Out seems like a costly administrative and legal headache, but its timing is delayed, and we do not anticipate it being a major driver of lost revenues. Rules apply to US firms only and force banks to shift derivatives for non-approved asset classes out of the FDIC-insured banking subsidiary and into a separate legal entity. Prohibited derivatives include equities, most non-precious commodities and non-investment grade CDS. Key exemptions such as those for hedging, plain vanilla interest rate swaps, and investment grade CDS will also allow for many swaps to remain in a bank entity. Swap push out may result in banks having to book derivatives through operations with lower credit ratings raising funding costs. It may also create difficulties in offsetting trades for clients as exposures will sit in several legal entities, with both factors impacting US banks ability to compete.

By our best estimation, swaps push-out could be a bigger deal for JPM and BAC, which have larger derivatives businesses housed in their banks, and less of an issue for MS or GS, given smaller banking subsidiaries. Importantly, we note at JPM's 2011 investor day they noted regarding swaps push-out, "No significant revenue and capital changes [are] expected."

A bill to repeal much of the swaps push-out requirements has started in the House, but appears side-lined at the moment. In mid-Feb the House Financial Services Committee voted to approve a bill with bi-partisan support that would largely repeal much of the swaps push-out, allowing equity, commodity and un-cleared credit derivatives to remain in bank subsidiaries – though swaps on low-quality structured finance assets (e.g. subprime mortgages) would not be allowed. Given recent political fall-out post JPM's CIO issues, we believe this legislation has been tabled – at least for the time being.

- **Key issues include reduced benefits from netting and higher funding costs for derivatives outside the bank** – Key issues include: 1) reduced ability to net derivatives across entities, which could complicate client interactions, 2) Higher funding costs for derivatives booked outside of the bank given typically lower credit-ratings for these entities, and 3) lack of clarity on extraterritorial application of US swaps push-out rules on US firm's global operations could add significant complexity and cost.
- **Prohibited derivatives appear not to be the largest categories.** Equities, most non-precious commodities and non-IG CDS will not be allowed in bank subsidiaries, but as a percentage of notional appear to be a relatively small portion of the total: CDS is 8%, while equity and commodity derivatives are relatively small at 1% apiece.

Figure 80. Notional derivatives contracts for US Commercial Banks shows vast majority in interest rates

	4Q11 Notional	Notional %Total	4Q11 Gross Fair Value	Notional %Total
Interest Rate Contracts	187,509	81%	4,478	81%
Foreign Exchange Contracts	25,436	11%	503	9%
Equity Contracts	1,589	1%	77	1%
Commodity/Other	1,501	1%	53	1%
Credit Derivatives	14,759	6%	418	8%
Total	230,794	100%	5,528	100%

Source: OCC (\$ bil)

- **Extraterritorial application uncertain, but impact would be damaging since it adds another layer of complexity if applied globally** – A lack of clarity remains on the extraterritorial application of US swaps push-out rules on US firm's global operations. If required, this could add significant complexity and cost, requiring US firms to maintain and track multiple legal entities at home and abroad for various derivative contracts, monitoring whether derivatives trades comply globally with the swaps push out rules. All of these factors could impact US competitiveness vs international firms, as no other country appears to be considering similar rules.
- **Potential remains for statutory repeal.** Representative Nan Hayworth (R-NY) is sponsoring H.R. 1838 – a [bill](#) seeking to repeal the prohibition of Federal bailouts of swap dealers or participants, specifically section 716 of Dodd Frank Act. Rep Hayworth's bill was passed by the House Financial Services committee on Feb 17, 2012 with strong bipartisan support including an endorsement by ranking Democrat Barney Frank (D-MA). Of note Democrats including Congresswoman Maxine Waters (D-CA), Congresswoman Carolyn Maloney (D-NY) and made strong statements of support. Despite progress we would believe this bill and any other potential changes to Dodd-Frank have been side-lined by the political furor over recent JPM losses in its Chief Investment Office.

Background

- **Swaps Push-Out drastic in original form, but several key exemptions enable for more practical implementation.** – The “swaps push-out” rule or Section 716 of the Dodd-Frank Act was originally proposed by Senator Blanche Lincoln. The intent was to prevent government support (i.e. access to the Fed discount window or FDIC insurance) for entities engaged in swaps dealing. After significant pushback from regulators and industry, several key exemptions were included in the final rule that make the rule more workable.
 - **Hedging.** Banks are permitted to enter into swaps as part of “hedging and other similar risk mitigating activities.”
 - **Bank permissible activities.** The exceptions also capture swaps for “rates or reference assets that are permissible for investment by a national bank”, which is open to later regulatory clarification. Examples of swaps that would likely be considered part of the business of banking are interest rates, foreign exchange, gold bullion, and investment securities (the large majority of swaps). Examples of excluded items include swaps related to equity, some commodities, and some credit derivatives.
 - **Centrally cleared CDS.** CDS that are centrally cleared are also permitted.
 - **Swaps in affiliated entities.** The rule allows for banks to set up affiliates of insured depository institutions beneath the same bank holding company to be involved in all swaps. An example would be an affiliated broker dealer, but it is still unclear exactly which affiliated entities will be the most efficient (lowest funding cost / least capital required), since it could be a US or foreign broker dealer or some other form of entity guaranteed by the bank. The dealings between the bank and these affiliated entities are expected to follow rule 23A and 23B to minimize risk that comes back to the bank entity. Rule 23A limits the transactions with one affiliate to 10% of capital and for all affiliates to 20% of capital. Rule 23B requires transactions between entities at market-based terms similar to terms offered to another non-affiliated company.

- **Swaps in connection with a customer loan.** This was thought to be an exception to help smaller banks that have some swap activity.
- **Trade-off exists in splitting up swap activities.** Banks must then decide whether to split up swaps between what is allowed in the bank and what must be done through an affiliate. The disadvantage of splitting up swap activities is that clients could then be required to trade with two different legal entities and would likely not get the benefit of netting offsetting positions. Obviously the alternative of moving all swaps out of the bank would increase funding costs.
- **Foreign banks could get caught up in swaps push-out.** The rule may impact foreign banks with entities in the US that could receive government support (i.e. have access to the Fed discount window or FDIC insurance). The reason is because a key part of the exception is for swaps within affiliates of banks that are under the same bank holding company. This may be an issue for foreign banks as in some cases foreign banks operate several entities in the US, but not under a bank holding company umbrella. Some believe that this issue, however, will ultimately be amended.

