

# Global Banks & Brokers: Derivatives Focus

## The Regulatory “Tunnel” Getting Longer, but a Bit Brighter

### ■ Industry Overview

- **Update on regulatory impact & timing** – In this report we refresh our views on the impact from regulatory reform following up on our in-depth [“Sizing Up The Elephant in the Room”](#) report published last May. Here we focus on OTC derivatives given impending US clearing, upcoming SEF/exchange trading rules, and newly re-proposed un-cleared margin rules. In Figures 1 & 2 we summarize key regulations to monitor. Inside we also review trends in “futuresization” including new deliverable “swap futures” and attitudes among corporate derivative clients. Overall, our biggest near-term concern is the potential mix shift from OTC swaps to futures, while risks from SEF/exchange trading & un-cleared margin rules won’t arrive until 2014 & 2015.
- **2013 headwinds look mild, but OTC-futures mix-shift risk bears watching** – We see minimal impact to 2013 FICC trading revenues from regulations, as OTC clearing does not directly change dealer profitability. However, we’ll be watching futures volumes closely thru mid-June to see if there is evidence of “futuresization” of swap volumes, given advantages of lower cost (lower margin req’s), and less transparency (lower block levels). By YE13 we see ~65% of global clients’ standard swap volume clearing, rising to ~100% by YE14 as EU & Asia come online.
- **2014 & 2015 will see headwinds with SEF trading & un-cleared margin rules posing the greatest risks.** In the US we expect mandatory exchange/SEF trading of OTC swaps to hit the run-rate in early-2014, with Europe and Asia 12-18 months after but potentially in a less strict fashion. As bid/ask compression hits electronic SEF volumes in 2014, we see low-to-mid-single digit percent FICC revenue headwinds. The second late-stage OTC derivative regulatory impact will be from un-cleared initial margin rules, starting in 2015. Layering in expectations for fewer trades due to high collateral demands – our cumulative derivative hit to FICC revenue estimate rises to ~7%. These impacts should be offset by core underlying growth, driving our ultimate expectation of flat-to-slightly-higher global FICC revenue pool over the next few years.
- **Importantly, growing regulatory forbearance is undercutting the chances of worst-case outcomes** – While many unknowns remain, trends are moving in a clearly positive direction making us view our prior estimated 15-20% regulatory “hit” (incl. OTC, Volcker, B2.5 and B3) to global FICC revenue as conservative, and likely realizable only over 3 to 5 years. Recent positives include: (1) “fixing” the onerous liquidity coverage ratio, (2) new exemptions to un-cleared margin rules and greater collateral eligibility, (3) reports the CFTC may water down a key SEF rule, (4) EU holding on to controversial CVA capital charge exemptions for corporates & pensions (which could push US regulators to ease CVA rules due to competitiveness concerns), and (5) the European Commission leaning toward fairly narrow Franco-German ring-fencing proposals vs harsher Liikanen proposals.
- **And rules continue to be delayed** – Implementation trends are another positive as they give more prep time and raise chances tough rules might be softened. Recent delays include (1) LCR’s 2015-2019 phase-in, (2) un-cleared margin rules’ 2015 start, (3) the CFTC’s exemptive order temporarily delaying cross-border rules, (4) continued Volcker rule delays, and (5) slow EU progress toward clearing.
- **Preferred capital markets names: JPM, CS & BARC** – Given expectations of continued value in top scale I-banking franchises, Citi’s preferred capital markets names include JPMorgan, Credit Suisse and Barclays among global banks.

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

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## Key Takeaways

In this report we refresh our views on the impact from regulatory reform on banks' fixed income trading revenues following up our deep dive on the coming structural change in Fixed Income Trading, ["Sizing Up The Elephant in the Room"](#) published last May. In this report we focus on OTC derivatives given the imminent US clearing implementation, upcoming SEF/exchange trading rules, and newly re-proposed un-cleared margin rules. At the end of this report we give an update on a host of other issues including extraterritoriality, the recent BIS global RWA review, the Liikanen ring-fencing proposals, and the Fed's single-counterparty limits.

**While there are still a number of unknown rules – we expect OTC derivative reforms to be a roughly 7% cumulative drag on FICC trading revenues.**

**Impacts, however, should trickle-in slowly over time with SEF impacts possible beginning in early-2014 and un-cleared margin rules likely not starting until 2015 or later.**

**Derivatives are an important source of revenue for banks** – We estimate roughly 40% of FICC trading revenues come from derivatives depending on the bank – with about 1/3 from products that can be standardized and cleared (and thus impacted by SEF rules), and about 2/3 of revenue from products that will not be cleared due to complexity, structure or their bespoke nature (and thus impacted by un-cleared initial margin rules). The stakes are high, evidenced by JPMorgan – which we believe has one of the largest derivative businesses among US banks. At its recent investor day JPM estimated a potential \$1-2 billion revenue hit to revenues from new market structures, which would be a 5-10% cumulative hit to trading revenues (or roughly 15-30% hit to impacted derivative revenues). As rules have progressed, we continue to believe our prior estimate of ~7% impact to FICC revenues from OTC reform seems reasonable, and see these impacts will largely be driven by 3 factors: (1) clearing and futures substitution, (2) SEF/exchange trading of swaps, and (3) un-cleared margin rules which could crimp volumes of un-cleared swaps.

**How we are thinking about regulatory impact in FICC over the next 3 years** – 2013 seems likely to see very little impact from regulations. Impacts, however, should phase in beginning in 2014 as SEF trading begins (2-3% hit). And by 2015, dealers must begin posting un-cleared margin (another 3-5% impact), for a cumulative ~7% drag on overall FICC revenues. These impacts however will be masked by core underlying growth – but are likely to keep the global revenue pool from growing much over the next few years.

Below we summarize the key findings in our report:

**1) 2013 launch of US clearing alone seems unlikely to be a “big deal” to banks’ trading revenues...** We expect the initial regulatory impacts in 2013 from clearing adoption in the US will be modest, as OTC clearing – while adding some administrative costs and collateral demands – really only affects the counterparty structure of the trade, and not banks’ bid/ask execution economics. While volumes may be impacted somewhat, given the gradual phase-in and limitations of alternatives like futures (liquidity, customization, etc) we are not expecting a big revenue drag.

■ **Timing for clearing will be a gradual phase-in, not a big bang** – US clearing begins March 11 and ramps slowly over the year, with Europe likely not beginning clearing until mid-2014. Asia implementation is a mixed bag, with Japan already mandating some clearing of derivatives, while Hong Kong and Singapore appearing to be on a slower track.

■ **Buy-side clearing in the US is just beginning and will phase-in evenly over the course of the year** – Based on activity observed at LCH, CME and ICE – so far buy-side clearing is not occurring in size ahead of the fast approaching March deadline. Overall we believe the rough phase-in of client trading volumes will be roughly evenly split 1/3, 1/3, 1/3 over the March, June and Sept deadlines. According to ISDA and Risk.net 77 firms and 215 active funds have voluntarily disclosed intention to clear as major market participants by the March deadline including several prominent HF managers. (See pages 12-19 for details on clearing).

■ **Minor disruptions are inevitable, but we anticipate no big volume changes –**

Over the next 12 months we would not be surprised by some volume hiccups during clearing implementation – as some firms may not be fully prepared operationally. That said we do not expect that clients are likely to radically alter or reduce trading/hedging activity due to US clearing rules. We also believe there are likely to be some “active funds” that might fail to meet the first March deadline due a late start in the on-boarding process.

**2) ...But the risk of “futuresization” or a mix-shift from OTC to futures remains a key risk that bears monitoring.** Some observers are calling for big shifts in derivative activity from OTC swaps to futures or new “swap futures” products. (See page 19 for details on trends in futuresization).

It's difficult to specify the precise difference in profitability to a dealer between a plain vanilla swap trade and a future trade (as swaps are a principal business with P&L dependant on the strength of a banks' risk management & positioning). A big shift in many ways would disintermediate banks' swaps business. Futures is primarily an agency-only commission business (with the exception of some off-exchange block trades) making overall profitability for banks to be far lower. Our best guess is banks typically make many multiples more trading swaps than executing futures.

■ **So far the first evidence of “futuresization” has been in energy...** Recent actions by ICE converting its line-up of OTC swaps to futures seemed clearly designed to help clients avoid impacts from new regulations.

■ **...But we believe “futuresization” broadly may be less of a threat due to the liquidity banks provide.** After examining new “swap futures” products, buy-side comments and recent volume trends, we believe near-term risk to banks' OTC derivative revenues from futuresization bears monitoring. Impacts seem unlikely to appear until at least June 2013, when major asset managers, non-dealer banks and insurance companies will be forced to clear. The key question in our eyes is will the lower cost of margin and more favorable block trading rule be enough to allow futures or swap futures to gather a critical mass of liquidity. Over time futures will likely enjoy some market share shift – though we expect some losses to be manageable as it will likely come from dealers' pool of low-margin, plain-vanilla flow trades – which generate less revenue.

■ **And the appeal of “swap futures” may eventually be weakened by more even-handed regulation...** Two of the key benefits of swap futures are (1) lower margin (1-2 day for futures vs 5-day for cleared swaps), and (2) lower block trade thresholds. However, we would not be surprised if the CFTC eventually evens the playing field, toughening some requirements of swap futures, which once in delivery, have the same economics and risk of cleared swaps.

■ **...which makes sense given the CFTC's track record and Gensler's attempt to push through “Core Principal 9”** – A leveling of the playing field between cleared swaps and futures could come in a few different ways – either through looser rules on cleared/SEF traded swaps, or potentially tighter rules on futures. In 2011 the CFTC tried to pass the highly controversial “core principal 9” rule which sought to increase price transparency on exchanges – and would have been a big step in narrowing the price transparency/block trade advantage of futures. (Core principal 9 said futures exchanges had to trade 85% of their volume on centralized exchanges, as opposed to in bi-lateral off-exchange block trades). The result was a firestorm of opposition from the exchanges that ultimately has side-lined the rule. While we can't be sure how regulations will be ironed out – it seems clear regulators are aware of the differences and eventually will find ways to address them.

- **Importantly, we don't see Corporate clients shifting from OTC swaps to futures** – Given exemptions from required clearing, corporates' refusal to tie up liquidity in hedging strategies, and GAAP hedge accounting recognition challenges, sources we have spoken with indicate most corporates – with the exception of a small few in the energy sector – are very unlikely to shift hedges from swaps to futures in any meaningful way. (See page 31 for our update with PricewaterhouseCoopers Ed Heitin who advises Fortune 500 corporations on derivatives hedging).

**3) Final SEF trading rules – due shortly – will be a critical swing factor.** Nearly all cleared swap activity in the US will be forced to move to new “swap execution facility” electronic trading platforms. Historical examples of other products that went electronic or saw large increases in price transparency include equities, FX, and corporate bonds – which saw bid/ask compression of ~75% on average over time, offset by higher volumes. In our view, how the final SEF rules are structured will be a key factor in whether the margin compression from SEF will follow historical examples, or not.

- **We expect SEF impact may be somewhat less than historical examples, but will depend on final rules and which platforms liquidity gravitates....** SEF impact will be highly dependent on how final rules come through, and how liquidity is distributed between SEF exempt block trades (voice trading), electronic request for quote (RFQ) systems, and new electronic central limit order book (CLOB) venues (greatest price transparency and tightest bid/ask). Separately, the current relatively thin bid/ask starting point may play a factor limiting bid/ask compression. Interest rate swaps quotes are already decimalized and run in the tenths of basis points, though its hard to say they could not move to hundredths of basis points. (See page 24 for more on SEF trading).

- **...But recent IRS volume shifting to SEF has seen only ~20% bid/ask compression** – So far only about 8-10% of interest rate swap volume has moved to electronic venues that eventually will register as SEFs. While hard data is scant, anecdotal sources indicate for interest rate swap volumes that recently moved to electronic venues – so far there has been only about a 20% compression in bid/ask vs what would be earned in a similar bi-lateral voice trade. This may not be the best datapoint however, depending on whether final liquidity aggregates on central order book style or RFQ-style execution venues.

- **Three key issues to watch for as final SEF rules are unveiled...** The extent to which standardized swaps see massive spread compression or volume challenges will be determined by the severity of the final rules.

- **1) If block trade size limits are reduced** – Lower block-trade exemptions would exempt more OTC trading liquidity from RFQ and central limit order book platforms – which instead could remain in bi-lateral voice trading. This is positive for dealers – which have the balance sheet capacity to offer clients deeper liquidity – as voice trading helps preserve the dealers' involvement in the transaction via bi-lateral relationships, and retain control of larger trades. This compares to a more negative outcome where buy-side trading “side-steps” dealers altogether by interacting 1-1 via electronic central limit order book venues. The higher the block trade limit, the more transactions must be made through electronic RFQ or central limit order book venues. Based on the last proposal from the CFTC in Feb 2012 (second iteration) only 6% of credit and interest rate swaps would qualify as block trades.

