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Diversified Banks
**North America**

# Global Banks and Brokers

## Deep Dive on Repo – Buy Side to Feel Impact More than Sell Side

- **Recent regulator focus on leverage ratios will impact how banks manage capital** – Moving towards a leverage-based capital approach will likely lead banks to re-think how they allocate balance sheet, switching focus from maximizing ROE to ROA. Banks have three 'low hanging fruit' opportunities to improve their leverage ratios: 1) compressing derivatives trades, 2) reducing unfunded lending commitments, and 3) shrinking secured financing books. Trade compression will likely be the top focus since it results in little economic impact, but a large benefit to leverage ratios. Banks are then likely to reassess their low ROA businesses that did not tie up a lot of capital under a risk-based capital measure.
- **This report focuses on the secured financing business** – Secured financing transactions consist of two instruments: repo and securities lending. Both are economically similar, but legally distinct and market participants often refer to repo when speaking broadly about secured financing. Repo is primarily done on the cash financing desks within fixed income, and securities lending is primarily done in prime brokerage within equities. We provide a 'primer' on secured financing in this report. While we focus on implications of managing to leverage ratios (which are not fully defined yet), we also highlight in the report that there are three wildcards which may put even more pressure on the repo business: 1) adoption of international standards, 2) final definition of liquidity coverage ratio, and 3) further potential regulatory reform as regulators remain very focused on this business.
- **Earnings impact won't be significant, but is another reason why we expect trading revenue growth to be challenged in the near term …** – Since the ROA for plain vanilla (commonly referred to as GC) repo is about 10bp, we don't see a meaningful hit to trading revenue. Banks will likely re-price the business (est minimum +40 bps), but we expect this will be offset by lower trading activity levels. Also, the collateral transformation business which JPM estimated could be $300-500 mil revenue opportunity as OTC derivatives move to clearing looks less likely to emerge now due to higher capital requirements. We also looked into the earnings impact on the banks using repo on the funding side, but we do not see a big impact due to improvements made post-crisis.
- **…But there may be potential for market share shift** – We expect some fixed income players to lose share, such as the major European banks' US subs due to stricter US leverage requirements. A cross-check of repo exposure vs. trading market share would suggest significant opportunity for Barclays to improve its balance sheet efficiency. While there may be small market share gains from smaller banks (such as WFC and BNP Paribas) and niche opportunities in non-GC repo by non-banks, we expect the bulk of trading market share to become more concentrated in the top 5-6 firms as the buy side will likely need to consolidate business.
- **The buy side will likely feel bigger impact** – Larger clients are unlikely to see reduced funding, but they are likely to see higher cost of financing. As banks reassess client profitability to factor in higher credit costs for repo, we expect efforts to trim funding access may turn to the smaller, 'leveraged' hedge funds and mortgage REITs, which cannot drive enough ancillary fees. Certain leveraged trading strategies, like carry trades, will be adversely impacted. This will likely lead to a reduction in liquidity, causing price discovery and market efficiency to decline in the underlying securities, including lower-risk, lower-return treasuries and agency MBS which rely on repo for liquidity.

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# Executive Summary

Banks have historically optimized their balance sheets based on risk-based capital measures, and have been less focused on non-risk-based leverage ratios – notably European banks which have not traditionally faced leverage ratio constraints. While all the US and European banks in our coverage universe are in a strong capital position on the traditional Tier 1 common equity metrics, the pro-forma leverage ratios under the proposed rules are more of a challenge for the banks and are becoming a new binding constraint on capital.

Although some banks look relatively weak on proposed leverage ratio standards, we believe there is significant "low hanging fruit" to drive down the denominator rather than the less appealing option of raising more capital. There are three primary opportunities we see for the banks to optimize their balance sheets for the supplementary leverage ratio: 1) trade compression, 2) secured client financing, and 3) re-pricing unused commitments. We believe there is significant opportunity on the trade compression side to reduce gross derivative receivables via netting of trades btw dealers, and this is likely to be the primary focus for the banks in the near term. The focus of this report is on how banks will address their secured financing businesses, for both clients and for their own balance sheet.