Bank Specific Details on Swaps Push-out

- **JP Morgan** – 4Q11 OCC disclosures shows nearly all of JP Morgan's derivatives are located in its bank subsidiary. We note that at JPM's Feb 2011 investor day, the firm said they noted that portions of their high yield CDS, equity and commodities derivatives would be affected, but saw "no significant revenue or capital changes expected." JPM also noted they could "push-out additional activities to support client requests" pointing to the challenges of a single client trading across multiple subsidiaries.
- **Bank of America** – OCC data shows that ~75% of Bank of America's derivatives are located in the bank as of 4Q11. It is likely that as a result of the Merrill Lynch merger, BAC derivatives were split between the bank and the broker dealer. Press reports pointed to BAC moving some derivatives into the bank. Part of this may be clean up post Merrill merger. In addition, we believe there is some benefit in terms of minimizing collateral posting as a result of locating the derivatives in the bank, given the BAC downgrade from Moody's. However, if these are more plain vanilla type derivatives (OCC data shows ~90% are rates and FX), a good portion may ultimately be permitted to stay in the bank under the new rules.
- **Goldman Sachs** – Management has indicated that for the legal documentation purposes important to the swaps push-out rule 2/3 of the firm's derivatives are currently papered outside of the bank subsidiary. Of the derivatives papered in the bank we understand the vast majority are the more plain vanilla interest rate swaps that would not need to be moved. Given management comments, we believe OCC data for GS is not reflective of their swaps push-out risks.
- **Morgan Stanley** – OCC data for MS shows minimal (~3%) derivatives are located in its bank subsidiary – which we believe largely reflects FX derivatives that appear permissible. Virtually all credit, rates, equity, and commodity derivatives are already held outside of the bank. This minimizes potential future incremental capital and funding cost drags from the push-out, and may be a modest capital and funding cost relief – to the extent plain vanilla and investment grade credit derivatives could be moved into the bank.

CFTC Position Limits

Figure 81. CFTC position limits affect 28 different commodities

CBOT Corn*
CBOT Oats*
CBOT Rough Rice
CBOT Soybean Meal*
CBOT Soybean Oil*
CBOT Soybeans*
CBOT Wheat*
CME Class III Milk
CME Feeder Cattle
CME Lean Hog
CME Live Cattle
COMEX Copper
COMEX Gold
COMEX Silver
ICE Cotton No. 2*
ICE FCOJ-A
(Frozen Concentrated Orange Juice)
ICE U.S. Cocoa
ICE U.S. Coffee
ICE U.S. Sugar No. 11
ICE U.S. Sugar No. 16
KCBT Hard Winter Wheat*
MGEX Hard Red Spring Wheat*
NYMEX Hub Natural Gas
NYMEX NYH Gasoline Blendstock
NYMEX NYH Heating Oil
NYMEX Palladium
NYMEX Platinum
NYMEX Sweet Light Crude

Source: CFTC *Denotes legacy contracts with faster implementation of non-spot month rules.

In October 2011, the CFTC approved final rules creating tighter limits on commodities trading (across physical, financial, and listed futures exposures) covering 28 different commodities across metals, energy and agriculture. Note that pre-existing positions are exempt. Broadly speaking, the rule places the CFTC in charge of setting limits (vs the prior regime where limits were set by futures exchanges), expands the limit applicability from futures to OTC swaps, narrows exemptions, and expands the aggregation requirements across a given firm's various subsidiaries that count toward a given limit. Note, in November 2011 international leaders endorsed an IOSCO report that said market regulators should use tools like position limits to prevent market abuses – and the EU Commission has also proposed a position management regime to the EU Parliament.

I. Final rule definition and implementation coming likely in 1H12, but legal challenge may stymie implementation

The rule becomes effective 60-days after the CFTC gives its final definition of a swap, which should come this summer, pointing to adoption as soon as 2H12. Rules are split into two parts impacting the spot month, and all other months with non-spot month rules delayed for 12-months...so initial impact will be lower than long-term impact.

- **Controversy of the decision within the CFTC regarding the rules was significant given vote and O'Malia's dissent.** The rule was passed with a 3-2 majority in favor, with Commissioner O'Malia issuing a 25-page [dissent](#). Even Commissioner Dunn who voted in favor of the rule expressed reservations noting 1) no one has proven the existence of excessive speculation, 2) prices of various commodities will not fall after the rules are enacted and 3) limits may make it harder for end users to hedge given limitation of participation in the market.
- **Despite final ruling, limits face challenges in court** – SIFMA and ISDA have filed a legal complaint, arguing that the CFTC had little supporting evidence that position limits to restrict speculation will result in lower volatility in commodity markets and that the reduced liquidity will have a detrimental effect.

II. Rule Specifics

- **Rules limit spot contract positions to 25% of deliverable supply and add further limits on non-spot month contracts** – The CFTC rules plan to limit the maximum position on spot contract positions, excluding qualifying hedging, at 25% of the estimated deliverable supply. For non-spot, the contract limits are 10% on the first 25,000 contracts and 2.5% of all contracts thereafter. Nine “legacy” contracts (mostly Ag contracts starred at left) will be subject to “non-spot month” rules 60-days after position limits start in mid-2012, while for everything else non-spot rules will not come into play for 12-months. Limits for financially settled contracts were set at 5x the physical contract.

III. Implications

- **Position limits may limit growth in commodity “investor products” businesses** – Growth in banks' investor products units, which sell structured index products that offer investors beta exposure to indices like the SandP GSCI Commodity index or the DJ UBS Commodity index may see curbs on growth from new position limits. We believe the biggest players in the investor products business are Barclays, Goldman and Deutsche Bank, while JP Morgan and Morgan Stanley are considerably smaller. We estimate roughly 15-20% of the total industry commodities revenue pool comes from investor products, though exposure varies widely among firms. Importantly, many firms currently operate

with grandfathered exemptions to old rules, so to the extent these are maintained, we do not anticipate sharp business shrinkage.