- **2) If the 15-second delay rule is eliminated or toned down** – We’ve heard little of late on the 15-second rule, which requires dealers that negotiate a trade with a client, or seek to cross two sides of two offsetting client trades simultaneously -- to first show the price to the market for 15 seconds to give other market participants a chance to offer a better price. The goal of the rule is to significantly increase pre-trade price transparency and price competition, which seems likely to be a negative for bid/ask and dealer profits. Dealers have opposed the rule on the basis that it disincentivizes market-making and liquidity, if third parties can cherry-pick trades to step in between, and could present risks when trying to unwind/hedge the trade.
- **3) Reduction of the “5” request for quote (RFQ) minimum...** SEF rules will require standard trades (below the block threshold) to be executed on either an electronic exchange or via an electronic RFQ system (vs the current dominant bi-lateral voice-brokerage model). To force price competition, the CFTC’s proposed rules state that clients, when looking to do a trade over an RFQ system, must solicit a minimum of 5 quotes from different dealers. Under this scenario, buy side customers worry about the impact of information leakage, which trumps the potential better price that might get from putting dealers in competition since it’s already a competitive market. Dealers worry greater pre-trade price transparency will create a “winners curse” allowing the 4 “losing” dealers to position against market-making brokers. Greater quote requirements may also accelerate a diffusion of clients’ trading “wallet” across more parties (as some clients tend to concentrate contracts with one or two dealers, a trend that will be helped by elimination of counterparty concerns though clearing). And
  - **...Which the CFTC appears likely to water down from 5 quotes to 2 which we see as a positive** – According to a Feb 28 report by the FT, the RFQ minimum appears likely to be softened to “2” which should be a modest help for incumbent dealers, though still not as good as a system that leaves it up to client discretion whether they need price discovery, given that they already have the choice to solicit as many quotes as they would like.
- **Plus possible un-even application of electronic swap trading rules abroad remains a wildcard.** Another key unknown is whether US firms will be disadvantaged by tough SEF restrictions vs European or Asian competitors where regulators may take a less prescriptive role in shaping derivatives trading. In our view the most likely outcome seems as if it may be – US mandatory SEF trading rules would apply to US and foreign firms’ activities in the US, but abroad US and foreign firms may compete on local rules. We also could see European rules move closer to US rules once adopted, though that has not seemed to be the general trajectory.
- **SEF timing seems like a 2014 event, with Europe & Asia later (or not at all)** – Final US SEF trading rules from the CFTC are reportedly due by April – but we don’t expect implementation to be immediate. In the fastest conceivable timeline, regulators could piggy back SEF rules on to the clearing timeline, possibly lagging by some amount. At the earliest, SEF rules could go live by late-2013, but we do not expect any impact to be seen until 1H14.

**4) Un-cleared OTC trades are likely to still see a sizeable impact from tough margin rules – but recent proposals are more favorable.** We believe most banks make about 2/3 of their derivative revenue from trades that will remain un-cleared vs 1/3 from the high volume of lower-margin plain vanilla trades that will shift to clearing and SEF trading. Given the revenue pie for uncleared seems larger – we believe final un-cleared margin rules will be among the most important for investors to watch.

- **Recent progress on un-cleared margin has been positive...** In mid-Feb BIS/IOSCO released its second draft of un-cleared margin rules – which also follows 2 prior proposals from the CFTC and SEC. (*See p 28 for more on new un-cleared margin rules*).
  - **New €50 million margin threshold seems like key positive as it could reduce system wide initial margin demands by 56% ...** Compared with a zero threshold, BIS estimated its newly proposed initial margin exemption on the first €50 million of swaps payments would reduce systemic collateral demands by 56% requiring €0.7 trillion of initial margin vs €1.7 trillion without an exemption. The rule exempts counterparties with aggregated €50 million or less in initial margin requirements and works like a €50 million margin “deductible” on total initial margin between each consolidated counterparty.
  - **Regulators also widened definitions for eligible collateral...** “Acceptable collateral” criteria was widened to include corporate bonds, covered bonds, equities and gold.
  - **...And delayed implementation into 2015 for most banks.** Rules are now recommended to phase in globally from 2015-2019 leaving only dealers as likely to post margin in the first year. The threshold for posting drops slowly over 2016-2018. From 2019 and beyond any party that has less than €8 billion of total un-cleared notional worth of activity will not need to post initial margin.
- **...But several key concerns remain including 2-way margin posting & rehypothecation limits...** Dealers however continue to fight “2-way margin” posting, i.e. both the bank and the client must each post initial margin to each other and segregate this amount, versus prior US proposals that only had clients posting margin to banks. Two-way posting with strict limits on re-use of collateral is viewed by many as likely to be an issue.
- **...However given the 2015 start, there is a lot of time between now and implementation.** While the un-cleared margin rules are dubbed “near-final” and have a very short Mid-March comment period deadline, some are optimistic these issues may be addressable over the next few years, as once final BIS rules come through, each regulatory body must actually translate them into local regulations.

**5) Globally we note a number of positive regulatory changes have been occurring...** Outside of the derivative rules, we see the most meaningful regulatory “fixes” including the (i) softening of the liquidity coverage ratio, (ii) apparent “death” of Liikanen ring-fencing proposal in Europe and instead a shift to more narrowly oriented French and German ring-fence proposals, and (iii) European regulator’s insistence on moving forward with CVA capital charge exemptions for corporations and pensions. Also late last year a Washington DC court struck down the CFTC’s commodity trading position limits due to inability to prove the limits would reduce speculation or not be an undue burden on market participants.

6) ...But numerous unknowns still remain.

■ **Volcker remains a big wildcard, but repeated delays are a positive –**

According to reports from the WSJ on Feb 27 the earliest possible release of a final version of the Volcker rule would be the end of the second quarter, but will most likely will be pushed back again until 2H13. This equates to nearly 2 years since the original draft proposal was issued in Oct 2011. While some of the delay appears due to SEC/Fed disagreements, we view delays optimistically, indicating regulators do not want to issue a poorly crafted rule that roils the markets.

■ **Extraterritoriality (risk of un-even global playing field) remains a top fear for US banks –**

The risk of an un-even playing field remains a concern for global US banks like JPM – which operate in a branch structure abroad. If US regulators insist US rules apply to US bank activities globally – there remains a very big risk US banks will lose trading business to overseas competitors.

– How ET could cause problems – One example of the problem with extraterritoriality of US rules is the Volcker rule – as the US has proposed applying it to US bank activities globally. This could restrict principal market making in securities like sovereign bonds, causing US banks to lose relationships with foreign central banks. Another example is with margin rules for un-cleared derivatives in parts of the world like Latin America where there may not be similar requirements. Depending on final US rules, local banks could execute derivative trades under local rules without margin, while US banks would need to ask for margin – effectively putting them out of the trade.

– **One potential fix suggested by JP Morgan is local subsidiaries ...**

Assuming US regulators cast their net too widely (and for example Volcker is applied to US firms globally but not global competitors) US firms are likely to take undertake significant actions. JPM I-Bank co-Head Daniel Pinto recently said JPM will seek to incorporate into separately capitalized local subsidiaries abroad. While this raises expenses and traps capital in offshore silos, so is less than ideal, it is one solution to re-level the playing field.

– **...Though local subsidiaries are not 100% certain to fix every regulatory difference –**

While JPM's subsidiarization plan may fix some problems such as application of derivative margin rules, we believe it is unlikely to iron out all differences. For example if US banks under US Basel 3 needs to calculate CVA charges for derivative trades with pensions and corporates in Europe – while Euro banks do not – this would not be helped by a locally incorporated legal entity structure. (See page 33 for details).

■ **Recent Global RWA review found significant discrepancies between global banks' risk weighted asset calculations causing uncertainty on regulatory response –**











On Jan 31, 2013 the BIS released details of its global study of risk weighted asset consistency. The exercise, which involved 15 firms calculating RWA for a series of 26 different model portfolios found significant deviations between firms.

– **We don't expect a sharp regulatory backlash on RWA rules –** Despite deep inconsistencies – which we long suspected but could not quantify – that were partly attributed to jurisdictional rules, we believe the muted nature of regulators' response was somewhat better than expected. Most importantly, regulators did not put forth new recommendations for stricter standardized calculations – and it seems like a relatively low probability of near-term restrictive policy reactions from the review. (See p 36 for details).

- **Fed's 10% single-counterparty limits – which could force banks to dramatically curtail and unwind inter-dealer derivative trades – have seen little momentum** – Dodd-Frank required regulators to set new limits on counterparty concentration levels for the largest banks. In Dec 2011 the Fed put forth proposed rules – which recommended a maximum 10% “single-counterparty” limit for banks with over \$500 billion in assets (a tougher level than the 25% required by law). This is potentially a big issue because the very onerous calculation methods proposed by the Fed could cause US banks to significantly reduce derivative counterparty exposures transactions between one another. These rules – which stem out of distrust of banks' use of modeling – appear to have been de-prioritized by regulators for the moment – but bear watching given their proposed severity. *(See p 41 for details).*

# Progress on Key Regulatory Issues: Largely Positive

Figure 1. Key regulatory progress

Issue	What Happened?	Positive / Neutral / Negative
Un-cleared OTC derivative margin rules	<ul style="list-style-type: none"> <li>■ <b>BIS/IOSCO released draft of "near-final" margin rules for un-cleared OTC derivatives</b> <ul style="list-style-type: none"> <li>- Regulators exempt the first €50 million of initial margin payments owed per counterparty relationship</li> <li>- BIS delays implementation to phases starting 2015-2019</li> <li>- 2-way Initial Margin Posting viewed as severe</li> <li>- Limits on Rehypotheication of margin</li> <li>- Retention of very onerous 10-day 99% VAR thresholds</li> </ul> </li> </ul>	        <b>More Positive than Negative</b>
CFTC delays various rules/reporting requirements	<ul style="list-style-type: none"> <li>■ <b>CFTC exemption order on "cross-border" activity effective through July 2013</b> <ul style="list-style-type: none"> <li>- CFTC issues exemptive order on cross-border application of swaps rules in Dec 2012</li> <li>- Temporarily prevents CFTC's "major swap market participant" registration rules from affecting foreign derivative customers that trade with US bank counterparties</li> <li>- Temporarily allows US banks to continue to deal derivatives abroad under similar local rules as foreign competitors</li> </ul> </li> </ul>	  <b>Neutral to Positive</b>
Futures & "swap futures" threats emerging	<ul style="list-style-type: none"> <li>■ <b>New "Futures on Swaps" products launched</b> <ul style="list-style-type: none"> <li>- CME and ERIS establishing new interest rate futures contracts which "deliver" into a cleared swap at expiry.</li> <li>- ICE plans to launch Markit Credit Index futures and options &amp; converted existing OTC energy contracts to futures.</li> </ul> </li> </ul>	  <b>Negative / Overdone Threat</b>
Liquidity Coverage Ratio	<ul style="list-style-type: none"> <li>■ <b>Calculation softened / Implementation Timeline delayed</b> <ul style="list-style-type: none"> <li>- In Jan the Basel Committee released revised calculation methodology for bank's liquidity coverage ratios and opted for a slower 4-year phase-in period beginning 2015 (vs prior 2015 start).</li> </ul> </li> </ul>	  
Commodity Position Limits	<ul style="list-style-type: none"> <li>■ <b>New position limits struck down in DC court.</b> <ul style="list-style-type: none"> <li>- Late last year DC court ruled the CFTC's new position limit rules failed to show they would prevent undue speculation, and failed to prove they would not create undue burdens as the Dodd-Frank law had required.</li> <li>- We expect CFTC to eventually return with a study showing the required effects, and attempt to reinstate the rules</li> </ul> </li> </ul>	  <b>But Not Done Deal</b>

Source: Citi Research

# Regulatory Issues to Watch

Figure 2. Upcoming rules to watch and issues needing resolution

<b>OTC Clearing Europe</b>	<ul style="list-style-type: none"> <li>■ <b>Current expectation is for European Clearing adoption in mid-2014</b> <ul style="list-style-type: none"> <li>- EMIR implementation timeline for Europe seems likely by mid-2014</li> <li>- Rules on required exchange trading of derivative appear to be side-tracked and may not come in same form as US</li> </ul> </li> </ul>
<b>Swap Execution Facility Rules / Mandatory exchange trading of derivatives</b> (US/Global)	<ul style="list-style-type: none"> <li>■ <b>Final SEF/Exchange trading rules expected very soon</b> <ul style="list-style-type: none"> <li>- Block trade exemptions - Are large block trades exempt from SEF/electronic trading, or must most trades go to SEF?</li> <li>- Request for quote protocol - Do regulators require clients to seek a minimum of 5 quotes, fewer, or have no minimum?</li> <li>- 15 sec rule be dropped? Proposal requires trades to be shown to market for 15 sec in case better execution arises.</li> <li>- Will US be only implementer? Europe and Asia on much slower path to OTC trading rules.</li> </ul> </li> </ul>
<b>Margin Rules for Uncleared OTC Derivatives</b> (Global)	<ul style="list-style-type: none"> <li>■ <b>Basel/IOSCO draft of "near-final" margin rules open to industry comments through March 15, 2013</b> <ul style="list-style-type: none"> <li>- Will rehypothecation of margin prohibition be removed? Will "two-way" gross IM posting be changed?</li> <li>- Phase-in for bank dealers slated to begin in 2015 - but industry may push for even longer delay</li> <li>- Will un-cleared deliverable FX fws &amp; swaps be exempt from margin globally? (Exempt in US per Treasury proposal)</li> </ul> </li> </ul>
<b>Volcker Rule</b> (US firms & Global firms interacting w/ US clients)	<ul style="list-style-type: none"> <li>■ <b>Will market making come under tight scrutiny?</b> <ul style="list-style-type: none"> <li>- Tightness around inventory holding periods and portfolio hedging will be key drivers of rule severity</li> <li>- Timing of implementation may get 2 year window from final rule, putting adoption in mid-2015</li> <li>- Municipal bonds and sovereign bonds may get new exemptions in final rule</li> </ul> </li> </ul>
<b>Extraterritoriality / Level Global Playing field</b>	<ul style="list-style-type: none"> <li>■ <b>Exemption for US firm's international dealing expires by July 2013 - though could be extended</b> <ul style="list-style-type: none"> <li>- Europeans holding out on giving US "equivalent jurisdiction" designation</li> <li>- CFTC pushing for tough application of US margin and swap dealer registration abroad</li> <li>- European regulators sticking to CVA capital charge exemptions for corporates &amp; pensions not (yet) available in US</li> </ul> </li> </ul>
<b>Capitalization of Foreign Banking Subsidiaries</b>	<ul style="list-style-type: none"> <li>■ <b>Fed proposed rules could force US-subsidaries of foreign banks to add capital</b> <ul style="list-style-type: none"> <li>- Stiff US rules however risk driving European regulators to put forth similar EU rules in retaliation</li> </ul> </li> </ul>
<b>10% Single-Counterparty Rules</b> (US)	<ul style="list-style-type: none"> <li>■ <b>Fed proposed limits on counterparty exposure which could affect large derivative dealers</b> <ul style="list-style-type: none"> <li>- Calculation of exposure via "current exposure method" remains highly controversial.</li> <li>- Fed's 10% threshold is tighter than the 25% minimum required by Dodd-Frank, but within Fed's authority/discretion</li> <li>- Our DC contacts indicate this rule appears to be running on slower track than other major rules.</li> </ul> </li> </ul>
<b>BIS Global Risk Weighted Asset Consistency Review</b>	<ul style="list-style-type: none"> <li>■ <b>RWA calculations inconsistencies across regulatory jurisdictions and firms found</b> <ul style="list-style-type: none"> <li>- In late Jan the BIS released a study showing wide variability in bank calculations of RWAs for a sample portfolio. Discrepancies were due partly to regulatory regime differences</li> </ul> </li> </ul>