Figure 1. Most of the US banks are at or close to the 5% minimum for SLR...

| | SLR Ratio | Ex Repo | Diff |
|---|---|---|---|
| **Goldman Sachs** | 4.8% | 6.4% | 1.6% |
| **Morgan Stanley** | 4.2% | 5.6% | 1.4% |
| **Wells Fargo** | 7.0% | 7.6% | 0.6% |
| **JP Morgan** | 4.7% | 5.3% | 0.6% |
| **Bank of America** | 5.0% | 5.4% | 0.4% |
| **State Street** | 5.4% | 5.5% | 0.1% |
| **Bank of New York** | 4.0% | 4.1% | 0.1% |
| **Average** | **5.0%** | **5.7%** | **0.7%** |

Source: Company reports, Citi Research
Note: Based on B3 rules; GS & WFC SLR are est (do not disclose); BK indicated low 4s & BAC said 4.9-5%

Figure 2. ...And most EU banks are at or close to 3% minimum levels

| | Lev Ratio | Ex repo | Diff |
|---|---|---|---|
| **Barclays** | 3.1% | 3.3% | 0.2% |
| **Credit Suisse** | 3.0% | 3.2% | 0.2% |
| **Deutsche Bank** | 3.1% | 3.3% | 0.2% |
| **Societe Generale** | 3.2% | 3.4% | 0.2% |
| **UBS** | 2.9% | 3.1% | 0.2% |
| **BNP Paribas** | 3.8% | 3.9% | 0.1% |
| **HSBC** | 4.8% | 4.9% | 0.1% |
| **Credit Agricole** | 3.5% | 3.6% | 0.1% |
| **RBS** | 4.3% | 4.3% | 0.1% |
| **Credit Agricole S.A.** | 1.9% | 2.0% | 0.1% |
| **Average** | **3.6%** | **3.7%** | **0.2%** |

Source: Company reports, Citi Research
Note: Based on CRD IV; Figures in USD; As regulators continue to look at CASA at the parent company level, CA Group clearly meets requirements; Netted repo exposure is a Citi estimate

- **In the US, it's the supplementary leverage ratio** – In the Notice of Proposed Rulemaking issued in July 2013, the regulators laid out a new capital measure called the supplementary leverage ratio requirement (SLR) for the 8 systemically important banks (see our May 19th, 2013 note *Potential New Capital Constraint Emerges*), which requires 5% at the holding company level and 6% at any insured subsidiary. As shown in Figure 1, the SLR at the bank holding company level ranges from 4.0-7.0%. In order to show the magnitude of the opportunity from reducing repo, we also show the SLR ex the impact of repo, which shows it would add only 10 bp for the trust banks, 40-60 bp for the larger money center banks, and 150 bp for GS and MS.

  – **Foreign Banking Organization (FBO) rules are likely to drive deleveraging pressure at European banks' US subsidiaries, notably at Barclays and Deutsche Bank.** The extent of this deleveraging will depend on the final FBO rules. In *US Leverage, European Read-through* (July 9th, 2013), we highlighted that European banks' US subsidiaries fall below the BHC (Bank Holding Company) thresholds of $700bn consolidated total assets under the SLR for systemically important banks; in other words, these subs are likely to be based on a minimum requirement of 3%. Notwithstanding this, these subsidiaries are likely to push through material deleveraging, with repo books bearing the brunt.

- **…And European banks are subject to minimum CRD4 leverage requirements of 3.0%** – As shown in Figure 2, UK PRA requirements exclude AT1 capital with the same minimum requirement while Swiss FINMA rules apply a minimum ratio of c4.2%. Although most European banks meet the minimum requirements, the likes of CS, Deutsche Bank, SocGen and Barclays are at the tighter end of the spectrum although the latter arguably on tougher PRA standards. The CRD IV leverage ratio excluding the impact of repo adds a modest 10-20 bps to the ratio.

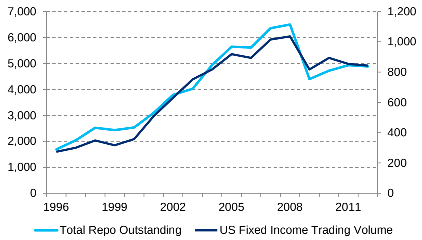
**Banks will pull back on secured financing, but it's early and changes will likely be on the margin in terms of extending balance sheet and pricing.** In the past, balance sheet capacity for client financing was readily available since it was an activity that did not require a lot of capital and so banks could lay it out in the hope of attracting incremental business. With the focus shifting to lower leverage and maximizing ROA, banks are likely to reduce their repo and securities lending

businesses since the ROA on these low-risk secured financing businesses are only about 10-50bps. At the low end, 10-20 bps is earned on the cash financing business which is primarily general collateral for cash, and at the high end, 20-50 bps is earned on the securities lending business which is usually not as liquid, non-GC, specials being borrowed. Since the standalone repo business does not make economic sense under a non-risk-based leverage approach, banks will need to reassess client profitability taking into account all ancillary businesses (such as trading) and as a result will likely need to shrink repo availability and/or look to re-price the financing costs in order to compensate for higher capital costs. Since the rules may change and there is much work to be done from derivatives trade compression, we do not believe there has been a significant change in the approach, as the goal posts have not been set.