- **Markets will shift to operate within the rules, but growth may become more expensive as new basis risks are introduced** – In our view, position limits will serve as a constraint to which commodities markets will evolve to operate within. For example, to the extent a firm reaches limits on a given product or contract month, the result will be attempts to instead utilize available exposures in similar products or nearby contract months, introducing new basis risks. Additionally, to the extent one firm may reach limit capacity, they may have to hedge or lay off risk to another firm that has not hit their limit – which could be sold for relatively higher price. To the extent the overall market sees risk capacity capped, the cost of that capacity is likely to rise.
- **Whether the bona fide hedge definition will prove too narrow and limit activity is difficult to tell at this stage** – The rule's exemption from position limits includes a list of eight potential types of bona fide hedge exemptions. To qualify for an exemption broadly a hedge must reduce risk for a "commercial enterprise." Additionally, firms can request specific exemptions for transactions not among the list from the CFTC directly.
 - **Note that some have criticized the hedge exemption definition as too narrow, as they eliminate the ability to execute anticipatory hedges** – In Commissioner Scott O'Malia's dissent, he notes "*The Commission's regulatory definition of bona fide hedging transactions ...[now] generally restricts bona fide hedge exemptions ... to those transactions or positions which represent a substitute for an actual cash market transaction ... This definition is narrower than current Commission regulation [exempting] positions that normally represent a substitute for a physical market transaction.*"
 - *When combined with the remaining provisions of §151.5, which provide for a closed universe of enumerated hedges and ultimately re-characterize longstanding acceptable bona fide hedging practices as speculative, it is evident that the Commission has used its authority to further narrow the availability of bona fide hedging transactions in a manner that will negatively impact the cash commodity markets and the physical commodity marketplace by eliminating certain legitimate derivatives risk management strategies, most notably anticipatory hedging...*"
- **Softening of aggregation rules for positions held across different bank subsidiaries (given sufficient independence) is small positive for banks** – One change from draft to final rules was the reversal of plans for the position limit rule to apply on an aggregate basis across all firm subsidiaries where ownership exceeds 10% with very little exception. The final version, however, reinstated a longstanding exemption within prior position limit rules on what would count as a subsidiary, allowing positions to be treated separately – representing a small concession to dealers. We note in May of this year the CFTC proposed expanding its subsidiary aggregation threshold from 10% to 50% ownership level provided certain criteria are met (e.g., no knowledge of trading decisions, separate systems, and written procedures about having separation of trading).

Qualifying Residential Mortgages and Risk Retention / Securitization Rules

Dodd Frank legislated for the creation of new rules on mortgage securitization designed to ensure that issuers of private label MBS maintain some 'skin in the game', with the objective of aligning RMBS issuer and investor incentives. The rule also sets thresholds where this risk retention does not apply on the basis that the underlying mortgages are not risky.

"Qualified Residential Mortgage" rule will be influenced by final "Qualified Mortgage" definition from CFPB – Under Dodd Frank the CFPB will finalize rules for qualified mortgages that will apply to all residential mortgage loans, including specific product and underwriting standards to protect the borrower by establishing their "ability to pay". Any mortgages issued outside QM will give the consumer the ability to defend against foreclosure and may leave the lender subject to substantial penalties. It is expected that QM will create an outer bound for mortgage issuance with few lenders prepared to issue outside the rule, with the QRM securitization rules forming a sub-set of loans within the QM definition. As a result regulators must ensure that QM and QRM work in tandem.

Timing uncertain, but looks unlikely this year – Regulators are targeting final rules for QRM and risk retention in securitizations in 2012, with the group of prudential regulators assessing ~1,000 comments received from interested parties. Despite the 2012 target, we see a final rule this year is looking less likely, given that the rule requires six regulatory bodies to reach agreement plus the added complexity of making the rule integrate with the CFPB's as yet undefined Qualified Mortgage rule.

And a whole new proposal could be forthcoming – Given disagreements Citi's securitized product research group believes regulators may re-propose rather than finalize the current set of rules.

- **Final risk retention rules are a key uncertainty preventing any resurgence of the non-agency RMBS Market** – Given that the private label RMBS market has been effectively closed since 2007, we see the rules defining risk retention as a key obstacle to the market returning. Now that confidence in underwriting standards is returning and low rates are drawing a pick up in loan activity, the limiting factor become banks being unable to understand the new securitization model, resulting in banks holding mortgages on balance sheet until the picture becomes clearer.
- **Final requirements of what makes a loan 'qualifying' will be a big driver for the shape of the future housing market** – As qualifying mortgages will not be subject to risk retention rules (whereas other non-agency mortgages will), the rule will have a significant impact on loan pricing going forward. The current proposed QRM rule with 80% max LTV (and 75% LTV for refi's) is considered relatively strict and will result in higher mortgage costs for many homeowners.
- **The rule includes a restriction on issuers taking upfront profit that would transform the economics of securitization** – A surprise component of the proposed rule would prevent issuers from recognizing upfront profit on securitizations. Instead, any profit when the deal is issued must be held as a first-loss reserve against the deal, significantly changing the economics of mortgage securitization business.

Background

- **Risk Retention rule requires banks to hold 5% of any private securitization**
 - The "skin in the game" clause is designed to ensure that the issuer of

securitizations maintain an economic interest inline with the buyers of the bond. The rule permits a variety of different ways that securitizers can hold the risk.

- **Four available methods of risk retention:** Horizontal (the bottom 5% tranche); Vertical (5% of each tranche); L-shaped (a combination of horizontal and vertical) or by sampling (where they hold the equivalent of 5% of assets with similar characteristics to those securitized, e.g. whole loans)
- **Qualified Residential Mortgages are exempt from risk-retention rules, but definition appears to be tight** – If a securitization is made of qualifying residential mortgages (QRM), the securitizing party does not need to hold 5% of the issue on the basis that the underlying mortgages satisfy certain conditions that regulators believe makes them safer investments.
 - **Draft QRM rule allows a maximum 80% LTV, with further debt to income ratios on borrowers...** For a mortgage to be qualified, initial proposals for loans would have max LTV of 80% for purchases (min 20% down payment, excluding mortgage insurance, 75% for refis, and 70% for cash-out refis). We note however that regulators have begun indicating the 20% down payment requirement is likely to be lowered. Also, the borrower can have a max debt-to income ratio of 28% on the “front-end” (mortgage debt, taxes and insurance / gross income) and 36% on the “back-end” (mtg debt plus all other debt).
 - **...with non-QRM borrowers likely to see high rates when they refinance or buy** – Given that future non-QRM mortgages will be subject to the risk retention requirements if securitized, it is expected that the cost of mortgage loans for these borrowers will rise significantly. This would mostly impact first time buyers, but also many refi’s with nearly 25% of borrowers putting less than 10% down in 2010.
 - **Industry has expressed concern that QRM definition is too restrictive and will hurt small lenders, likely benefiting large banks like WFC...** – As the mortgage rules would require banks to hold 5% of originated loans (either in whole loan or securitization form), there is concern that this would most negatively impact small lenders with less balance sheet capacity to hold loans. This would favor larger players like WFC who are better prepared to use their balance sheet to finance mortgages.
 - **Note that QRM rules do not apply to the GSEs** – FNM and FRE have their own underwriting guidelines that are independent from QRM standards. Additionally as entities they are not required to comply with the 5% retention as long as they remain under govt support. Since GSEs control the majority of the current mortgage market, overall impact from the QRM definition will be limited in the near term.