Source: Citi Research

## OTC Derivative Clearing

**“I think clearing ... [will] play out over many years.”**

Goldman Sachs CFO  
Harvey Schwartz 2/12/13

**The direct impact from OTC derivative clearing to 2013 revenue should be relatively small:** In 2013 we expect margin drags from clients' shift to clearing to be a very limited drag on global FICC revenues, as eligible standard volumes slowly migrate to clearing, and the current low-rate environment helps minimize costs from new margin requirements for both clients and dealers. (Note as we progress into 2014 drags are likely to increase, primarily due to lower bid/ask from mandatory swap execution facility trading in the US - see page 24).

In Figure 3 below we show the expected long-term shift from un-cleared trades to clearing per the recent BIS quantitative impact study. Overall, the top global derivatives dealers indicated that 46% of the un-cleared derivative trades (based on notional size) on the books today would qualify for clearing. This re-mixing however will actually occur very slowly as existing trades are grandfathered from clearing, and re-mixing will occur only as un-cleared trades mature and new cleared trades are added.

**Implementation of clearing will not be a step function event, but build gradually over 2013 and into 2014...** We see client adoption of mandatory OTC derivative clearing feathering steadily over the next 2 years driven by: (1) the 3-phase US implementation as shown in Figure 6 and (2) our expectation that Europe which we estimate represents about 35% of the total eligible pool is unlikely to even begin the shift to clearing until mid-2014.

- **...Which should soften the visible drag from higher margin requirements –**  
As clearing volumes grow slowly over time, we do not anticipate as sharp a decline in activity – partly helped by somewhat low current activity levels. Instead, we expect more modest drags as clients cope with new initial margin demands from cleared trades. While the impact of collateral needs and related funding/opportunity costs will eventually be greater in a higher rate environment – we do not expect clearing alone to be a shock to bank 2013 FICC trading revenues.
- **Offsetting this impact, we expect some clients may temporarily avoid cleared products, and move to un-cleared trades –** Some market participants seeking to avoid initial margin liquidity demands and clearing requirements (or which are simply not operationally ready to clear) may shift some volumes to similar but un-clearable products (e.g. trade interest rate options instead of interest rate swaps). This is partly because we believe initial margin is not yet being collected by all dealers for many un-cleared products (particularly shorter-tenor trades). Long-term however this shift is not a viable solution, as beginning in 2015 uncleared margin rules will take effect.

**However we believe the main risk is a shift in volumes from cleared OTC trades to futures –** While we do not expect a major shift – we believe this is the major downside that could come from futures. *See page 19 for more on “futurization.”*

Figure 3. 46% of un-cleared notional values would be eligible for clearing. While existing trades are exempt, this would imply an eventual future 70/30 cleared/un-cleared mix.

Mix of Current & Future Estimated Derivative Notional Values						
Notional USD (Tril)	FX	Rates	Credit	Equity	Commod.	Total
<b>Today</b>						
Uncleared	71	275	25	7	3	380
Cleared	33	292	7	0	1	300
Total	104	566	32	7	3	680
<b>Forecast</b>						
Uncleared	62	129	13	3	2	205
Cleared	42	437	20	4	2	475
Total	104	566	32	7	3	680
% Uncleared Today	68%	49%	78%	97%	77%	56%
% Cleared Today	32%	51%	22%	3%	23%	44%
% Uncleared Forecast	59%	23%	39%	43%	46%	30%
% Cleared Forecast	41%	77%	61%	57%	54%	70%
% Chg in Uncleared \$	-13%	-53%	-50%	-56%	-40%	-46%
% Mix Shift to Clearing	9%	26%	39%	54%	31%	26%

Source: BIS/IOSCO, Citi Research. Survey responses grossed-up to match total global notional values. Note existing trades are grandfathered, so mix will not directly shift, but re-mix overtime as trades mature and are replaced.

## US Clearing – Implementation Ahead

As shown on Figure 4 and Figure 5, US clearing implementation will occur in 3 phases and focus on plain-vanilla interest rate swaps and CDS index trading. While some large buy-side clients have begun ahead of the March deadline, only a small fraction of the eligible client volume for clearing is currently being cleared.

Figure 4. US 2013 Clearing Timeline

### Category 1 - March 11th

Swap Dealers  
Major Swap Market Participants  
Active Funds (>200 trades/mo)

### Category 2 - June 10th

Non-dealer Banks and Financial Co's  
Commodity Pools  
Private Funds

### Category 3 - Sept 9th

Thrid Party Accounts  
ERISA Funds  
Non-exempt Non-financial end-users

Figure 5. Standard swaps required for US clearing

Rates	Rate	Maturity
<b>Fixed to Floating</b>		
USD / EUR / GBP // JPY*	LIBOR / EURIBOR	28-days - 50 yrs // *30 yrs
<b>Basis Swaps</b>		
USD / EUR / GBP // JPY*	LIBOR / EURIBOR	28-days - 50 yrs // *30 yrs
<b>Forward Rate Agreements</b>		
USD / EUR / GBP / JPY	LIBOR / EURIBOR	3 days - 3 yrs
<b>Overnight Index Swaps</b>		
USD / EUR / GBP	FF/ EONIA / SONIA	7 days - 2 yrs
<b>Credit Default Swaps</b>		
	Series	Tenor
<b>Indices - North America</b>		
CDX.NA.IG	Varies by tenor	3Y, 5Y, 7Y, 10Y
CDX.NA.HY	Varies by tenor	5Y
<b>Indices - Europe</b>		
iTraxx Europe	Varies by tenor	5Y, 10Y
iTraxx Europe Crossover	Varies by tenor	5Y
iTraxx Europe HiVol	Varies by tenor	5Y

Source: Citi Research, CFTC

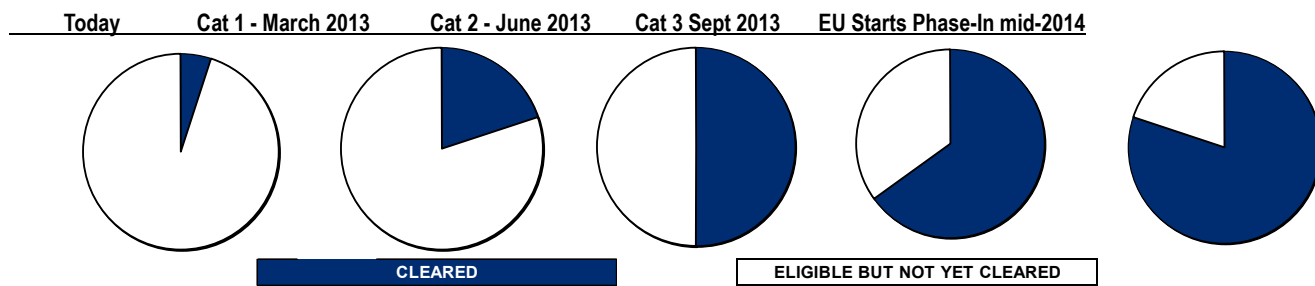
Source: Citi Research, CFTC

## Estimated Global Clearing Time-Line

- **Phase 1 – 3/11/13: Est ~20% of go forward volume gets cleared** – Given the late rush to clearing, we believe the largest clearing members are focused on on-boarding the biggest accounts which fall into phase 1. Note that transactions between dealers in category 1 and non-dealer banks and financial companies which are not deemed major participants in category 2 do not have need to clear until June 10.
- **Phase 2 – 6/10/13: Est ~50% of go forward volume gets cleared** – Phase 2 for US clearing includes financial firms like banks, insurance companies, and less active asset managers that do not meet the phase 1 designation.
- **Phase 3 – 9/9/13: Est ~65% of go forward volume gets cleared** – Phase 3 appears to be a smaller cohort, and by the time phase 3 comes into effect we believe the industry will be clearing roughly 65% of eligible client volume.
- **Next Phase – by mid 2014: 80% of eligible volume will be clearing with the remaining 20% phasing-in from Europe & Asia** – Europe which we estimate will represent about 35% of the ultimate pool of cleared trades, seems most likely on pace for start sometime in 2014. We would also not be surprised to see some phased implementations from Asia. All combined we estimate this would still leave about 20% of the eligible volume pool remaining by the back-half of 2014 fully coming online by the end of the year.

Figure 6. Client OTC clearing will phase-in slowly over 2 years; with ~35% not coming online until Europe adopts clearing in mid 2014

### Cleared Volume as % of Final Pool of Eligible Client Transactions



Source: Citi Research estimates. Pie represents approximation of total clearable client derivative trades, excluding dealer-to-dealer volume and exempt end-users.

## Global Clearing – Modest Progress on Client-Side to Date

**Clearinghouse volume continues to rise, but so far most of the volume we believe is still vastly dealer-to-dealer** – Below we show clearing progress at CME & LCH for rates and CME & ICE for CDS contracts – which have continued to climb as we near clearing deadlines. Dealers have largely been clearing rates and CDS trades since the Sept 2009 commitment by the top 15 global players to clear 90% of eligible rates trades and 95% of eligible CDS trades – however clearing is only beginning to be adopted by buy-side clients.

Figure 7. Summary of Notional Volumes Outstanding on CCP's

Cleared		LCH	Approx	
Oustandings	CME	Client	Client	LCH
Rates (\$US Tril)	0.8	3.8	Total	Total
			4.6	370

Cleared			
Oustandings	CME	ICE	Total
CDS (\$US Tril)	0.05	1.50	1.6

Source: Company reports. Note cleared volumes typically include both sides of a trade, so are roughly 2x the size of actual trades outstanding.

■ **Rates clearing progressing but client clearing remains small relative to overall amount of trades currently outstanding** – In Figure 8 and Figure 9 we show steadily rising clearing house volume for CME (left) and LCH (right). The top blue line in each graph represents cumulative dollars cleared – which has steadily risen since 2012. This amount includes all matured and outstanding swaps in US\$ terms for CME, and all buy-side client swaps in all currencies for LCH. While by definition this figure can only rise, it helps put in perspective aggregate clearing levels – which were \$1 trillion of notional for CME and \$19 trillion (buy-side client only) for LCH.

- On the bottom of each graph (orange line) we show the current trend of cleared interest rate swaps on CME & LCH. For CME this is cleared “open interest” or trades outstanding on CME sitting in the clearinghouse. The name is slightly different at LCH given there is no execution mechanism – with current active swaps on LCH called “notional outstanding.”
- CME client IRS clearing remains low relative to LCH's SwapClear platform which began clearing in 1999 (primarily for dealers). CME cleared interest rate swaps outstanding total ~\$800 billion across all currencies. (We only show US\$ interest rate contracts of \$600 billion in Figure 8). This compares to \$3.8 trillion of buy-side notional outstanding on LCH. We note that LCH's grand total of notional IRS cleared including dealer volumes is roughly 100x larger at nearly \$370 trillion (Figure 7). This \$370 trillion adjusted for bi-lateral trade “sides” double-counting equals about \$185 trillion of notional, or roughly 40% of the total of \$495 trillion of IRS notional outstanding using BIS figures as of the most recent June 2012 figures.