*We should make an important caveat here that the rules for the US SLR are not final. There is the potential for the ratio to be modified in the form of carve-outs for excess liquidity plus there has been some anecdotal evidence that regulators are becoming increasingly sensitive to the impact of banks pulling back on client financing on the US Treasury and agency MBS markets[1].*

**Key Findings:**

Figure 3. Repo and trading volume are highly correlated




Source: Citi Research, SIFMA as of YE 2012

**1) We see limited impact to bank profitability from lower client financing…** – Investors remain concerned as to how the business models of the banks will be impacted if they have to scale back on client financing in order to optimize the balance sheets for new leverage hurdles. As we explain below, we anticipate it will be a slight (under 5%) negative impact on the overall fixed income trading revenue pool.

*Banks are also reliant on repo to finance their trading inventory, so there remain questions on the sustainability of funding for the balance sheet as well. On page 31 in the funding section of the report, we review the changes to the bank funding model vs pre-crisis and conclude that there should be no impact to the funding model.*

- **We expect a slight negative impact to the fixed income trading revenue pool with asset classes that rely on leverage impacted the most** – Cash financing and prime brokerage are most exposed to a reduction in client funding. The trading businesses most likely to be impacted are the higher quality/more liquid businesses such as US Treasuries and agency MBS where spreads are very thin, and investors need leverage in order to generate a decent return. As shown in Figure 3, there is a fairly strong correlation between the repo market and trading volumes, so a pullback in repo can potentially impact trading activity as various trading strategies may become harder to put on as credit and liquidity become constricted. Trading businesses that utilize derivatives, such as interest rates, may be impacted by less client flow. Both the hedging and pricing of derivatives are reliant on the ability to use repo to fund long positions and cover short positions in the underlying securities. Derivatives like credit default swaps, interest rate swaps, total return swaps and cross-currency swaps may see a decrease as broker dealers reduce balance sheets.
  - **Banks no longer have balance sheet capacity to grow their collateral transformation business** – As over-the-counter derivatives move to central clearing, more high quality margin will be required to be posted due to initial

[1] Participants on the Treasury Borrowing Advisory Committee recently expressed these concerns in a presentation to Treasury officials in July 2013 (Presentation)

margin requirements. Clearing houses are also typically more restrictive on the type of collateral they will allow to be posted. Clients, such as asset managers and hedge funds, do not always have readily available high quality, liquid collateral to post. Through collateral transformation, which works similarly to a repo transaction, banks had planned to fill this hole for clients by allowing them to pledge their illiquid securities in exchange for more liquid collateral. Collateral transformation was thought to be an area of growth within the financial service industry (referenced by the trust banks and JPM as potential revenue opportunities) and would help to offset the lost revenue from moving to central clearing, but due to SLR there may no longer be the capacity to take on these positions as balance sheets are now constrained.

- **At JPM's investor day in February 2013, collateral transformation was expected to generate ~$300-500 mil** – Collateral transformation would complement the prime brokerage and securities services businesses, but with balance sheets brushing up against capacity due to new regulatory proposals, this business no longer looks as attractive as it once did.

**2) …But there will likely be some shifts in market share as banks pull out, which may create an opportunity for new players, but we believe the bulk of market share gains will flow to top 5 banks** – While it is anecdotal, some in the industry have suggested that some of the more leverage-constrained banks are having preliminary discussions with clients about the costs of repo. We believe that the conversations are not widespread, and are focused on the least profitable clients. Credit Suisse is a case in point which has been refocusing its sizeable Prime Brokerage balance sheet (SFr210bn at 3Q12) to more profitable clients.

- **Our market share analysis points to Barclays and several others as most likely to pull back and give up market share in fixed income trading…** In Figure 4, we provide a scatterplot of the repo assets on the bank balance sheets vs respective FICC global markets share. Ideally a bank wants to be above the line, since they are extending relatively less balance sheet for a given amount of trading share. This analysis suggests that Barclays is extending the largest amount of balance sheet via repo relative to its trading market share and therefore has an opportunity to improve its balance sheet efficiency.