Premium Capture – which captures any profit as a first-loss reserve – has been contentious with the Industry

- **Premium Capture Reserve Account restricts upfront gains or spread from securitizations** – The premium capture account portion of the proposed risk retention rules restricts securitizers from booking upfront gains by selling premium loans into a securitization or by selling interest-only securities. Any gains or excess spread recognized would instead be “captured” in the securitization as a first-loss equity piece and added to the risk retention requirement (see Figure 82 below).

- **The goal of premium recapture is to ensure 5% risk retention rules are not diluted by upfront securitization gains on sale** – In the proposed rules regulators state the goal of premium capture reserve accounts is to prevent sponsors from negating or reducing economic exposure from risk retention and align interests of sponsors and investors and promote simpler securitization structures.
- **Premium capture was a big surprise to industry participants...** Most market participants we have spoken with agreed that the premium capture rule was unexpected and one of the more onerous parts of the proposed risk retention framework. As the rules are finalized following industry comments, we believe the outcome on this issue will be important in determining how quickly the non-agency MBS market returns.
- **...but regulator comments suggest that ending upfront monetization of deals is a deliberate move** - We note that regulators expected this rule would prevent virtually all securitization structures with excess spread. “As a likely consequence to this proposed requirements, the Agencies expect that few, if any, securitizations would be structured to monetize excess spread at closing and, thus, require the establishment of a premium capture cash reserve account...”

How Premium Capture Could Work

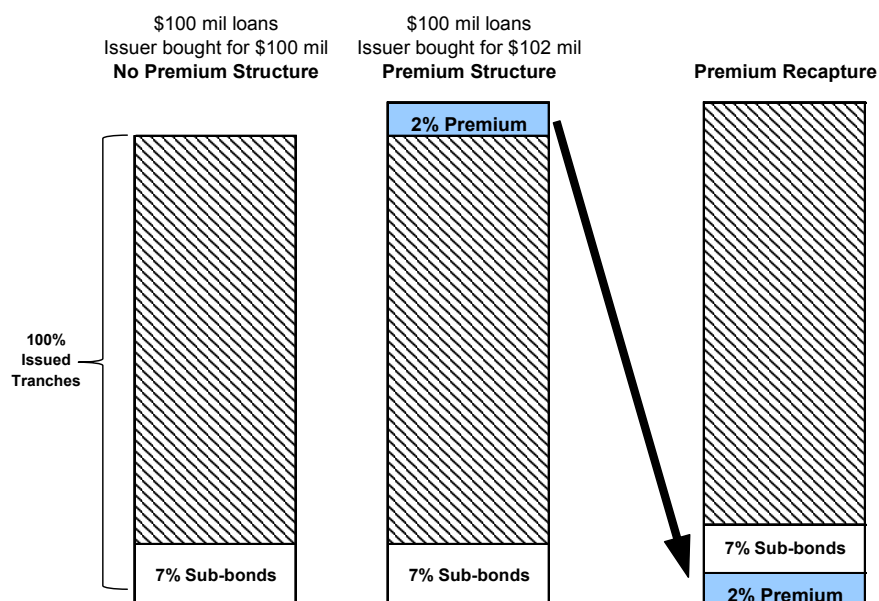
Quick Example: A bank is seeking to securitize MBS collateralized by loans with a weighted average coupon of 6% offered when market rates for senior bonds were 4%. In the case of recapture, the extra 2% of interest can no longer be used to create an Interest Only class of certificates to be sold for an upfront gain by the securitizer, and instead this gain must be placed in a special reserve account held by the trustee to absorb losses before the first loss position. This reserve rule would be in addition to the 5% risk retention requirement and prevent a securitizer from building in excess spread to offset and minimize the 5% required retention (see Figure 82).

1) Par appears likely to be clarified to mean an issuers cost basis, rather than arbitrary numeric 100 value. Under current proposed rules the calculation for premium recapture effectively assumes a basic 100 or par value deal. The exact formula for premium recapture = gross proceeds received from sale of ABS securities (net of closing costs paid by the sponsor) less 95%. We note the 95% is designed to exclude the 5% risk already retained. This means that premium loans sold into premium price deal (i.e. loans priced at 102 sold into deal at 102) would generate 2 points of premium recapture, plus 5% of normal retention – even though the sponsor did NOT book 2 points of gains. We would not be surprised if this is adjusted and clarified so that cost basis would be the determinant of premium recapture — with the language “net of costs” in the draft rules supporting this view.

2) Another outcome could be reinvestment of the recaptured premium into a vertical slice of the deal. While not specifically outlined in any documents, some industry participants have suggested that regulators may be amenable to adjusting rules to have recapture simply be satisfied by holding a larger risk retention position (via horizontal, vertical, L-shaped, etc.) rather than by creating a separate and possibly more subordinated position. For example, if a deal was created with 80% w/ 2-point premium loans and 20% with par value loans – the recapture provision would be based on pro-rata share – requiring 5% retention plus $2\% \times 80\% = 1.6\%$ premium recapture for total of 6.6% held in the deal.

3) The ability to interest rate hedge a warehouse of loans awaiting securitization could also be hurt. Take the example of an interest rate hedged warehouse portfolio of mortgage loans awaiting securitization with a 3-year duration. If we assume a shock to interest rates of *negative* 50bps – which would have a *positive* 1.5% impact (50bp x 3 yrs) on the portfolio of loans, and a *negative* 1.5% impact on the hedge. In this case the bank would bear the cost of the hedge, but when it went to securitize the above par value loans – the premium created would be trapped at the bottom of the securitization as shown in Figure 82.