Figure 8. IR clearing on CME continues to ramp off a very low base with open interest of about only \$600 billion\*

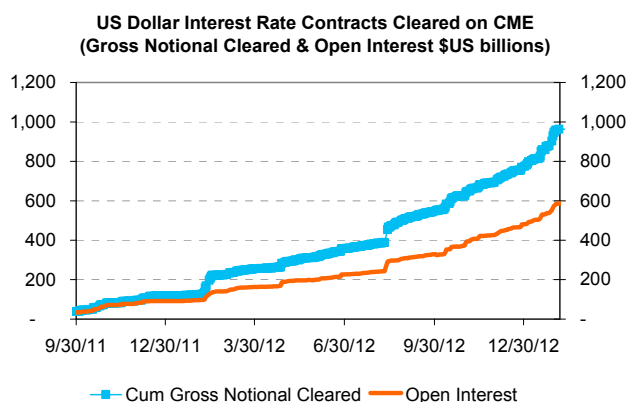
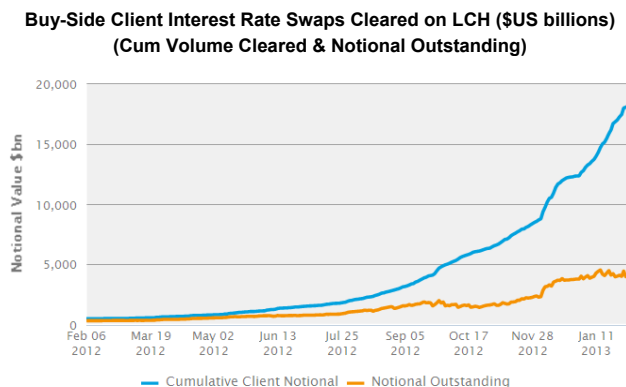


Figure 9. And LCH only shows \$3.9 trillion of buy-side client clearing – vs its \$370 trillion of total cleared IRS notional outstanding.



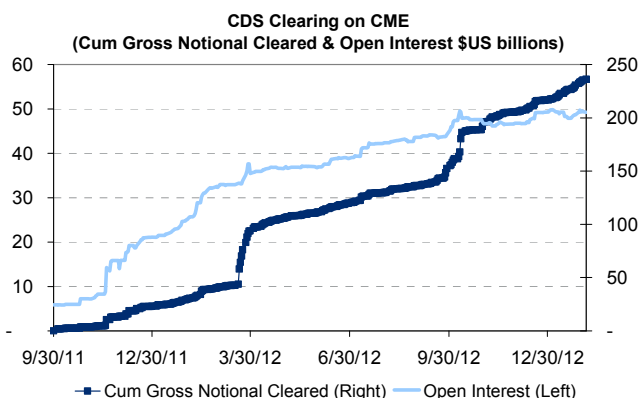
Source: CME Group, LCH SwapClear, Citi Research. \*For CME we show US\$ IRS for simplicity as this is the largest bucket, LCH shows IRS across all currencies. Note for CME in Figure 7 the total Open Interest in Rates across all currencies is approximately \$800 billion.

**Credit - Clearing also progressing, but not showing much evidence of significant growth from non-dealers yet**

Below we show similar graphs for current cleared open interest and aggregate cumulative totals for CME and ICE. The cumulative gross notional of CDS Index contracts cleared (dark blue lines) continues to climb. ICE which dominates CDS has cleared over \$35 trillion, while CME has cleared only \$250 billion.

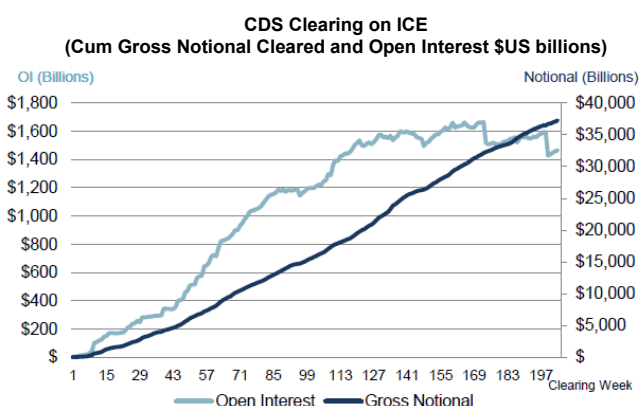
**Outstanding cleared CDS contracts seem to have leveled-off.** Current notional of contracts in clearinghouses – have leveled off as of late for both ICE and CME – running in the \$1.5-1.6 trillion range for ICE (right graph) and in the \$50 billion range at CME (left graph).

**Figure 10. CME CDS open interest of \$50 bil has been holding steady, as buy-side client clearing has yet to significantly take hold.**



Source: CME Group, Citi Research

**Figure 11. Open interest at ICE shows similar steady ~\$1.5 trillion of Open Interest as we've yet to see a rush of clearing from buy-siders.**



Source: LCH SwapClear, Citi Research

## Bank Clearing Readiness & Opportunities

**Some bank competitors appear more prepared for clearing than others –**

Based on our understanding, we believe JPM, BARC and CS have made the among the most significant investments in clearing to-date and appear most ready to be up to speed with clearing at the outset of US implementation. Separately, we believe BAC, MS and GS appear to have invested less aggressively, though still appear operationally ready to participate. We also expect smaller futures commission merchants (FCMs), which are technically allowed to participate with only \$50 million in minimum capital, will still be squeezed very hard by the high cost of regulatory compliance.

**New (modest) clearing revenue streams will be one positive...** JPM – which we expect to be one of the largest clearing banks – estimated it might see \$300-500 million of incremental revenue opportunity from clearing and collateral management long-term – though to achieve this much revenue, we believe will require several years and possibly a higher rate environment.

- Clearing revenues are driven by a number of sources including: (i) Commissions/ ticket fees, (ii) Free carry income from initial margin posted which can be invested in eligible securities (restricted to Treasuries, GSE securities, CDs and commercial paper, and municipal bonds under CFTC rule 1.25 similar to futures), and (iii) maintenance or custody fees (calculated in basis points based on the amount of initial margin posted).

**...Though cross-currents from new execution rules & trading protocols complicate the landscape.** While we do see clearing strength as an advantage to gaining wallet share – we also note the competitive landscape is changing in new ways that also make incumbents vulnerable. For example, in the US proposed SEF electronic trading protocols require banks to request a quote potentially from a minimum of 5 dealers. If this rule goes through – various clients that historically have chosen to deal with only one or two banks for derivative transactions could widen trading to more counterparties. This effect we believe could counter-act some of the benefits from having strong clearing franchises, putting industry market share leaders like JPM at risk. On the other hand, strong players might be able to pick up new customers that they chose not to deal with before due to perceived counterparty risk – that are now less of a risk due to clearing.

## European Clearing Progress

**Summer 2014 implementation** – The European regulatory timetable clearly lags that of the US. As a starting point, the US regulatory legislation in the Dodd-Frank Act was passed in July 2010, while the European legislation EMIR was not passed into law until 2012. Both Dodd-Frank and EMIR are only principle-based laws, and require the creation of specific and technical regulations by regulatory bodies before they can be implemented in practice.

At this point, the next thing to occur in Europe is expected to be trade repository reporting for interest rate and credit derivatives beginning July 2013. This should be followed by the start of European clearing by summer 2014 – more than a year after the US.

As always, the devil is in the details. The EU clearing regime is potentially less burdensome for end-users with the exception of non-financial counterparties that exceed a certain size. The European rules on extra-territoriality are, at least at this stage, more open than US rules by enabling compliance where one of the counterparties is based in a non-EU jurisdiction that is deemed to have an equivalent regulatory regime (which is applied in an equitable way).

## Asia Clearing Progress

Asia with over 15 distinct jurisdictions has been moving forward with an uneven approach to clearing regime. Unlike Europe and the US, where several large clearing houses seem likely to consolidate regional activity – Asia in some ways is migrating toward a network of national CCPs. This allows local regulators greater control, but risks trapping collateral across a variety of jurisdictions, builds national walls between markets, and brings the thorny issue called “interoperability” – or netting collateral across multiple CCPs which has yet to be effectively solved.

- Japan is the largest derivatives market in Asia and one of the first nations to put clearing rules into effect in November 2012. Japan however is mandating that certain OTC derivatives clear through its onshore Japan Securities Clearing Corp clearing house. Generally Hong Kong and Singapore appear to be establishing clearing rules that allow foreign transactions to be cleared in their markets. But like Japan, Hong Kong appears to be pushing to mandate local clearing for transactions with a “Hong Kong nexus” though in certain situations may permit use of a global CCP. Separately, neither Hong Kong nor Singapore appears to be moving forward with mandatory exchange trading of derivatives as regulators in the US have proposed. In other areas of Asia like China and India, derivatives markets are much smaller making decisions here less impacting on global markets broadly.

- Asian regulators have also expressed concerns about the extraterritorial reach of proposed US regulations – which could affect local Asian market participants depending on the extent of activity with “US persons.”

**“Now that the entire derivatives marketplace – both futures and swaps – has comprehensive oversight, it's the natural order of things for some realignment to take place.**

CFTC Chairman  
Gary Gensler 1/31/13

## “Futurization” of Derivative Markets

**“Futurization” – could be a headwind for bank’s’ derivatives volumes, and while early evidence of a big “mix-shift” is lacking...we don’t expect much change until clearing begins.** Given significantly lower margin demands for futures vs both cleared and un-cleared swaps, greater regulatory and legal certainty, and fewer challenges for counterparties operating across borders – many observers are calling for a sizeable shift of trading from swaps markets to comparable futures contracts. This view has been supported by several new “swap futures” contracts which have generated significant buzz.

**Some mix shift to futures seems inevitable, but we believe OTC cleared swaps will survive despite new challenges** – Mandatory clearing rules have not yet started, so its not a big surprise that so far we have not seen much change in futures volumes. In fact open interest in key products like interest rate futures traded on the CME continues to slowly decline (Figure 13). Additionally, new innovative products like swap futures have yet to capture a large chunk of volume.

**Investor clients are more likely to switch from swaps to futures than corporates** – Given margin advantages, we expect there will be some mix shift among non-corporate (asset manager/hedge fund) and financial (banks/insurers) clients from vanilla OTC swaps to futures, however we do not expect OTC volumes to massively re-allocate to futures. The two main reasons we see this shift to futures as likely to be smaller is due to: (1) customization benefits of swaps and (2) deeper liquidity of the OTC market (supported by entrenched dealers).

**Plus new innovative “swap futures” products may see tighter regulation and possibly higher margin requirements** – According to press reports the CFTC has begun a regulatory review of new “swap futures” products (see page 21). We would not be surprised to see the CFTC’s final stance eliminate some of the perceived benefits – swap futures enjoy vs cleared swaps. These currently include (1) lower margin requirements and (2) exclusion in the notional swap tally used to determine if a player must register as a swap dealer or major swap market participant – currently set at \$8 billion of activity per year. (3) Swap futures also enjoy block trade limits set by the exchange – vs OTC swaps where block levels are set by regulators.

Over the next 6-8 months we’ll be watching futures volumes closely to monitor for any evidence of mix shift.

### Futures have several competitive advantages for clients over swaps...

- **Margin seems like it should be large advantage for futures over swaps...** As the rules appear to be unfolding, futures will have initial margin requirements based on expected losses over a 1 or 2 day time horizon, vs a 5-day horizon for cleared swaps and a 10-day horizon for un-cleared swaps.
- **...Plus further benefits of portfolio margining with other products** – For example, CME currently offers portfolio margining - offsetting risks from clients’ Eurodollar and Treasury futures and options trades. By this summer portfolio margining is expected to be expanded to CME cleared OTC swaps. This means clients trading interest rate futures, treasury futures and OTC interest rates swaps cleared through CME can pool the calculation of risk together, achieving lower initial margin requirements than if the trades were viewed as separate futures and swaps portfolios. What’s not clear yet is whether un-cleared swaps will allowed to be considered for overall initial margin calculation purposes.

■ **Lower futures block trade levels are also an advantage over OTC swaps...**

There may be some further incentives for clients to execute futures transactions due to the current system of lower block trade levels for futures vs proposed rules for cleared OTC SEF trade. A block trade can be negotiated bi-laterally, executed off-exchange, or via voice outside of the SEF framework – and enjoys greater anonymity in the market due to delays in the trade price being relayed to the public. According to some market participants, part of the reason ICE has been successful with its shift from OTC energy swaps to futures – was due to anticipated lower thresholds for block trades in futures.

- **...Though we may eventually see some harmonization of futures and cleared OTC block trade rules** – Current block trade rules for futures (which allow off-exchange trading and delayed price reporting) are set by the exchanges, while blocks for SEF trading are being set by regulators – and at what some market participants consider arbitrarily higher levels. This difference seems to advantage exchanges – which can offer big clients more off-exchange bi-lateral execution – preserving favorable trade dynamics like anonymity and delayed disclosure of trade pricing. Over time however we would expect regulators would have cause to narrow these differences, though whether this happens soon, or at all, remains unclear. The fact that the CFTC proposed core principal 9 in 2011 (which so far has not been enacted) – which would have significantly restricted block trading on futures exchanges – indicates to us that regulators in the US are aware of some of the problems with current futures rules, and may be likely to take further action in the future.