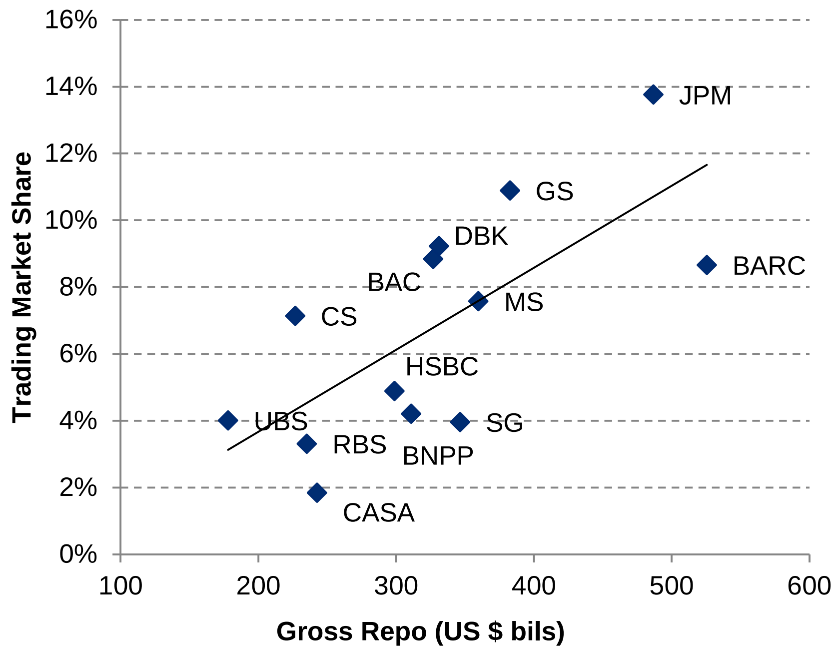
- **…And likely to see some smaller banks try to take market share...** – One question that investors have is if we see the large players pull back from repo, will there be opportunities for smaller players to gain share. It's important to note that the client financing business as a standalone business is not very profitable and the business model requires having broad fixed income and equity franchises as clients redirect trading flow to where they are now receiving financing.

  – **Of the US regional banks, we only see WFC as well positioned to take market share and expand its FICC franchise…** – In our view, WFC would be the only US regional bank positioned to gain some share, but do not view it as a significant near-term opportunity. The other regional banks (such as USB) do not have large enough fixed income and equity franchises that are strong enough to take business away from the larger dealers.

  – **…And BNP Paribas would be the most likely of foreign banks** – We see BNP Paribas as looking to expand its modest presence in the US (c1.5% market share). Bringing together the BancWest and US CIB franchise under a single IHC (Intermediate Holding Company) could bring its own advantages. Management has also noted the franchise's relative track record in that it did

not tap the Fed window during the 2008-09 subprime crisis. However, we sense that management is waiting for the final FBO rules before formally announcing its strategy.

Figure 4. There seems to be a strong relationship between repo and trading market share




Source: Citi Research, Company Reports

- **…And would expect to see some disintermediation of the banks.** In addition to smaller banks taking share, below we address non-bank threats from: 1) hedge funds/asset managers going directly to real money to finance inventory positions, and 2) impact of a new reverse repo facility from the Fed that can be directly accessed by non-banks.

  – **Non-banks will likely look for niche business opportunities in the more profitable non-GC repo business.** There are several reasons why non-banks are unlikely to take a significant market share from banks in repo including: 1) limited buy-side risk management capabilities to assess non-bank counterparty risk, 2) private capital is not viewed as a stable capital base, especially in times of stress, and 3) regulators might be reluctant to move more repo into the "shadows" (although we feel this could be addressed via more transparency). That being said, there is a lot of work being done here, and we do expect to see some niche players develop to fill a potential hole in the market.

    • **Specialty lenders / borrowers likely to find opportunity in non-GC repo market** – As a standalone business, the repo business is viewed as a 10 bps ROA business, and as we noted before, the banks do it to facilitate other businesses. So, it does not seem like there is a big threat from non-banks. However, there are segments in the non-GC repo market where there is the potential for real money investors to get a good return, and this may create some niche opportunities.

For instance, we have heard examples of real money investors such as life insurance companies, asset managers and even regional banks that are interested in term funding for 6 months or longer against say a basket of equities or other non-GC collateral. On the other side, we have talked with several very large hedge funds that are very focused on the fact that the supply of leverage is shrinking due to the impact of leverage ratio and the cost of funding is going up, and they are looking for potential counterparties outside of the banks.

– **The repo markets may be further impacted by new Federal Reserve policy action** – Recently, the Federal Reserve announced a fixed-rate, full allotment, overnight Reverse Repo (RRP) facility expanded to various counterparties in order to implement monetary policy decisions and ultimately extract liquidity from the financial system. Historically, the Fed has only extended its reverse repo operations to the primary dealers, but in an effort to exert greater control over short-term rates, the Fed is allowing money market funds, other dealers, etc to participate. The facility will have no cap in the amount of funds accepted from any of the counterparties (ie full allotment). By creating a fixed rate, the Fed will effectively be able to set the floor for short-term rates and at the same time influence the amount of money supply entering and exiting the system.