Figure 82. Premium Recapture rule could prevent banks from earning gains on sale when issuing securitizations



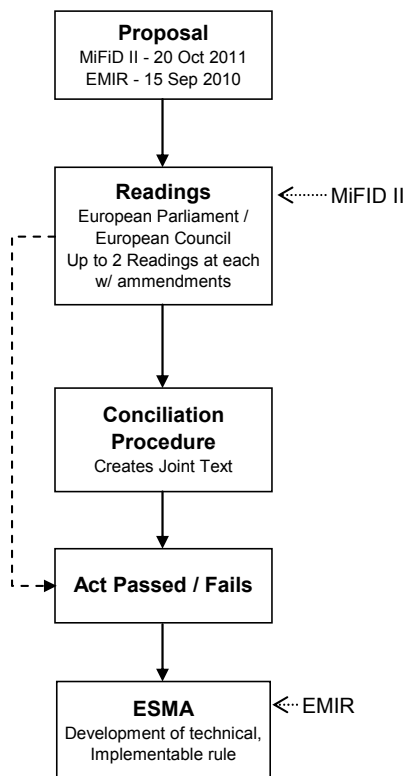
Source: Citi Investment Research and Analysis

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Appendix

Appendix I: European Derivatives Rulemaking

Figure 83. EU Rulemaking Process



Source: CIRA. Conciliation procedure can be bypassed.

EU rules while targeted for end-2012 appear likely to come into place later than US rules, and broadly address the same key topics. European OTC derivatives legislation continues to lag behind its US counterpart, with the European Parliament adopting the final text in March 2012 for the OTC derivatives clearing regulation (called EMIR) and the EU Council expected to formally adopt the EMIR text in July. The technical standards for EMIR (Level 2) are currently being drafted and are expected to come into force by the end of 2012 – though regulators' ability to meet this tight deadline in time for actual industry implementation by year-end looks like a challenge. The other key rule set MiFID addressing changes to trading and transparency rules (for both OTC derivatives and other products), is also underway but at a much earlier stage of the process, with a revised draft of the directive and accompanying regulation being negotiated.

It's difficult to compare the detail of EU and US rules before EU technical standards are published... The EU regulatory process is at varying early-to-intermediate stages but in some key areas has moved beyond simple principle based drafts (for example, Level 1 EMIR legislation addressing clearing is very detailed and specific).

In Europe, the Paris based European Securities and Markets Authority (ESMA), in conjunction with the European Banking Authority (EBA) and the European Insurance and Occupational Pensions Authority (EIOPA), perform roles equivalent to the Fed, CFTC or SEC for the US implementation of Dodd-Frank. Once technical standards are set, EU and US rules will become much more directly comparable. (Note, the last step to finalize the rules into law is the formal adoption by the European Council and publishing in the Official Journal.)

- **...Leaving the impression of onerous proposed US rules vs relatively undefined EU rules** – Expectations that EU rules could be less strict than US counterparts is partly a result of US draft rules being very stringent and EU rules not yet having been technically defined.
- **Current “big” unknowns include the severity of initial margin rules for un-cleared trades** – One of the US rules considered most punitive is proposed initial margin for OTC derivatives, which is proposed to be set at a 10-day VAR 99% confidence interval calculation for un-cleared derivatives (vs 5-day 99% for cleared trades). The EU draft currently proposes margin of at least 99% VaR-based confidence interval, based on an undefined “appropriate time horizon”.
- **Basel 3 implementation will also play an important role in setting a level playing field** – The EU adoption of Capital Requirements Directive IV (which implements Basel 3) by 2013 will be an important component of creating a level playing field – however, we remain concerned that there will be important differences between how Basel 3 is implemented in the US and Europe. Key issues remain CVA counterparty exemptions in Europe for sovereigns, pensions and possibly corporates that appear unlikely to be mirrored in the US.
- **EU proposals seek to have extraterritorial effect** – EMIR and the recent drafts of MiFID have shown the EU seeking to adopt very similar extraterritorial provisions to Dodd-Frank, i.e. impacting non-EU financial institutions without a physical presence in the EU, which creates a problem for global firms seeking to comply with different rules which overlap and conflict

- **Clearing Exemptions** - EU rules state that non-financial end-users should only be required to centrally clear if they trade above a certain threshold, compared to the US blanket exemption for non-financial corporate end-users. On the flipside, the final text indicates European pension funds will have a 3-year exemption from the clearing provisions of EMIR. We note that according to the Council compromise text, it appears European pension funds will also be deemed exempt from tough CVA counterparty charges under Basel 3.
- **EU Intention to regulate Algorithmic and High-Frequency Trading is notable difference vs US regulatory proposals** – The recent drafts of MiFID have included provisions to regulate the use of algorithms and high frequency trading. The proposals are being heavily negotiated but the outline suggests that compliance and oversight costs for automated trading may be significantly increased.
- **Meeting the end-2012 deadline on OTC derivatives looks like a challenge** – With the adoption by the European Parliament, EMIR still has a chance of meeting its target of year-end 2012 implementation. However, the schedule is very tight given that the technical standards – by our best estimation – need be drafted by September to allow enough time for implementation this year. Given the time taken to negotiate EMIR, the completion of MiFID II by end-2012 looks unlikely and the Level 2 process will need to be completed in 2013.

European Policy Background

There are two key EU regulations that will govern the trading and clearing of OTC derivatives : (1) European Markets Infrastructure Regulation (EMIR), which will establish central clearing rules for OTC derivatives; and (2) the Markets and Financial Instruments Directive (MiFID II, which has an accompanying Regulation, MiFIR), including rules and definitions for trading venues.

European law / regulation making processes require the agreement of three political bodies – the European Parliament and Council (not dissimilar in process to the Senate and Congress in the US) and the European Commission. The EU Parliament is a directly elected body of 736 politicians weighted by the population of Member States. The Council has 27 members, made up from the leaders of each of the 27 Member States with a rotating Presidency.

Markets and Financial Instruments Directive and Regulation (MiFID II and MiFIR)

On October 20, 2011, the European Commission released drafts of MiFIR (a regulation with direct effect on Member States) and MiFID II (a review of the 2005 Directive which will need to be implemented by Member States into national law). A key focus of MiFID is the creation of a level playing field for financial services across all Member States.

- **Pre- and Post-Trade Transparency to expand across products** – Building on the original MiFID transparency requirements that applied to equities, MiFID/MiFIR proposes to expand its transparency and other requirements to cover bonds, structured finance products, emission allowances and derivatives which are clearing eligible. Trading venues must make public prices and the depth of trading interests pre-trade; and, the price, volume and time of transactions post-trade.