**...but there are disadvantages to futures as well:**

- **Futures lack customization** – The new CME swap futures contracts allow clients to lock in the price of a swap beginning at the end of the standard quarterly international monetary market (IMM) dates common to all futures and options contracts. Contracts last for 2, 5, 10 and 30 year maturities. While limiting duration/rate risk between the current date and settlement, this is less precise than the exact date matching clients can achieve with OTC swaps.
- **And its still not clear if corporates will embrace futures due to hedge accounting requirements** – While swap futures allow mitigation of rate risk between the time the trade is executed and the IMM date the swap begins, given difficulty of achieving exact matching for hedge accounting purposes – deliverable futures do not seem likely adopted by current corporate OTC derivative users.
- **While traditional futures require active management of the “roll”** – Another deterrent to usage by corporates is the need for customers to be more active in hedge management, rolling the contracts every time they expire. This roll adds cost and complexity. We note this challenge however appears to be mitigated by new swap futures contracts, though there is little liquidity in these products at this time.
- **Futures liquidity is also not as deep causing a classic chicken-or-the-egg problem** – So far the only major change has been in OTC swap trading at ICE, which has now migrated to a new set of futures products. New products like deliverable interest rate swap futures – while nascent – still have yet to prove they can gather a critical mass of liquidity. So we sit with a circular “chicken or the egg” problem – with activity not ramping because of low liquidity on the exchange, and liquidity, well that’s a function of activity.

**“We have tested some swap futures ... but we won’t start using them unless sufficient liquidity is available. Assuming the swap futures market had comparable liquidity to the OTC swaps market, the lion’s share of our portfolio could be switched into swap futures.”**

-- BlackRock  
Global Head of Trading  
Richard Prager 10/5/12

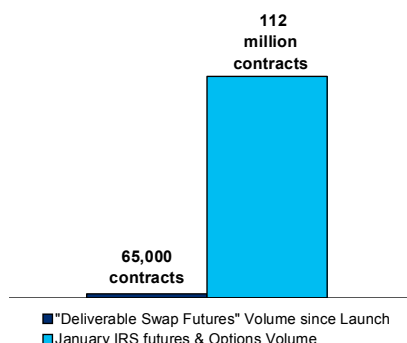
## Recent Developments in the Futures Market

Below we walk through 4 key developments in the futures market that participants are watching closely. In our view, a key motivation to each maneuver has been for clients to avoid classification as a regulated US swap dealer, major swap market participants, or reporting requirements from the extraterritorial application of US rules on foreign traders.

### 1) CME & ERIS Exchange have recently launched new deliverable interest rate “swap futures”

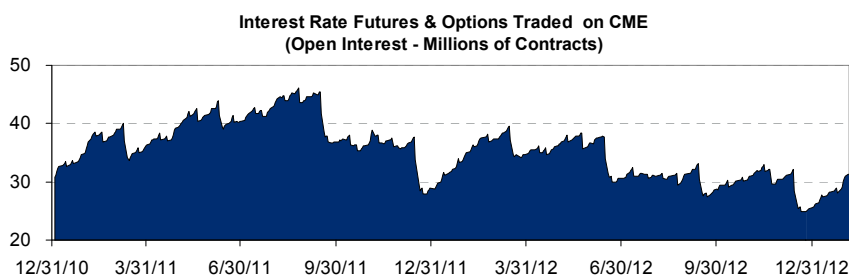
- **CME launched deliverable interest rate swap futures in October 2012...**  
Deliverable Swap Futures are futures contracts that expire on the four quarterly IMM dates. Upon expiry the contracts “deliver” or convert into a cleared swap based on the stated underlying and tenor at that date. These new products are designed to provide the capital and margin efficiency of a future, and also offer public price transparency, simpler legal documentation and netting benefits.
- **...But so far volume has been very minimal** – Since late October through January 2013 CME has sold a very nominal \$6.5 billion notional worth of deliverable interest rate swap futures. To put this in perspective, the cumulative 65,000 swap futures contracts sold represent less than 0.10% of CME’s 112 million interest rate and option contracts volume for the month of January.
- **GS owns intellectual capital stake in CME’s swap futures product.** According to Bloomberg, GS owns a key patent for the swap to futures concept, which it has licensed to CME in exchange for 12.5% of revenues generated. While swap future revenues is immaterial today, this arrangement could be an important hedge for GS in the event swap futures take-off dramatically.
- **ERIS Exchange – supported by MS – also competing in swap futures** – ERIS established an exchange to trade swap-like futures on interest rates in June 2010. Current outstanding contracts are relatively small at ~\$2 billion. ERIS is set-up as a designated contract market (DCM) like the CME regulated by the CFTC. ERIS offers two product types “standard” contracts with quarterly dates and pre-set coupon rates, and “flexes” that have flexible dates and interest rates. In December 2012 Morgan Stanley made a strategic investment in ERIS for an undisclosed stake, took a seat on its Board and announced intention to participate as a liquidity and clearing provider.

Figure 12. Volume in “Deliverable Swap Futures” has been very small so far...



Source: CME, Citi Research.

Figure 13. ...And Interest Rates Futures don’t appear to be gaining share vs OTC as futures open interest has been steadily falling

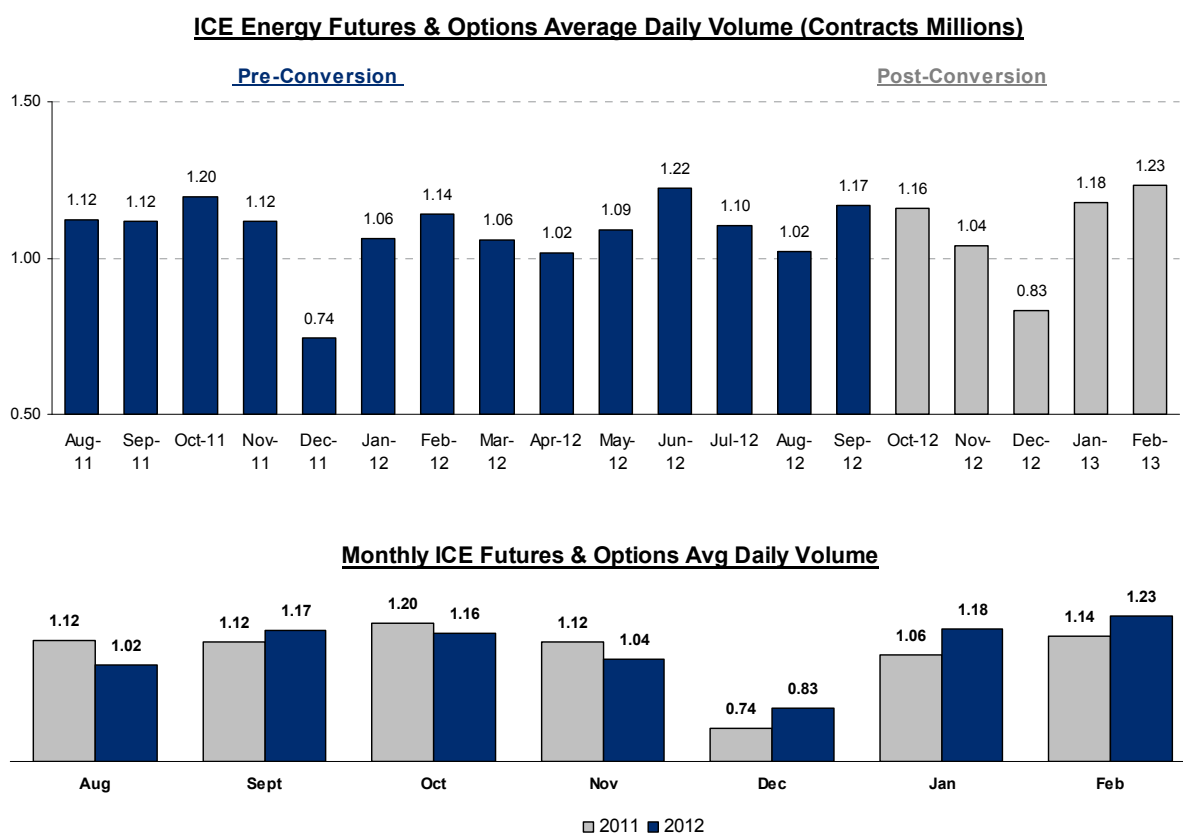


Source: CME, Citi Research

## 2) InterContinental Exchange leaning more heavily on futures model

- **ICE converted ~960 individual OTC energy contracts to futures beginning in October...** In an apparent attempt to help clients seeking to minimize expected impacts from new tougher rules for OTC swaps – in mid-October ICE converted all of its energy swap products to futures. Outstanding open interest was also converted, putting all of ICE's former OTC customers on the new futures products. Given ICE did not disclose its OTC energy contract volume prior to the transition, it is hard to see if the change has helped or hurt volumes. In Figure 14 we show ICE's listed energy futures and options volumes before and after the OTC conversion. Publicly disclosed monthly futures volumes appear to be running about 8-12% higher (including the additions) than a year-ago since December – vs the negative to low-single digit y/y growth rates seen in the months prior to conversion.

Figure 14. Conversion ICE's of OTC Energy contracts to Futures has modestly boosted futures & options volume since Dec



Source: ICE, Citi Research. Change effected 10/15/12. Feb data through 2/22/13.

## 3) ICE planning to release a future on CDS indices as soon as April

- **Futures continue to try to encroach in the credit space, where the market has historically been entirely OTC...** Recently ICE announced it reached a licensing agreement with Markit to launch a credit default swap future, which it plans to launch in April. The futures contracts appear likely to use the Markit's North American CDX Index and Europe's i-Traxx index. Credit future proponents hope the ability to see public quotes and smaller trade sizes via futures will open trading to a larger pool of clients – improving volumes.

- **...but historically credit futures products have not taken-off** – Skeptics of futures on CDS note prior failed attempts at creating listed credit derivative liquidity. For example CBOE launched a set of credit default options in 2011 (called Credit Event Binary Options) which failed to gain much traction.

**4) While other players are making changes outside of US borders to avoid complying with tough US rules**

**ICE moved some contracts to trade outside of US regulatory jurisdiction.** In addition to its OTC energy contract conversions to futures discussed above, ICE also moved a number of swaps that were more heavily used by Asian and European clients to the ICE Futures Europe platform – which currently falls under UK regulations. This change may help foreign clients avoid some of the extraterritorial issues caused by Dodd-Frank.

**Singapore Exchange adds commodity futures to existing swaps clearing capabilities** – Recent moves by the Singapore Exchange (SGX) in its AsiaClear platform show how some firms are adapting to help foreign clients avoid falling under new US derivative rules. SGX is the leading global clearinghouse for iron ore trading with 90% of global volume – much of which comes from Asia. In January SGX announced plans to add a set of 12 commodities futures contracts to its clearing platform – and has made these contracts completely fungible with existing OTC commodity swap products. The new set of futures focuses on iron ore, freight and oil contracts. The futures are intended to have the same contract specifications, settlement prices and expiry dates as existing swaps.

- **The change appears motivated to help foreign clients avoid US swap dealer registration** – The shift appears to be in response to foreign traders' desire to avoid falling under Dodd-Frank regulation and CFTC requirements to register as a swap dealer. Registration requirements are triggered if firms reach \$8 billion of notional value in swaps involving US persons. Futures however fall outside of this rule, so by establishing futures clearing – Asian clients can continue to trade with US counterparties in a cleared venue without triggering new rules.
- **It's unclear to us that this shift will really change dealer profitability** – Importantly, SGX's AsiaClear performs only clearing not execution – so trades must be executed over-the-counter between clients at an AsiaClear member firm and then submitted post-trade to the platform for clearing. Given trading will remain outside of a central trading platform – our best guess is this shift to futures is unlikely to materially change dealer profitability.

## Swap Execution Facility Rules

**SEF trading of derivatives will drive some revenue losses – but impact will mostly be a 2014+ event and may play-out in a tough form only in the US.**

Derivative trading rules have yet to be finalized in any jurisdiction – with the US set to finalize rules shortly and the Europe to follow. At this point it's not clear whether Asia has any intention of following and may skip derivative trading rules altogether.

- **The CFTC is in the driver's seat for derivative trading rules in the US** – Final swap execution facility (SEF) rules from the CFTC will dictate trading protocols for clearable interest rate swaps, commodity swaps and credit index swaps, as well as non-deliverable FX forwards. Similar rules from the SEC will cover mostly single-name CDS, but will likely come separately. (See Figure 17 for details on CFTC and SEC proposals which have been outstanding for 1-2 years now.)
- **Final US swap execution facility rules from the CFTC could come as soon as April** – Assuming final CFTC rules come in the next few months we believe the soonest required SEF trading of derivatives could begin would be late-2013 but more likely will begin early-2014 for US firms. We would also expect the potential for a lagged phase-in similar to clearing.
- **European swap execution rules appear at least 12 months behind the US** – While Dodd-Frank included requirements for the execution of OTC derivative contracts on electronic trading platforms and post-trade transparency, in Europe these issues will be addressed separately in new and not yet final legislation called MiFID 2 (Markets in Financial Instruments Directive) and a related EU Regulation (MiFIR). This legislation is not likely to be adopted until mid-2013 and will itself require significant technical implementation time. If adopted, we do not expect MiFIR to apply until late 2014 or early 2015 or at least 12 months after equivalent US rules.
- **And European rules on trading may be less all-encompassing** – We also see the language behind the European proposals as likely more open-ended. Under Dodd-Frank, all swaps subject to mandatory clearing requirement must also be executed on an exchange or swap execution facility (SEF), unless such a trading facility is unavailable. On the other hand, under MiFIR, there is a "sufficiently liquid" condition (e.g. size/frequency of trades, size of spreads) that must also be met which could cause the rules to be more narrowly applied in Europe. That said – we believe the European regulators are likely to pay close attention to what happens in the US when drafting their own rules.