  - **The Fed will now be able to improve its control over money market rates…** – The rate at which the Fed offers this overnight, essentially risk-free investment will determine a floor on overnight rates. No one would be willing to lend at a rate lower than what they could receive from the Fed, thus creating a floor. The fact that this facility is full allotment should reduce downward pressure on rates for risk-free assets by increasing availability. Money market funds and GSEs, which were previously ineligible to earn interest on excess reserves (IOER) like the primary dealers, are now eligible to earn the fixed rate which may or may not be higher than prevailing money market rates. This effect should tighten up money market rates (ie Fed Funds) and create less spread between the various short-term lending rates.

  - **…and may accelerate the disintermediation of the banks** – As the Fed expands their list of eligible lenders, banks may be removed from their role as the intermediary for some transactions. Money market funds can now go directly to the Fed when they need collateral, bypassing the banks. This could have a positive effect on bank balance sheets as it may reduce the size of their matched books.

  - **As the broker-dealer repo footprint shrinks, there may be negative effects to financing** – The Fed may reduce the ability for banks to source financing. If money market funds can go directly to the Fed and receive the fixed rate, in order to attract financing, banks will have to match or offer a higher rate. This price competition with the Fed to attract liquidity could raise the banks' financing costs. Deposit pricing may also increase, but we believe banks will be slower to raise rates, as they are already flush with excess deposits. Wholesale depositors are likely to chase the higher money market fund yields which creates a natural outflow of deposits and as a result, banks can shrink balance sheets.

**3) …But the bigger impact is likely to be on buy-side investors and the liquidity of the markets** – We believe reductions in repo financing could have business model impacts on one-sided leverage investors (such as mortgage REITs)

which do not provide an opposite, or matched, trade to offset their borrowing, or on smaller tier clients that rely on repo financing and do not generate enough fees when banks look at client profitability on an ROA basis. In addition, the liquidity of markets for instruments that are typically used as collateral for repo as well as leveraged products could be affected.

- **Large hedge funds will not lose access to funding, but are likely to see increases in their costs of financing…** – We do not believe that large hedge funds will lose access to funding, but we do believe that banks will reassess how they look at client profitability, as Credit Suisse and others have been doing, with the leverage ratio being a constraint. As a result, we would expect to see financing costs climb higher and/or hedge funds consolidate their list of dealers, which could benefit the larger players such as JPM.
  - **Repo spreads would have to widen to 50 bps vs the 5 bps received today for the banks to earn the same cost of capital as prior to the introduction of the SLR** – The example below uses a general collateral, zero risk weighted asset (ie Treasuries) which currently generates roughly a 5 bp ROA. Assuming banks want to earn 10% cost of capital and a 3% capital constraint under the SLR (the trade is levered 33x), spreads would need to increase by 50 bps to meet the return hurdle.

Figure 5. Repo spreads would need to widen at least 50 bps to maintain the current ~10% ROE for the secured financing business

| **Reverse Repo Example under Basel Proposal (3% requirement)** | |
|---|---|
| Capital requirement | 3% |
| Corporate tax rate | 40% |
| Cost of capital (After tax) | 10% |
| Required spread to achieve cost of capital (3% * 10%/(1-40%)) | 50 bps |
| Typical market spread | 5 bps |

Source: Financial services joint trade comment letter to the BIS titled “Comments in Response to the Consultative Document on the Revised Basel III Leverage Ratio Framework and Disclosure Requirements.” Pg 7

- **…But smaller buy-side firms may feel more of a material impact as leverage is reduced** – Smaller hedge funds and some mortgage REITs may be impacted the most from a pullback in repo supply. These users may not be able to drive enough revenue to incentivize dealers to extend financing (note that a key driver for mortgage REITs is potential fees from equity issuance, which may be limited in a period of higher long-term rates).

- **Liquidity may tighten for those securities more commonly financed by repo** – A pullback in repo financing could reduce liquidity in markets for instruments such as US Treasuries, US agency MBS and Agency debt, which could also result in additional price volatility or less efficient price discovery. As these securities become less liquid, it may lead to higher yields.
  - **Repo allows for US Treasuries and US agency MBS to trade with a ‘cash-like’ liquidity premium** – Based on data from the New York Fed, repo transactions account for 20% of the outstanding notional in the Treasury market and 16% of the Agency MBS market. Cash can be easily obtained by posting either of these securities as collateral, adding to the trading depth of both of these markets. Repo enhances the liquidity and the overall tradability of the underlying product.