- **European rules seek to impose an obligation to trade on trading venues, and go farther than US rules which are primarily derivatives-focused** – One of the objectives of new European trading regulations (MiFID) appears to be to impose a trading obligation on all clearable derivatives to trade on trading venues – though these rules remain in early stages – and what exactly will be considered an allowable venue remains highly uncertain. Additionally, the breadth of the MiFID proposal may impact a variety of market structures such as broker crossing networks, dark pools and single-dealer platforms. These rules seem likely to be broader than those in the US.
- **EU rules require open-architecture between exchanges and CCPs which would increase client choice, but could hurt existing exchanges** – MiFID will require open access to multi-lateral trading facilities (MTFs) or exchanges, with all MTFs required to accept and process trades from any client. This rule would allow clients greater choice for clearing and execution venues, as neither CCPs nor exchanges would be allowed to discriminate or use exclusive providers. The rule reflects an ongoing battle between the UK and Germany on how exchanges should be structured.

European Markets Infrastructure Regulation (EMIR)

On March 29, 2011, the European Parliament approved new OTC derivatives regulations under the European Markets Infrastructure Regulation (EMIR). This is akin to US legislators passing derivatives rules via Dodd-Frank – but in Europe these rules must then go back to be formally adopted by the EU Council. The next step is for Europeans to codify the principle-based regulation via the technical rule-writing process under the European Securities and Markets Authority (ESMA).

- **Industry hoping implementation will be extended, pushing EMIR into 2013** – The current schedule for EMIR to meet the end 2012 G20 deadline is very tight, allowing only 6-7 months for rule drafting by ESMA, a comment period with feedback from the banks and clients, finalization of the rule, adoption by the Council, and then implementation.

Initial Margin rules in Europe still not defined in quantifiable form

- **EMIR rules will use a similar 99% confidence VaR-based initial margin rule, but severity of rule unclear as critical time horizon figure not yet known.** EMIR final text on margin stipulates that a CCP shall impose, call and collect margins “sufficient to cover losses that result from at least 99% of exposure movements over an appropriate time horizon.” The problem in comparing to US rules is that EMIR has not yet identified the VaR measurement time horizon. Meanwhile the US has not finalized its proposed time horizon.
- **All OTC trades must be reported to trade repository (central data centers)** – The rules would require all OTC derivative trades across the EU to be reported to Trade Depositories providing ESMA, central banks, other European Supervisory Authorities and national regulators access to the data. The agreement is similar to rules enacted in Dodd-Frank with large dealers and participants required to report trades to a central depository and clear through CCP's.

US and EU Derivative Proposals Side by Side

Figure 84. US and EU Derivative Proposals side by side

	US	EU	US Proposals	EU Proposals
Clearing				
Central clearing	✓	✓	■ Required for all clearable swaps	■ Required for sufficiently liquid identified products
Clearing - Exemptions				
Corporate End-Users	✓	✓	■ Corporate end-users are exempt from reporting and central clearing	■ Corporate end-users are exempt from central clearing if volumes are below a certain threshold
Pension Funds	X	✓	■ None	■ Pension funds receive a 3-year exemption from clearing
CVA Counterparty Charge - Exemptions				
Sovereigns, Central Banks and Large Pensions	?	✓	■ No exemptions proposed	■ CVA exemptions proposed
Corporate End-Users	?	✓	■ No exemptions proposed	■ CVA exemptions proposed
Trading Platforms (SEFs)				
Trade Transparency	✓	✓	■ Trades to be reported to centralized database with public disclosure of trade details. Proposed RFQ minimum protocols could increase pre-trade information leakage.	■ Extension of MiFID I provisions to include bonds, derivatives, structured products ■ Public quotes required with price and size (liquidity dependent) - continuously on MTFs / OTFs ■ Post-trade Reporting (potentially delayed for some products)
Pre-trade Protocol - RFQ	✓	X	■ Minimum of 1 RFQ (SEC) or 5 RFQ's (CFTC) as yet undetermined	■ None so far proposed
Algorithmic Trading strategies	X	✓	■ None	■ All automated trading strategies required to make markets at all times, increased compliance and risk management requirements
Derivative Exchange Trading	✓	✓	■ Centrally cleared swaps must be executed on exchange/SEF ■ Swap Execution Facility (SEF) yet to be fully defined	■ Exchange/ OTF platforms yet to be defined ■ Unclear whether will allow bi-lateral voice trading, but seems more likely than in US
Initial Margin	✓	?	■ 99% 10-day VaR uncleared (proposed) ■ 99% 5-day VaR cleared (proposed)	■ Minimum of 99% VaR "over an appropriate time horizon." (threshold expected late 2012)
Collateral	✓	✓	■ Cash, Sovereign Bonds, Agencies ■ Cash only for variation margin	■ Cash, Sovereign Bonds, Gold (Initial Margin)
Capital Treatment	✓	✓	■ Basel 3 phase in to begin in 2013	■ CRD IV (Basel 3) to be in force from start 2013
Open Access to Exchanges				
Vertical exchange integration prohibited?	X	✓	■ None	■ EU removing barriers on vertical silo model to allow clients to choose exchange trading and clearing (exchanges not able to insist on clearing house)

Source: Citi Investment Research and Analysis

Appendix II: Summary of FICC capacity reductions

In our view, industry consolidation among the top fixed income trading players will be a painful struggle...but is the most likely long-term outcome. Despite the entrance of new players in OTC derivatives business and the removal of some old barriers like the importance of counterparty strength, we believe the broader impacts of regulations will be deeper consolidation of fixed income trading among the largest scale players.

In our view recent exits by weaker European or second-tier players unable to justify capital allocations on lower revenue bases is only the first step in what will be a difficult readjustment period for the industry. High capital charges, less leverage, significant and ongoing technology investment costs and greater incentives for clients to consolidate business to maximize netting and reduce initial margin requirements – will be key drivers of consolidation among top players.