### **SEF/Electronic trading rules will dictate a new market structure (and profitability) for derivatives trading**

**SEF trading rules matter because they potentially could significantly disrupt the profitability of banks' large derivatives trading businesses.** To broadly generalize, regulators tend to dislike banks' derivative businesses because their bilateral nature creates (1) opaque counterparty risks (which is being addressed via clearing and margin rules) and (2) has less price transparency (which regulators worry harms customers who pay too much for derivative transactions). To address the second issue – lawmakers and regulators in the US are pushing derivative trading – long conducted via bi-laterally negotiated deals by brokers on the telephone – to new electronic trading venues. In the US, the CFTC has generally pushed to apply market structure themes used in the futures markets – to the OTC swaps market.

**Historical examples show bid/ask profitability compresses ~75% with electronic trading** – Historically, when other markets like equities, FX, and Treasuries have shifted electronic or significantly increased price transparency, there has been dramatic declines in bid/ask (averaging ~75%). Historically there have also been significant offsets via increased volumes, though it is unclear whether either will be a perfect analog for derivative trading.

## Migration to electronic venues has already begun

**So far we believe only about 15% of eventually eligible Rates & Credit swap trading has moved to electronic platforms (mostly Credit Index)** – As shown in Figure 15 we believe relatively little client interest rate swap volume and the majority of credit index trading has already migrated to voluntary trading on multi-dealer platforms that will eventually be categorized as SEFs. While certainly a simplification of the available trading venues, we believe this is roughly accurate picture of migration to electronic trading as activity levels stand today.

Figure 15. To-date, we estimate only ~15% of clients' combined Rates & Credit derivative volume has moved to electronic venues that will be "SEFs"

	Flow Rates	Credit Index	Wgtd Total Volume
Client "SEF" Electronic Volume	8-10%	70%	
<i>Est relative size of client volume</i>	90%	10%	
<b>Wgtd % of Client Volume on "SEF" today</b>			<b>~15%</b>

Source: Citi Research & JPMorgan investor day. SEF volume estimated based on assumed volumes on platforms including Bloomberg (Rates and Credit), Tradeweb (Rates and Credit) and MarketAxess (Credit).

## Recent IRS volume shifting to SEF has seen only ~20% bid/ask compression –

While hard data is scant, anecdotal sources indicate for interest rate swaps that have recently moved to electronic trading on platforms that will eventually be registered as SEFs. So far there has been only about a 20% compression in bid/ask vs what would be earned in a similar bi-lateral voice trade. This may not be the best datapoint however, depending on whether final liquidity aggregates on central order book style or RFQ-style execution venues.

## There also may be some natural limit to SEF bid/ask compression for interest rate swaps given their connection to the Treasury market –

Interest rate swaps are already quoted in tenths of a basis point (as shown in Figure 16) so we believe there may be somewhat less room for bid/ask compression than other products. Additionally, interest rate swaps are a derivative that can be thought of as a combination of a treasury plus a swap spread. Thus, bid/ask compression in interest rate swaps in some way may be partly bound to the minimum pricing increments of Treasuries, which currently range from 1/2 to 1/8 of a 32<sup>nds</sup> of a dollar with some very active issues traded in 64<sup>ths</sup> of a dollar. While we can't say for certain, given the linkages between Treasuries and interest rate swaps, without re-denominating the minimum pricing increments of Treasuries, there may be some lower bound resistance to bid/ask compression for interest rate swaps.

Figure 16. Current bid/ask for products likely to shift to SEF is already relatively narrow -- quoted in tenths of basis points for IRS & IG credit

	Rates - Swap		Credit Index (IG)		Credit Index (HY)	
	High	Low	High	Low	High	Low
Current bid/ask (bps)	0.500	0.200	0.750	0.375	50.0	12.5

Source: Citi Research

## Which type of market structure or platform captures liquidity will also be a key determinant of profitability

Outside of large block trades that will be allowed to be executed via voice brokerage – there are generally 2 types of market venues that derivatives can trade on: (1) a request for quote (RFQ) system and (2) a central limit order book (CLOB). The RFQ system is effectively a screen where a client could electronically ask for a firm quote from one or multiple dealers, choose their counterparty, and consummate the trade. A central limit order book is structured similar to equity markets, where all open resting bids and asks (with firm executable prices and quantities) are consolidated in single database, with trades executed at the prevailing best price at the resting quotes at the “top of the book.” Depending on the combination of final rules as well as aggregate dealer and client behavior will determine which venues win out in the war for liquidity aggregation.

- **CLOB venues are more dangerous to bank profits, but seem likely to have trouble building liquidity** – CLOB’s are also any-to-any venues (i.e. buy-side can trade with buy-side, not just dealers)... so a shift to fully electronic central limit order books poses a much greater threat as “middle-man” dealers in theory could be cut out of the trading altogether. Price competition on a central limit order book would also drive bid/ask very tight. While this may function well for small trades, it is unlikely bank dealers will significantly participate – which may cause these venues to be starved for liquidity. If clients want to execute in size on CLOB, we expect they are likely to pay wider spreads as orders trade through the thin and tight liquidity at the top of the book—or may not be able to get large trades done at all.
- **Dealers (and likely liquidity) will gravitate to RFQ style venues** – Given dealers desire to preserve client interactions, dealers are most likely to more actively participate in RFQ systems – which also work better for more thinly traded swaps. As the OTC market trades less frequently, but in larger sizes, we expect buy-side clients will instead seek out dealers on request-for-quote systems. For this reason we expect RFQ platforms to be the dominant SEF trading style at least at the outset of this transition.

## Possible Outcomes from Final US SEF Rules

Below are the top 3 issues to look for when new SEF rules come out – in order of expected potential impact to derivative dealers. Here we describe what we see as the best possible outcome from each rule. (Note the CFTC and SEC have both slightly different proposals, and there will be two distinct final rules from each regulator, which may not be identical).

- 1) More lenient block trade size that exempts a larger segment of large OTC trades from required electronic SEF trading.** By forcing all trading to electronic platforms, except trades that exceed new block trade size thresholds – regulators are seeking to significantly change existing trading practices. So far the CFTC has

proposed 2 block trade size rules which used differing methodologies, but which had similar effects of only exempting 6% of trades as blocks. While proposals received stiff opposition from the industry – it's unclear whether the CFTC will soften its stance. When final block rules come out – to assess if they are better or worse will likely require some calculations. The last method proposed used a cumulative running total calculation with the CFTC suggesting two possible thresholds factors (67% and 75%) to identify the block size. Assuming the same calculation method is used, and only the threshold is changed – the higher the better.

**2) Elimination of the 15-second delay “open-up-to-the-market” rule** – This proposed rule requires dealers to flash potential client trades to the market for 15-seconds to give opportunity for price improvement and for other traders to join the trade. This means a dealer that wants to (i) execute against a client order, or (ii) cross two client trades at a given price, must first expose the order to the market and wait 15 seconds before consummating. (Note the rule only applies to RFQ trading, not trading on an electronic central limit order book). Given the controversy, many participants expect this rule to be removed or significantly altered, though if it is not, the impact to profitability for market makers could be significant.

**3) Easing of the request for quote minimum from 5 to 2 quotes** – The CFTC had initially set out rules which require clients to request at least 5 quotes from dealers before doing a derivative trade as shown below. The rule which was strongly opposed by the industry due to expected pre-trade information leakage, and fear of getting caught on the wrong-side of a large trade. According to recent reports by the FT, however the CFTC appears likely to reduce this requirement from 5 quotes to 2 quotes – which would be a step to alleviating these issues. That said industry participants would clearly prefer the quote minimum be removed altogether.

In our eyes the change – in addition to reducing market maker hedging risks – modestly helps incumbent dealers with strong captive client relationships (e.g. universal banks with large DCM footprints) – as it decreases purely price-driven competition if the client so chooses.

Figure 17. Summary of key differences between initial CFTC and SEC proposals for SEFs

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

Source: Citi Research

## Un-Cleared Margin Rules

Figure 18. Expected Margin Rules will force higher collateral for OTC trades vs futures

	OTC	
	Futures Cleared	OTC Uncleared
Risk horizon	1-2 day	5-day 10-day
Initial Margin		
vs 1 day future	2.2x	3.2x
vs 2 day future	1.6x	2.2x
vs 5 day cleared OTC		1.4x

Source: Citi Research. Assumes VAR modeling for interest rate swap, (not the standard method).

Changes to un-cleared proposals show regulators want to reduce the shock from higher margin requirements, but rules still likely to have big impact. On February 15, 2013 the Basel Committee on Banking Supervision and the IOSCO issued their "Second Consultative Document" covering margin requirements for un-cleared trades. While there were several key changes – regulators did not budge on the particularly onerous initial margin calculation demand of a VAR-based test with 99% confidence interval and a 10-day horizon, which still produce initial collateral demands of as much as 2-3x higher for un-cleared trades vs futures, and roughly 40% higher for uncleared derivatives vs cleared (see Figure 18).

Below we summarize the key provisions in the BIS/IOSCO un-cleared margin report – and note key changes from prior proposals.

Figure 19. Cleared Margin Proposal from BIS/IOSCO – appear to be moving in positive direction

		Positive / Same as Prior / Negative
<b>Margin Threshold and de minimis levels</b>	<ul style="list-style-type: none"> <li>■ <b>Universal initial margin threshold of €50 million</b></li> <li>- BIS estimates could reduce systemic liquidity demands by over 55%</li> <li>- €50 million margin exemption threshold on a bi-lateral basis (i.e. by client counterparty at consolidated group level).</li> <li>- €8 billion gross notional exemption from IM posting</li> <li>- €100K de-minimis minimum transfer amount for variation margin</li> </ul>	✓
<b>Collateral Eligibility Widened</b>	<ul style="list-style-type: none"> <li>■ <b>Broad set of collateral with regulatory established haircuts</b></li> <li>- Cash, High Quality Govt &amp; Central Bank Securities</li> <li>- High Quality Corporate &amp; Covered Bonds</li> <li>- Equities on major stock exchanges &amp; Gold</li> </ul>	✓
<b>Phase-In Period proposed</b>	<ul style="list-style-type: none"> <li>■ <b>4 year phase-in beginning in 2015</b></li> <li>- Begins with most active and systemically risky participants</li> <li>- Size of derivative activity determines timing of compliance</li> </ul>	✓
<b>No-Cross Asset Class Netting for IM calculation</b>	<ul style="list-style-type: none"> <li>■ <b>Intra-asset class netting Allowed / Cross-asset class NOT allowed</b></li> <li>- Netting must be for entity with a legally enforceable netting agreement</li> <li>- Broad asset classes include FX, Rates, Commodities, Credit and Equities</li> <li>- Netting between cleared and un-cleared was not addressed</li> </ul>	Same
<b>Variation Margin</b>	<ul style="list-style-type: none"> <li>■ <b>Full Amount to back 100% of market exposure must be exchanged</b></li> <li>- VM must be exchanged with sufficient frequency (Daily suggested but not required)</li> </ul>	Same
<b>Initial Margin</b>	<ul style="list-style-type: none"> <li>■ <b>10-day VAR with 99% Confidence Interval</b></li> <li>- 1) Quantitative Portfolio Margin model (must be regulator-approved), or</li> <li>- 2) Standardized schedule</li> <li>- All transactions in the same asset class must use same method</li> </ul>	Same But Still Tough
<b>2-Way Margin posting &amp; Rehypothecation limits</b>	<ul style="list-style-type: none"> <li>■ <b>BIS/IOSCO rules require 2-way posting of margin (not in US proposals)</b></li> <li>- Two-way gross IM posting required for dealer-to-dealer and dealer-to-client trades</li> <li>- Collateral must be segregated and not rehypothecated or pledged</li> </ul>	✗
<b>Key Areas of Uncertainty</b>	<ul style="list-style-type: none"> <li>■ <b>FX swap treatment internationally and Rehypothecation</b></li> <li>- Will physically-settled FX fws &amp; swaps be exempt from margin (exempt from clearing but could still need margin), or only long-dated FX swaps exempted?</li> <li>- Will rehypothecation limits for initial margin be eased in meaningful way?</li> <li>- Will two-way margin posting be left in final rule?</li> </ul>	?

Source: Citi Research, BIS/IOSCO

**“We will have to pay around 4-5 times more in initial margin for non-cleared swap using the standardised initial margin compared to cleared swaps, so we may look to more standardised instruments as alternatives given that currently the majority of our OTC derivatives trading would likely fall into the non-cleared bucket.”**

COO Derivatives Mgmt Team  
AXA Investment Managers  
The TRADE Magazine 2/25/13

## Implications of Un-cleared Margin Rules

### **Ultimate collateral demands seem to be somewhat improved by final rules –**

According to BIS the proposed “near-final” un-cleared margin rules would create an incremental system-wide collateral demand of €700 billion, or roughly \$925 billion. This figure includes the benefit of a proposed exemption on the first €50 million of margin payments between counterparties. According to the accompanying quantitative impact study the €50 million exemption reduced required system-wide margin by 56%.