– **For some products, a decrease in leverage may lead to a decrease in price efficiency** – There are several key players in the fixed income market that are big users of balance sheet via repo, and in turn provide more liquid markets in US Treasuries and agency MBS. Some investing tactics, like carry trade strategies, are dependent on access to cheap funding to use as leverage to enhance returns. These market participants and strategies are important to the market structure, often correcting price imbalances and adding to liquidity.

- **Relative value trades require lots of leverage to boost marginal returns, but these types of trades also serve as a stabilizer to the market** – For example, the on-the-run Treasuries vs the off-the-run Treasuries usually trade at narrow spreads (despite liquidity differences) due to relative value trades holding them in line. And because many securities are priced off US government bond rates, any hiccup in US Treasuries could easily spill over into other areas of the market.

**"…We would do the American public a fundamental disservice were we to declare victory without tackling the structural weakness of short-term wholesale funding markets…" –** *Fed Board Member Daniel K. Tarullo, May 3, 2013*

**4) Despite improvements to the bank funding models, regulators still believe that there is hidden risk within the repo market structure** – Regardless of all the features of the secured financing market that are intended to reduce risk (over-collateralization, backed by high-quality securities, favorable treatment under bankruptcy law), the market is still susceptible to various destabilizing factors. There is a continued fear that too much of the market is controlled by the systemically important banks and not enough has been done to address this issue. Regulators have continued their vocal support for changes to improve the efficiency and safety of the short-term financing markets.

We see three potential regulatory wildcards as regulators look for ways to reduce risk: 1) adoption of proposed changes to the leverage ratio framework, 2) finalization of the liquidity coverage ratio, which would indirectly impact the repo market, and 3) an introduction of a new measure such as those mentioned recently by regulators.

Figure 6. More work needs to be done to be compliant with BCBS proposed leverage ratio…

| | BCBS | Ex Repo | Diff |
|---|---|---|---|
| **Wells Fargo** | 6.9% | 7.4% | 0.6% |
| **State Street** | 4.8% | 5.5% | 0.6% |
| **Bank of America** | 4.6% | 5.2% | 0.6% |
| **HSBC** | 4.6% | 4.9% | 0.3% |
| **JP Morgan** | 4.3% | 5.0% | 0.7% |
| **RBS** | 4.0% | 4.3% | 0.3% |
| **Bank of New York** | 4.0% | 4.1% | 0.1% |
| **Goldman Sachs** | 3.9% | 5.1% | 1.2% |
| **BNP Paribas** | 3.6% | 3.9% | 0.3% |
| **Morgan Stanley** | 3.5% | 4.9% | 1.3% |
| **Credit Agricole** | 3.4% | 3.6% | 0.3% |
| **Societe Generale** | 2.9% | 3.4% | 0.4% |
| **Barclays** | 2.8% | 3.3% | 0.4% |
| **Deutsche Bank** | 2.8% | 3.3% | 0.4% |
| **Credit Suisse** | 2.8% | 3.2% | 0.4% |
| **UBS** | 2.7% | 3.1% | 0.4% |
| **Credit Agricole S.A.** | 1.8% | 2.0% | 0.2% |
| **Average** | **3.7%** | **4.2%** | **0.5%** |

Source: Company reports, Citi Research, in USD

- **Proposed changes to the leverage ratio framework could eliminate benefits from netting repo and shrink repo books** – As we have written previously (see our September 9th, 2013 note *Leverage Ratio May Get Even Tougher*), the BCBS has proposed changes to the calculation of the leverage ratio. One of those changes may force banks to add back repo netted off the balance sheet to the denominator, making the ratio more onerous for the banks. Eliminating this netting benefit could place additional scrutiny on the size of repo books and may lead certain dealers to pullback on repo financing. In Figure 6, we show our estimated pro-forma leverage ratios for the US and European banks under the international proposal. Also we show to the right what the ratios would look like ex repo to give an idea of how much the repo books are impacting the ratio.

– **Absence of allowance for FIN 41 netting would move $460 billion of repo back on balance sheet for the US banks…** – FIN 41 netting permits participants to net repos and reverse repos provided a master netting agreement is in place and a number of conditions are met – especially, that the transactions are with the same counterparty and for the same maturity. Previously, the netting of reverse repo and repo transactions were not required to be disclosed, but recently all banks are now reporting a 'gross' number in the notes of their financial statements. As we show in Figure 7, the amount of repo netted off the balance sheet totaled $460 bil for the 8 G-SIB banks in 2Q13, ~30% of the $1.6 tril amount held on balance sheet.