The current environment looks like the first time where there is a large voluntary exit of capacity since – something that was not seen in 1998, 2001, or 2008. With volumes down already on increased risk aversion, expense base increases due to increased technology and compliance requirements, plus capital requirements up significantly, many players are re-evaluating commitments to various businesses. In both Europe and the US banks have focused on moderating headcount across businesses and reducing RWA across capital intensive products, particularly structured credit and RMBS. Even so we believe this may be the first phase in a longer trend as recent exits really represent more marginal parts of their businesses. *(In Figure 85 and Figure 86 we summarize RWA mitigation/deleveraging and cost cutting plans).*

- **Capacity will continue to exit as the current cyclically low growth macro picture compounds secular pressures.** Downsizing is already underway but how much is enough. While a true “equilibrium” level of capacity may not be knowable until we see more normal economic environment – investors are unlikely willing to suffer multiple sub-par years of returns before management acts – which is why capacity is declining now.
- **The recent “false-start” and exit by State Street in European bond trading may be an example of growing barriers to entry.** Similar to the way marginal players may find certain businesses are no longer economically viable under Dodd-Frank, the expense required to develop trading infrastructure, back office systems and complete compliance frameworks to enter the business presents a significant barrier to entrants. In September of 2011 State Street launched a new government bond flow trading business in Europe – targeting client-facing trades in UK and German government bonds. The firm reportedly had researched entry into the market for at least a year. Then the draft in October for the Volcker rule came out as well as new rules in the UK. State Street’s response was an about face shuttering of the effort just months after it had started.

Thus Far, Capacity Exits are a Far Cry from the Real Shake-Out the Industry Needs

Downsizing among second-tier players in Europe has begun at the margin, marking this as one of the first times capacity has voluntarily exited the system following decades of growth. We count over \$1 trillion of RWA mitigation and deleveraging

planned globally and thousands of job cuts (Figure 85 and Figure 86). As second tier players evaluate the greater cost of capital we expect further consolidation of trading revenues. The following four European banks have announced reductions in various capital markets businesses:

- **Credit Suisse** – CS announced at 3Q it would downsize or exit long-dated unsecured trades in Global Rates, Emerging Markets and Commodities, exit CMBS originations and reduce capital intensive businesses like securitized products. Increased focus is given to FX and electronic trading, emerging markets (BRICS) and private banking.
- **Crédit Agricole** – On Dec 14 Crédit Agricole announced it would cut 1,750 jobs from its investment bank and exit the equity derivatives and commodities businesses. The bank seeks to reduce use of €18 billion of capital by 4Q12 primarily from equity derivatives and financing and is looking for a total of €60 billion of RWA reductions. The moves come alongside geographic retrenchment including exit from 21 countries as well as reduction in leasing and factoring originations plus run-off.
- **RBS** – At 3Q RBS announced plans to reshape and resize its Global Banking and Markets division and on Jan 12, 2012, outlined its intentions including exits from cash equities, ECM and M&A advisory businesses. Going forward RBS has said it will retain its Fixed Income trading franchise focused on DCM, securitization, FX and rates. Given RBS's intention for much lower balance sheet intensity, press reports note plans may include reductions in equity derivatives, structured credit and rates businesses. Note that the FT had estimated RBS could cut up to 10,000 of its 18,900 employees; however, the firm has publicly stated intentions for 3,500 in cuts in the UK and abroad, in addition to 2,000 cuts made in 2H11. RBS is targeting £75 billion in Basel 3 RWA reductions or ~33% cut vs £225 billion today.
- **UBS** – UBS announced at its investor day it will exit or shrink several I-banking businesses and cut the IB risk-weighted assets by ~50% to ~\$165 billion (expected not until 2016). Businesses to be closed are: Equity prop trading; Macro directional trading in FICC; all Non-mortgage securitization; and complex structured products. Long-end flow rates and global correlation will be much smaller. Short-end flow rates, US credit flow trading, synthetic equities and the equity-linked business will also be reduced in size.

Figure 85. We tally RWA mitigation active and passive roll-off of over \$1 trillion globally

	RWA run-off	Deleveraging / RWA Management
US		
Bank of America	~\$65 bil	<ul style="list-style-type: none"> ■ Run-off low rated RMBS (~\$65 bil RWA), exit prop trading ■ Reduce CVA (~\$25 bil RWA)
JP Morgan	~\$110 bil	<ul style="list-style-type: none"> ■ Data model enhancements = \$60 bil mitigation by 4Q13 ■ Legacy portfolio runoff through 2014 = \$80 bil by 4Q13 ■ Offset by line of business growth +\$30 bil by 4Q13 ■ Includes I-Bank RWA reduction from 4Q11 to 4Q12 of \$54 billion
Goldman Sachs	~\$135 bil	<ul style="list-style-type: none"> ■ \$89 bil passive RWA reduction from market risk and credit risk by 4Q13 ■ \$45 billion of further passive RWA reduction from 2013 to 2015
Morgan Stanley	~\$100 bil	<ul style="list-style-type: none"> ■ Implied RWA reduction of approx. \$100 billion from 4Q11 to 4Q12
Europe		
Deutsche Bank	~\$90 bil	<ul style="list-style-type: none"> ■ Unwinds and roll-off of portfolios in Emerging Markets, Correlation trading and US RMBS portfolios ■ Credit correlation notional reduced 61% from end-2009 ■ Target of \$90 bil RWA reduction by end-2012
Credit Suisse	~\$140 bil	<ul style="list-style-type: none"> ■ Targeting \$140 bil reduction over 2Q11-4Q12, o/w \$120 bil achieved by 1Q12 ■ Downscale/exiting: Long-dated unsecured trades, CMBS origination, and 'de-layering' of EMEA I-Banking
UBS	~\$140 bil	<ul style="list-style-type: none"> ■ \$140 bil of RWA reduction, with roughly half from legacy businesses (ARS, Credit products) ■ ~\$50 bil achieved by end 1Q12 ■ Rescaling structured credit, long-dated flow rates. Exiting Securitization, Complex structuring, Prop and directional macro
BNP Paribas	~\$60 bil	<ul style="list-style-type: none"> ■ ~\$60 bil deleveraging (~\$40 bil in Financing, ~\$20 bil Capital Markets), o/w \$16bn achieved by end 1Q12 ■ Recent disposals include Klepierre stake (28.7%) and Reserve-based Lending activity in US
Societe Generale	\$40-\$55 bil	<ul style="list-style-type: none"> ■ \$40-55 bil RWA deleveraging in the Corporate & Investment Bank (e.g. aircraft leasing, shipping, real estate, leveraged finance) ■ Some deleveraging achieved through dismantling of CDOs of RMBS
Credit Agricole	~\$40 bil	<ul style="list-style-type: none"> ■ \$40 bil RWA deleveraging in the Corporate & Investment Bank (including Financing), o/w 97% accomplished by end-1Q12 ■ Exiting equity derivatives & commodities given lack of critical mass
UK		
Barclays	\$65-\$90 bil	<ul style="list-style-type: none"> ■ Sell-down & other management actions
RBS	~\$110 bil	<ul style="list-style-type: none"> ■ \$110 bil in Basel 3 RWA reduction from exiting equities & reducing other b/s intensive businesses. Sold \$7.3 bil RBS Aviation to SMFG
HSBC	not specified	
Japan		
Nomura	not specified	
Total	>\$1.1 Trillion	Identified Passive & Active