- **We note the BIS calculations assume all parties use IM modeling –** IM modeling is standard practice among banks. This method derives IM via VAR-based calculations, versus the somewhat tougher, but simplified standard schedule. Some non-bank clients, without the infrastructure or resources to dedicate to modeling, may need to rely on simpler (and tougher) standard methods, increasing incentives to switch from un-cleared to cleared products (sidebar).
- **Regulators seem increasingly sensitive to ways to create a safer system without creating massive collateral demands...** According to reports from RISK.net these rules were supposed to be released at the end of 2012, but were held back after the results of the quantitative impact study had alarmed regulators. It’s not clear what rules were changed during the delay, but in our view the key positives from the proposal were 1) the new €50 million threshold (which reportedly reduces the overall systemic collateral demand by a full €1 trillion), 2) wider list of acceptable forms of collateral, and 3) a delayed implementation starting in 2015, which should give banks time to prepare for new rules.
- **... but, 2-way initial margin posting combined with rehypothecation restrictions could have significant consequences...** According to the proposal, firms must post initial margin on a gross basis – leaving safeguarded collateral on each side of the transaction. Collateral from initial margin is also required to be segregated (i.e. “cannot be rehypothecated, re-pledged or re-used”). While this reduces risks from either pooling collateral, or using collateral to fund other client positions, and makes it easier for a counterparty to retrieve collateral without legal or claims from others – it also significantly increases liquidity burdens to participants. Many industry participants had been hoping that un-cleared trades would not be subject to mandatory two-way initial margin rules.
- **...Though regulators also opened a new debate on rehypothecation – which we see as an important potential positive –** In the proposal BIS requested industry comment on whether initial margin should be allowed in a restricted form i.e. (1) only used to finance/hedge customer positions, (2) only if the “pledgee” treats the rehypothecated collateral as customer assets, and (3) only if bankruptcy rules allow the derivative poster first priority claim on the collateral. While its difficult for us to know if these conditions would be effective – we believe the question points to growing pressure on regulators to establish a workable rule-set which does not create an overly burdensome margin.

**Cross-asset class portfolio margining still disallowed –** In the “old world” dealers could aggregate margin clients’ risk exposures across all types of asset classes for the purpose of calculating initial margin. New rules – as proposed in the US and by the BIS/IOSCO group of international regulators – restrict collateral netting and risk calculations to broad intra-asset class categories, such as credit, interest rates, FX, equities and commodities – which means some clients may see less netting effectiveness than before.

## Interplay of margin with Basel 3 capital calculations

- **Some of the impact from lower un-cleared trading activity (particularly with long-dated trades) is already in the run-rate** – While its very difficult to quantify – we believe many banks have significantly curtailed their very long-dated cross-currency swap and long-tenor interest rate derivative activity due to anticipated higher capital charges down the road. Given the majority of swap revenues are booked upfront when the deals are put on the books via an NPV of expected future cash flows vs the price sold to the client – we believe the absence of this long-dated activity may largely be in the revenue run-rate for most banks.
- **But so far banks do not appear to be fully pricing in all CVA charges for uncleared trades** – Given banks will ultimately pay higher capital charges for un-cleared and un-margined trades due to Basel 3 rules, and the fact that banks are reporting pro forma B3 ratios – one would expect that B3 charges were being fully priced into trades today. Nevertheless, we believe pricing remains highly competitive and given lack of final rules and un-even exemptions for CVA charges, so far we do not believe banks have fully passed along higher prices to a number of different client types.

## Corporate End-User Activity

**“Among our 150 Large Corporate and Mid-Sized Corporate clients – Not a single one has switched in a meaningful way from (hedging with) OTC derivatives to futures directly as a result of the new derivative regulations...**

**...and the only ones that will likely look at futures in a meaningful way will be those with significant commodities exposure.”**

Ed Heitin  
Partner PwC  
1/10/2013

**Since 2H12 it's become harder for firms like Houston-based utility Dynegy to do electricity and fuel swaps without posting collateral because banks have less appetite for derivative deals.**

**“It's completely regulatory driven... We can't hedge maybe as much of the portfolio as we would like or as far out as we would possibly like.”**

Dynegy CEO Robert Flexon  
and Businessweek  
1/24/2013

### **Impact on US Corporates end-user activity not likely to be seen until 2014 –**

We do not expect any meaningful impact on US corporate end-user derivatives activity in 2013. This is primarily due to the fact that (1) there is a general misunderstanding among many corporates that they will not be affected by new rules, (2) corporate boards have yet to evaluate whether to apply for end-user exemptions, and (3) derivative prices for most corporates have not really yet moved higher to account for higher capital requirements that will be applied to un-cleared trades. Instead, we expect greater impact in 2014 – particularly for middle market firms which trade less frequently – where dealers will need to raise prices to make transactions economic.

Recently Citi hosted investor meetings with Ed Heitin, Partner in PwC's consulting practice serving Fortune 500 and large middle market corporations – and leader of the firm's advisory efforts to corporates on OTC derivatives rules and Dodd-Frank compliance. We summarize some of the takeaways from this meeting below:

- **Many Corporate Boards are not yet up to speed** – According to Heitin, many CFOs and Boards have not yet examined the impact of new derivatives rules, and this will happen as we go through 2013. As these conversations occur – we may see some impact to activity – which we anticipate will be most visible to investors in 2014, given a lot of corporates hedging plans are conducted early in the year.

### **Large Corporates**

- **The biggest corporations are likely to continue to use derivatives in 2013 and beyond.** In Heitin's view – the largest corporations are unlikely to change their OTC derivatives use in 2013 – and any impact from decisions that occur this year will impact 2014 activity – as firms re-evaluate the (1) cost of margin for un-cleared trades and (2) the new administrative burdens from derivatives. Even with these drags, Heitin believes the largest corporations generally have the resources, sophistication, and access to liquidity to continue to use derivatives.
- **Given so far pricing for big corporations has not changed much, its not surprising there has not been much change in corporate behavior –** Historically, these clients have received the most competitive pricing from banks that were eager to keep corporate M&A and debt-issuing clients happy. But hedging costs/prices will rise – given Heitin's view that banks have tried to remain competitive and have not yet fully priced in Basel 3 charges on many corporate clients. As prices change – and are likely to be steeper for weaker-credit quality middle-market companies – there will be a breaking point in 2014 where some hedging activity simply ceases to occur.
- **But collateral demands will have some impact, as a good portion of many corporates' hedging via FX fwds was designed to avoid posting margin.** Some long-tenor corporate hedging strategies (like swapping long-term debt from fixed to floating for 5 years or longer) will require significantly higher collateral. Short-dated hedges common among corporates (e.g. 1-year FX fwds) will see somewhat smaller collateral demands and lower CVA capital charges. Nevertheless, given many corporates had chosen hedging FX risk via simple OTC forward contracts explicitly because they did not require collateral posting, we expect some negative volume impact as un-cleared derivative margin rules come into play. FX hedging generally – as with all OTC trades – will also require significantly greater record-keeping going forward.

- **Un-cleared corporate end-user trades will also create new dealer liquidity needs due to dealer need to post margin on offsetting hedges** – In a pre-cleared world, dealers would often hedge client transactions with offsetting OTC trades with another dealer, but did not typically exchange initial margin on the offsetting hedge swap. As we shift to mandatory clearing – even though corporate end-user trades will not require clients to post margin, when the dealer executes an offsetting hedge – it will likely need to be cleared and margined, tying up extra dealer collateral in the overall deal.

#### **Middle-Market Corporates**

- **Middle-market corporates are the segment most likely to cease hedging risks rather than post margin or pay higher hedging prices...** According to Heitin, many middle market corporations seem at risk of halting OTC derivatives trading activity altogether given the challenge of likely being required to (1) pay higher prices for trades given banks' need to price in the impact of Basel 3 capital charges, and (2) lack of liquidity or lack of infrastructure needed to post the initial and daily margin collateral required to reduce derivative prices. A mid-2012 survey conducted by Risk.net, confirms this view – as 60% of end-user respondents indicated that they would opt out of using derivatives if new proposed rules for margins on un-cleared trades were implemented.
- **...And substitution with futures seems unlikely for middle market firms.** Less sophisticated middle market corporates do not have the financial resources in many cases to dynamically manage and roll futures hedge exposures on an ongoing basis. This is compounded by a lack of ability to easily achieve hedge accounting treatment under GAAP rules. For these reasons, Heitin expects many middle market companies will instead simply retain greater risk internally. That said, there will be some corporates that carry more significant market risk and will continue to hedge (e.g. an energy company that is highly leveraged to commodity prices or has relatively thin margins).

#### **All corporates will have higher reporting requirements**

- **There will be numerous new reporting and accounting burdens** – There are several hoops corporates must jump through to trade, including new record keeping requirements, trade reporting to swap data repositories, board level certifications that transactions are hedges, plus planning on how the firm intends to meet obligations that end up out-of-the-money.
- **...And most corporates will need to shift to documenting hedges via “long-haul” calculation to receive GAAP hedge accounting treatment** – Under GAAP rules US corporates need to prove hedge effectiveness to prevent having to show the volatility of the ongoing hedge P&L in their income statement. Historically, customized swaps allowed firms to use “short-cut” method and easily justify hedge accounting. If companies move to exchange traded and/or cleared derivatives going forward, Heitin believes these firms will need instead to use “long-haul” calculations which are more complex and burdensome."

## Extraterritoriality & Level Playing Field

**“...If foreign banks are able to continue adhering to current market practice, the proposed margin rules will quite simply put us out of business overseas.”**

JPM Chief Risk Officer (former)  
Barry Zubrow 6/16/2011

**Even application of new regulations abroad remains a key risk for US firms.**  
On repeated occasions JPM CEO Jamie Dimon has stated one of his greatest concerns the creation of an un-even global playing field that disadvantages US banks.

**Several regulatory differences/issues may create an uneven playing field driving competitive concerns.**

### **(1) Extraterritoriality of US margin & “major swap market participant”**

**registration rules** – Extraterritorial application of stiff US margin and reporting/registration rules on US banks’ derivative businesses abroad remains a top concern of major US derivatives players. (For example: This could come into play in Latin America where many countries do not intend to enact similar derivative margin rules as proposed by US & European regulators. Under extraterritorial application of US rules, a US bank would still need to charge a Brazilian corporate margin, but a European or local bank operating under local rules might not – effectively shutting the US bank out of competition.)

The CFTC has also cast a relatively wide net with its “major swap market participant” definitions that risks capturing significant activities by foreign players if they conduct business with US counterparties. This broad application of CFTC registration rules could drive foreign customers to avoid US counterparties. (For example: if a Japanese bank conducted extensive derivative trading with a US bank branch, which was deemed a “US person”, the Japanese bank could trip registration requirements with the CFTC, triggering operational and reporting burdens).

**Problems from un-even global roll-out of derivative margin temporarily minimized by CFTC “cross-border exemptive order” effective thru July 2013** – On Dec 21, 2012, the CFTC issued an “exemptive order” regarding foreign swap transactions, including US firms’ swap transactions with non-US clients. While technical in nature, the exemptions effectively allow US banks operating US branches abroad to continue derivative activities abroad in similar fashion as in the past with non-US clients. This rule however expires July 12, 2013. One of the key elements of the order is its relief with respect to CFTC registration minimums for “major swap participants” doing business with a non-US branch of a US bank. Should the order expire with no intervening changes, there is a risk non-US clients would avoid trading with US banks and non-US branches of US banks – for fear of being forced to register with the CFTC as a major swap market participant.

### **(2) CVA exemptions for corporates, sovereigns & pension funds in Europe –**

Un-even capital treatment for derivative counterparties through potential “CVA” capital charge exemptions allowed to European, but not US banks when dealing with corporates and pension fund clients, is another key area where US firms are worried about competitive disadvantage. As far as we understand Europe has made no changes to its proposed plans to exempt corporates, sovereigns and pensions from CVA charges – while no such exemptions have been proposed in the US.

**(3) Global RWA calculation inconsistency** – Another issue is the level of strictness applied to risk weighted asset calculations – as highlighted by a recent BIS quantitative study. To the extent some banks are held to weaker standards could hide systemic risks or leave banks with tougher calculations with excessive capital requirements, weighing down ROEs. (*see p. 36 for details*).

**(4) Europe's recognition of the US as an "equivalent jurisdiction"** – Another key area of debate in Europe is to what extent EU regulators grant the US "equivalent jurisdiction" status. This decision potentially has significant implications for global wholesale banks, as without convergence, European banks might be unable to use trade repositories and clearing houses outside of Europe, which would force them to fragment their global trading operations, placing them at a competitive disadvantage.

#### **Implications**

- **In our view, the CFTC's ongoing "tough" stance on extra-territorial may be part of a strategy to influence international regulators** – Given one of the stated objectives from the CFTC of issuing the exemptive order is to continue dialogs with international regulators, we believe there may be less incentive for them to ease any applications until negotiations with European and Asian counterparts are complete.
- **We could envision a scenario where the CFTC's exemptive order is extended in July as foreign regulators are unlikely to have rules similar to the US yet in place** – While we have no evidence this will be the case, the CFTC's pattern with many regulations has been to push for the toughest implementation up until the very final deadline and if implementation is not possible, to issue exemptions or "no action" letters. This was essentially the agency's strategy seen at the end of 2012.

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## Other Regulatory Issues

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## Global RWA Review

**“Basel standards deliberately allow banks and supervisors some flexibility in measuring risks in order to accommodate for differences in risk appetite and local practices ...**

**...Some variation in market risk RWA should therefore be expected.**

**...[F]rom a financial stability perspective, it is desirable to have some diversity in risk management practices so as to avoid that all banks act in a similar way, which potentially could create additional instability.**

**At the same time, excessive variation in risk measurement is undesirable.”**

Basel Committee on  
Banking Supervision 1/31/13

**Issue:** Regulators remain concerned that inconsistencies in the way banks calculate risk weighted assets may be masking risks in the system. Regulator concern is echoed by bank executives (particularly in the US) who worry about the fairness of capital calculations across jurisdictions – which increasingly rely on opaque model-based calculations that are impossible to decompose by outsiders.