Figure 7. As of June 30, $460 billion of repo assets were off b/s due to Fin 41 in the US...

| (US$ mils) | Net Repo | FIN 41 Netting | Gross Repo |
|---|---|---|---|
| **JP Morgan** | 369,665 | (117,183) | 486,848 |
| **Goldman Sachs** | 328,353 | (54,345) | 382,698 |
| **Morgan Stanley** | 271,608 | (88,247) | 359,855 |
| **Citigroup** | 263,205 | (66,233) | 329,438 |
| **Bank of America** | 224,168 | (102,843) | 327,011 |
| **Wells Fargo** | 148,665 | (5,315) | 153,980 |
| **State Street** | 5,569 | (26,167) | 31,736 |
| **Bank of New York** | 9,978 | - | 9,978 |
| **Total** | **1,621,211** | **(460,333)** | **2,081,544** |

Source: Citi Research, Company Filings

Figure 8. ...and $720 bil for European banks

| (US$ mils) | Net Repo | Offset | Gross Repo |
|---|---|---|---|
| **Barclays** | 339,047 | (186,517) | 525,564 |
| **Societe Generale** | 258,430 | (88,161) | 346,591 |
| **Deutsche Bank** | 291,510 | (39,569) | 331,078 |
| **BNP Paribas** | 215,855 | (95,215) | 311,070 |
| **HSBC** | 210,081 | (88,777) | 298,858 |
| **Credit Agricole Group** | 180,940 | (61,726) | 242,665 |
| **RBS** | 150,935 | (84,293) | 235,228 |
| **Credit Suisse** | 183,541 | (43,292) | 226,832 |
| **UBS** | 143,318 | (34,718) | 178,037 |
| **Total** | **1,973,656** | **(722,269)** | **2,695,924** |

Source: Citi Research, Company Filings

Note: Gross repo for Credit Agricole S.A. is $180.94 and Net Repo is $242.665

– **…But banks may be able to offset this via BVP/LVP (borrow/loan vs pledge)** – Since the drivers of FIN 41 balances are multiple cash transactions back and forth between the same counterparty, even though the net cash is still the same (ie matched off), we believe banks will try to restructure some of these repo transactions as borrowed/loaned vs pledge transactions. In simple terms, if one side of the trade is cash, then it has to be booked on balance sheet as financing. If there is a security-for-security swap, then this can be classified as borrow/loan vs pledge, which is held off-balance sheet for the party deemed to be the borrower for accounting purposes, and since there are multiple transactions, we believe there is an opportunity to restructure these transactions so the potential impact from losing the ability to net under FIN 41 will be mitigated.

- **The proposed liquidity coverage ratio (LCR) could be another balance sheet constraint that impacts repo books** – The Basel Committee's proposed LCR rule will require a bank to hold enough "high quality liquid assets"[2] to ensure that it has enough liquidity to withstand a 30-day stressed event. The current proposal is for banks to have a minimum LCR of 100%. LCR may be another reason why banks will need to reduce short-term financing to clients, as banks need to limit the amount of secured financing being rolled over within 30 days. The majority of repo financing is very short term. It is expected that rule will be clarified later in the year or in early 2014.

– **Banks may reduce repo books given the negative impact repo would have on the proposed liquidity coverage ratio** – Banks would have to maintain a minimum liquidity coverage ratio of 100% under proposed rules, measured by dividing their stock of high quality liquid assets by net contractual outflows over a 30-day period. Matched repo books, despite being cash transactions collateralized by highly liquid securities, negatively impact these ratios for the banks, which may force banks to reduce repo books to meet minimum requirements. These rules are not yet final. It is expected that the rule will be clarified later in the year or in early 2014. In addition, repo collateralized by Treasuries, which represents 65% of the repo market, receives different treatment as we describe below, and as a result would not negatively impact the ratio for the banks.

– **A simple example of how matched book repo affects the liquidity coverage ratio** – In a simple example, a bank loans $100 to a client collateralized with agency MBS, financed by borrowing $100 from another client. The net cash flow from these transactions would be zero. However, in calculating the net outflows under the LCR, banks can only include a certain percentage of their inflows (the amount of the inflow included ranges from 0-75% depending on the asset's riskiness.) As a result, the net contractual outflow in the denominator would range from a minimum of $25 to a maximum of $100. In addition, although the assets reversed in from the client are typically high quality liquid assets (in this case agency MBS), they do not count towards the numerator because they are considered "encumbered", since the bank has agreed to resell them. So at the end of the day, the bank sees no impact to the numerator and at least a $25 increase in the denominator, reducing its LCR, all for a low ROA transaction.