Source: Citi Investment Research and Analysis

Figure 86. Summary of globally announced cost reduction initiatives

Cost Saves			
	Heads	Targets (\$bil)	Comments
US			
Bank of America	30,000	\$5.0 (Phase 1)	<ul style="list-style-type: none">■ BAC eliminating 30K positions across firm over several years. Phase 1 targets Consumer segment (18% expenses or \$5.0 bil)■ Commercial & I-Bank & With Mgmt targeted in Phase 2 of cuts reportedly ~\$3 bil (~10% of expense base). Phase 2 begins 2Q12
JP Morgan	unclear	unclear	<ul style="list-style-type: none">■ Assessing cutting costs from operations & technology across Ibank and Treasury Security Services from a \$1.6 billion expense base.
Goldman Sachs	1,000	\$1.4	<ul style="list-style-type: none">■ \$1.4 bil in cuts or ~1K heads, 3% of total. Also 2011 will include higher percent of partner retirements
Morgan Stanley	1,600	\$1.4	<ul style="list-style-type: none">■ \$1.4 bil in cost cutting by 2014■ 1,600 Investment Bank positions to be eliminated
Europe			
Deutsche Bank	500	unclear	<ul style="list-style-type: none">■ 500 positions in Corporate & Inv Bank from slow business volumes
Credit Suisse	3,500	\$2.2	<ul style="list-style-type: none">■ Cuts across all business in 2011, ~7% of total heads■ 2,000 job cuts achieved since 2Q11, inline with target■ ~\$2 bil saves: 70% from I-Bank 20% Private Bank, 10% Asset Mgmt■ ~75% of planned run-rate achieved by 1Q12■ Additional cost saves to come from streamlining infrastructure, implementing vendor management initiative, and Clariden Leu (private bank) integration
UBS	3,500	\$2.2	<ul style="list-style-type: none">■ 3.5K cuts, with half from I-Bank (~10% of IB heads)
BNP Paribas	1,000	\$0.7	<ul style="list-style-type: none">■ Planning cuts from struct finance & capital mkts, ~7% of total. 1/3 France, 2/3 international■ Over 60% of workforce adaption plan completed by 1Q12
Societe Generale	500	\$0.35	<ul style="list-style-type: none">■ 500 job cuts expected per press reports
Credit Agricole	2,350	\$0.5	<ul style="list-style-type: none">■ 2,350 jobs to be cut; 1,750 in the Investment Bank
UK			
Barclays	3,000	\$3.0	<ul style="list-style-type: none">■ 3,000 headcount reduction through 2011, of which half in IB. \$1.8 bil run-rate of planned £3.0 bil of cost saves already achieved
RBS	3,500	unclear	<ul style="list-style-type: none">■ 3,500 headcount reduction in GBM over 3 years. Exiting cash equities, corporate broking, ECM and M&A. Downsizing in structured credit and rates
HSBC	30,000	unclear	<ul style="list-style-type: none">■ 30k jobs (10% global workforce), distributed across the business. \$2.1bn run-rate of cost saves already achieved.■ Expect to reach upper-end of \$2.5-3.5bn target
Japan			
Nomura	unclear	\$1.2	<ul style="list-style-type: none">■ Reviewing loss making European operations acquired from LEH (losses for 6 consecutive quarters)

Source: Citi Investment Research and Analysis

Appendix III: “DC Watch”

Below we summarize seven recent legislative progress and political momentum regarding regulation in Washington DC. The first six relate to derivatives were for a time gaining traction in the House, but appetite for any change or bipartisan support to Dodd-Frank appears to have ground to a halt in the wake of JPM's CIO office losses. We note, that because of the potential for political messaging from Congress to regulators writing rules, in the end some of these bills may not actually need to pass to influence the regulatory process.

Prior to the recent set backs, the first 3 bills (Derivative Corporate-End Use Exemption, Inter-Affiliate Derivatives and SEF Clarification) had the most promise of being passed by the full House due to prior bi-partisan support. So far, according to our legislative contacts the Senate has been content to wait for the House to complete its actions, and has not yet shown willingness to embrace any changes.

We note that the Extraterritorial bill and the SEF bill have both been opposed by Congressman Barney Frank and are among the more contentious bills.

Figure 87. Legislation proposed to change Dodd-Frank or signal Congressional intent to regulators

	Issue	Bill	Name / Description
1	Corporate End User Exemption	(H.R. 2682)	"The Business Risk Mitigation and Price Stabilization Act" - Would exempt end users that are not financial entities from margin requirements for un-cleared swaps
2	Inter Affiliate Derivative Transactions	(H.R. 2779)	Inter-Affiliate Derivatives - Would clarify that inter-affiliate swaps should be exempt from many of the anticipated swap regulations
3	Swap Execution Facilities	H.R. 2586)	"Swap Execution Facility Clarification Act" – Would refine Dodd-Frank's definition of swap execution facility (SEF) to clarify that a SEF shall not be required to have a minimum number of participants receive or respond to quote requests or to display quotes for a certain period of time
4	Extraterritorial reach of US Derivatives Rules	(H.R. 3283)	"Swap Jurisdiction Certainty Act" - Effectively seeking to exempt banks from extraterritoriality rules on competition grounds. So far just had a hearing (2/8/12). Bill reflects bi-partisan concern in Congress over potential regulatory overreach.
5	Swaps Push-Out (section 716)	(H.R. 1838)	Seeks to repeal the Swaps Push-Out (aka Lincoln Amendment) section 716 of the Dodd-Frank Act that requires US Banks to operate certain derivatives outside of banking subsidiaries.
6	Swap Data Depositories	(H.R. 4235)	"Swap Data Repository (SDR) and Clearinghouse Indemnification Correction Act" is a bill to remove the indemnification requirement for swap data repositories in the law - replacing indemnification with confidentiality agreements.
7	Commodities Position Limits	(H.R. 1840)	Cost/benefit analysis for Commodity Position Limits - Would require the CFTC to assess both qualitative and quantitative costs and benefits before proposing or adopting regulations

Source: Citi Investment Research and Analysis

Notes

Notes

Notes

Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

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