**What happened?** On Jan 31, 2013 the BIS released details of its “Regulatory consistency assessment program (RCAP)” – a global study of risk weighted asset calculation consistency.

- The study included two components: (1) a comparison of public disclosures, which we dismiss in part because banks in the sample are under differing public regulatory reporting regimes (e.g. Basel 1 for US vs Basel 2.5 for Europe), and (2) benchmark study of bank RWA calculations for a variety of hypothetical test portfolios across equity, credit, rates, FX and commodities assets.
- This benchmark study required 15 global banks with significant trading activity to calculate market risk weighted assets for 26 “test portfolios.” Company specific results were not released. The study found significant variability between banks with many portfolios getting RWA weightings ranging between 50-150%, and numerous instances where ranges were considerably wider. Also see our Euro Bank team’s note [Wholesale Banks & the RWA Debate - First-Take of Market Risk Review](#).

**BIS Findings:** (1) A sizeable portion of variation was also due to jurisdictional regulatory differences – such as model approvals and supervisory chosen “multipliers”. (2) Another driver of the differences between banks was found to be different model inputs (e.g. length of historical data series, aggregation methods, selection of stress periods), different model types, and the level of complexity of models chosen.

**BIS Recommendations:** BIS made 3 broad policy recommendations in the report: (1) banks should improve public disclosure including greater details on metrics which drive the regulatory calculations (not a new request), (2) regulators should consider narrowing banks’ modeling choices / and methods of calculation, and (3) supervisory practices regarding models should be harmonized.

**Implications of RWA review seem relatively benign and we do not expect new restrictive policy reactions from the review:**

- **No imminently stiffer RWA calculation rules seem likely.** Based on our understanding of the Basel protocols – recommendations from this study most likely will be taken into account via Basel’s ongoing “Fundamental Review of the Trading Book” process. This review, which seeks to improve upon the patchwork of rules hastily enacted following the financial crisis, was launched in May 2012. We believe this strategic review of trading RWA calculation rules is progressing on a slower methodical and likely multi-year timeframe. Next steps are likely a quantitative impact study and another proposal.
- **No mention of shifting to leverage based metrics** – In the report we believe Basel Committee went to great length not to condemn risk modeling, for which BIS is a major proponent. We note there was no recommendation in the study to augment risk weighted asset calculations with cruder leverage ratios, as some have suggested.

**While the BIS noted 27% of RWA variability was due to various supervisory “multipliers” from different jurisdictions...**

**We believe jurisdictional differences in model approval and allowable inputs account for far more than 27% of the variance between banks’ RWA calculations.**

- **Greater restriction on modeling inputs seems likely, but we do not expect this to drive big hits to capital ratios** – We would expect regulators (eventually) will tighten up the allowed model inputs and impose greater calculation consistency requirements. And we note greater model standardization is different than imposing wider use of onerous formulaic standard calculations (e.g. \$X exposure times Y% risk weight was not a recommendation).
- **That said we still could see some ad hoc regulatory responses to the BIS survey** – Recent comments from European Banking Authority Chairman Andrea Enria indicate it is possible we could see some policy response, describing the RWA report’s results “significant and calls for further investigations and possibly policy solutions.”

**Jurisdictional differences remain key driver of RWA inconsistency.**

- **We expect greater standardization of “Supervisory Multipliers” over time, as BIS estimated these accounted for 1/4 of the RWA differences...** Different country’s regulators are currently providing banks with specific supervisory multipliers – or factors – that go into various risk weighting calculations. BIS found that re-calculating portfolio risk weighted assets instead using a standard multiplier explained 27% of the differences between the various banks.
- **...but in our view, jurisdictional differences in strictness of model approvals (methods & inputs) are an additional driver of inconsistencies.** In our view the BIS attribution of 27% of difference to jurisdictional multipliers mentioned above is only one component of jurisdictional differences. Model usage, and the inputs allowable by local regulators is also a big driver of differences, as model approval standards vary from country to country.
- **In the US the Fed has been doing its own model portfolio benchmarking for months to iron out inconsistencies among US banks.** Based on our understanding, the Fed is already requiring the largest US banks to submit RWA calculations for model portfolios – and repeating these calculations on a regular basis. This seems to indicate at least within the US, the Fed is seeking to establish some level of modeling consistency among the US banks, and is already encouraging banks to make adjustments to models where it deems necessary. We view the Fed as likely among the strictest international regulators when it comes to model approvals – which we believe limits the potential future risk from a tightening of the model approval process.
- **VAR & Stressed VAR models showed less variability than Incremental Risk Charge (Credit Risk Migration)** – There was generally less variability among banks in the VAR calculation than the stressed VAR. On VAR, one the key driver of differences was the length of period for the data used (e.g. a five-year period that includes the crisis vs a two-year look back with greater exponential weightings on the most recent period).
  - For the Incremental Risk Charge (which measures downward credit migration risk in the portfolio), the main driver of differences among banks appeared to be the level of portfolio diversification benefits. This was driven by (1) the overall modeling approach (models can be either spread-based or “transition matrix based”) and (2) the calibration of the “transition matrix” (which seems to point to the speed of credit deterioration) and the assumed correlation among credits.

- **Note highly complex models such as those used for Correlation Trading calculations still remain to be addressed** – In this exercise the BIS did not examine the most complex models, such as correlation trading which uses a Comprehensive Risk Measure model (CRM). We believe there is significant variability in this area – again due to differences in model approvals by US and European regulators. This is specifically due to the Fed's requirement that US banks calculate RWA for a correlation trading portfolio as the sum of (1) a standard calculation and (2) a model-based calculation, while in EU banks are allowed to use only one-or-the-other of methods: (1) a standard calculation or (2) a model based calculation. US banks are likely to eventually have models approved and shift to a similar method as European banks, but this is unlikely to occur until 1Q14 at the earliest based on comments from US bank management teams.
- **Plus more disclosure seems likely (and welcome)** – Greater standardization of disclosures seems likely, and should help investors. Long-term we see this as a positive for global bank stock multiples.
- **Next up is the banking book review** – BIS will also release results of a similar study on banks' loan portfolios; however we believe most variability from RWA calculations likely resides in the trading books.

**“I don’t want to penalise the work of banks when they work for the benefit of the economy and industry. Clearly a part of market-making is linked to supporting the industry and the economy.”**

Michel Barnier,  
EU Financial Svs Commissioner  
*Brussels Softens Line on Bank Ringfence*,  
Financial Times  
Jan 29, 2013

## Liikanen – Towards the French Solution

The European version of the Volcker came via the Liikanen [report](#) issued Oct 2, 2012 which recommends ‘ring-fencing’ or separating banks’ proprietary trading and activities into separate legal entity from the deposit institution. The universal banking model however could be maintained, but the split would in theory prevent government support from ever reaching the risk-taking non-bank legal entity. Both entities would individually be subject to regulatory requirements under Basel 3 rules.

We believe that the European Commission is likely to take a more pragmatic approach on the issue of ‘ring-fencing’ – more consistent with the relatively ‘narrow’ Franco-German proposals, described below. In theory, the Liikanen Group appears to give banks the ability to maintain corporate hedging business within the ‘core’ bank. However, we believe that, in practice, it would be very difficult for banks to split sales & trading operations between corporate (hedging) in the ‘core’ banks vs institutional business in the ring-fenced unit. After all, they can often be two sides of the same trade.

**Liikanen process likely to be drawn-out** – From a timing perspective, we understand that the European Commission proposals are due by June/July 2013 for industry comment and are being drawn-up by a dedicated unit within DG Internal Markets. Such proposals would then also require an impact assessment before going for parliamentary approval. We suspect that the timing of implementation is likely to be a ‘drawn-out’ process.

### The French Proposal

In our view, the Liikanen ‘ring-fencing’ proposals could place European banks at a competitive disadvantage (to US banks) especially in the context of increasing disintermediation of corporate financing. We believe that the ‘compromise’ could be the French proposal which includes ‘ring-fencing’ proprietary trading and banning unsecured hedge fund lending, high-frequency and agricultural commodities trading. Although the current debate is centered around a threshold above which market-making activities need to be ring-fenced, in practice we expect the major French banks to fall under this threshold. At the same time, supervisors may get additional powers to determine businesses that could require ‘ring-fencing’ or be banned in the future.

### The German Debate

Like France, Germany is moving ahead with proposals to address Liikanen recommendations. Under these proposals and subject to a size threshold, a bank’s ‘riskier’ operations will have to be ring-fenced. According to a recent FT article *Germany Rejects Whole-bank Ring-fencing* (30 Jan, 2013), the German proposal would require banks to set up a separate unit for any proprietary trading activities that accounted for either €100bn of assets or 20% of its balance sheet. Unlike the French, this proposal appears to propose to ‘ring-fence’ all hedge fund lending business, rather than just unsecured. Again, such proposals are significantly narrower than the original Liikanen proposals.

### Key Liikanen Proposals

The key proposals of the Liikanen report are highlighted below (see [Separated, But Living Together - First-Take of Liikanen Group Proposals](#), October 3, 2012):

- **Trading book ring-fence** in and ‘adapted’ Volcker rather than Vickers (retail/wholesale split). The differentiating approach in the Liikanen report is based on whether a business is ‘socially useful’ or otherwise; financing, corporate hedging and underwriting operations do not require separation;

- **Focus on Trading Leverage** — The Liikanen Group raised the issue of risk-weights on the trading book, recommending floors as well as questioning the consistency and efficacy of internal model-based inputs; and
- **Real Estate ‘Floors’ & ‘Caps’** — Interestingly, the Group also questioned risk-weights on real estate assets and recommended more robust RWA ‘floors’ to ensure sufficient buffers against substantial property market stress. The Group also supports LTV (loan-to-value) and LTI (loan-to-income) ‘caps’.

## Fed's 10% Single-Counterparty Limits (US)

**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.

- **Fed's rules went further than 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 10% single-counterparty limit, below the statutory minimum of 25%<sup>1</sup> for banks with over \$500 billion in assets.
- **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.
- **Original proposal supposed to go live Oct 2013 – but seems highly likely to be delayed** – According to our regulatory contacts, we believe Federal Reserve officials have acknowledged challenges with the current rule and planned implementation. While no official that we are aware of has gone on the record that implementation will be delayed, we believe the far-reaching nature of the rule and the continued pattern of delays creates a very high likelihood of delay.
- **Lack of faith in banks' use of internal models seems to be driving the push by the Fed to use tougher measures** – From what we understand, part of the use of such a draconian measure is due to the preference by some regulators, such as Governor Tarullo for broader use of standardized measures for risk, rather than internal model-based methods.
- **Next item to watch for is a new standardized version of counterparty risk measurement from Basel** – From what we understand, US regulators – who seem to recognize the challenges posed by implementing this rule in current form – may be waiting for new rules from the Basel Committee on standard counterparty risk charges. Expert observers note, this standard Basel framework could be the foundation for a revised version of the US counterparty exposure calculations ultimately used for the 10% rule.

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<sup>1</sup> 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.

## Appendix – Notable Recent Rule “Fixes”

Below we summarize a handful of small positives seen from US regulators and the court system regarding ongoing regulations.

- **International Regulators “fixed” the Liquidity Coverage Ratio (LCR) calculation...** On Jan 6, 2013, The Basel Committee on Banking Supervision offered new amendments to the LCR calculation and instituted a phase-in from 2015-2019. Key changes included: 1) a broader definition of “high quality liquid assets,” and 2) an easier “net cash outflow definition” including better line drawdown and deposit run-off assumptions. In 2015, now banks will only need to hit a 60% ratio which scales up to 100% over 2019. See [“Euro Banks & Liquidity Forbearance - Amendments to Liquidity Coverage Ratio.”](#)
- **US DC Court struck down Commodity Position Limit rules** – though this likely more delay than “fix.” The CFTC’s commodity position limit rule (which restricted the size of dealer and investor positions in 28 physical commodities across futures, options and OTC swaps) was vacated in late Sept 2012 by a U.S. District Court in Washington DC. The case was the result of lawsuits filed by trade groups SIFMA and ISDA. The Court’s ruling took issue with the CFTC’s lack of proof that showed planned limits would prevent excessive speculation and not create an undue burdens. But we expect the CFTC to come back with a more detailed study on the impacts of speculation on prices – possibly as soon as this year, as Chairman Gensler has the agency will continue to push for position limits, making this more likely a delay than a final ruling on position limits.
- **Regulators affirm ability to portfolio margin of CDS index & single names across SEC/CFTC regulatory jurisdictions** – The SEC and CFTC agreed to allow clearing members to “portfolio margin” CDS portfolios of single-name and CDS index contracts – as long as the clearing member is registered as an FCM with the CFTC and as a broker-dealer with the SEC. This will reduce margin drag for clients using relative value strategies that hedge single-name exposure with index contracts. The “fix” was executed by a Dec 14 order from the SEC that was followed by a Jan rule from the CFTC.

### Companies mentioned

Bank of America Corp (BAC.N; US\$11.34; 2)

Barclays PLC (BARC.L; £3.03; 1)

Credit Suisse (CSGN.VX; SFr24.80; 1)

Deutsche Bank (DBKGn.DE; €33.57; 1)

Goldman Sachs Group, Inc. (GS.N; US\$150.53; 2)

JP Morgan Chase & Co (JPM.N; US\$48.91; 1)

Morgan Stanley (MS.N; US\$22.43; 2)

UBS (UBSN.VX; SFr14.71; 1)

# Appendix A-1

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