  - **The exception is repo collateralized by Treasuries, which neither positively nor negatively impact the ratio** – Inflows are capped at 75% in

[2] HQLA includes high quality, liquid, unencumbered assets that can be quickly converted to cash even during periods of market stress. For example, cash, high quality government securities, certain corporate bonds, common equity shares and RMBS.

the calculation of net outflows in the denominator, unless the repo is collateralized by US Treasuries. In this case, 100% of the inflow would count, so in this case there would be no impact to the LCR ratio.

- **Regulators have also proposed other measures that would directly target repo books** – The biggest regulatory change that has occurred post-crisis has been to the tri-party repo market. Regulators and banks worked together to limit the intra-day credit exposure that was concentrating risk between just two counterparties (JPM & BK). Regulators have looked at ways to reduce intra-day credit extension by working with dealers to improve trade matching, and ending JPM's practice of unwinding non-maturing repo trades intra-day to reduce exposure.[3] At a meeting on October 4th, Federal Reserve Board of Governors member Jeremy Stein expressed that the best way to reduce the risk of fire-sales in the repo market is to impose the appropriate tax on participants in the system. Stein noted that the leverage ratio, since it is a blunt regulatory measure, may not be the best way to regulate the repo market, but instead will just shift the risk to other players who have the ability to take share given their relatively better leverage ratios. Stein spoke to possible approaches for reducing the risk of fire sales in the repo system.

  Regulators have been discussing different methods for directly regulating the repo market including adding surcharges for repo to risk-based capital ratios, modifying liquidity ratio requirements, mandatory haircuts, and limiting re-use of collateral.

  - **Additional capital surcharges** – Regulators could impose "liquidity-linked capital surcharges" on the banks, with different capital surcharges based on the amount of repo to finance clients vs repo to finance the bank itself. Potential obstacles to this approach are: 1) the bank may just pass through the cost to the borrower, and 2) the bank may be able to avoid this by dis-intermediating itself from the market – in other words, clients who need cash would borrow directly from clients with excess cash to lend (hedge funds borrow from corporations and the bank is removed from the middle.) This would just push the risk into other areas of the market that would not be regulated.

  - **Modifying liquidity requirements** – Regulators could modify liquidity requirements to create a tax on bank repo books. For example, regulators could change the Net Stable Funding Ratio (stable funding including deposits and long-term wholesale funding/ long-term assets). By assuming that repo for clients rolls off more slowly than repo the firm uses to finance itself, repos would essentially become long-term assets, inflating the denominator, which would force banks to finance them with long-term liabilities. However, banks could again likely get around this by passing the higher costs onto customers or dis-intermediating from the market.

  - **Mandatory collateral haircuts** – The FSB has proposed minimum and mandatory haircuts on collateral which would establish a cap on the amount various assets can be pledged. While haircuts are almost always used, this restrictive approach would again change the economics of the client financing business.

[3] Regulations have helped reduce intra-day credit extension by: 1) recommending that tri-party repo trades settle by 5:15 PM in order to facilitate successive fund transfers by market participants; 2) working with dealers to improve trade matching; 3) ending JPM's practice of unwinding non-maturing repo trades intra-day to reduce exposure; and 4) working with BK to have dealers prefund maturing repo transactions backed by privately-issued nongovernment securities.

- **Shortening the collateral chain by limiting re-pledging** – Regulators are also trying to shorten the collateral chain length by restricting the number of times a security can be delivered onto a new counterparty. The goal of this proposal is to reduce the systemic risk posed to the financial system, as long collateral chains result in many market participants being affected if just one participant defaults. Regulators believe that long collateral chains create hidden exposure to firms and assets not thought to be connected by one transaction.

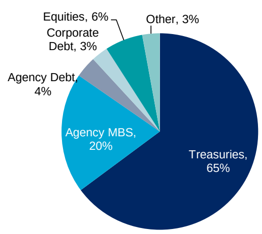
  - **Part of the systemic risk arises from the interconnectedness of the collateral chains created by re-hypothecation** – Re-hypothecation is the recycling of client collateral to be used for more financing. Clients are often rebated, or receive lower financing costs, if they allow their collateral to be re-hypothecated for the firms' benefit. If collateral can be constantly reused, this creates an interconnected and intertwined collateral chain between counterparties. Dealers may not know their exact exposures due to the complexity of such transaction chains. The use of leverage and maturity transformation occurs at different points within these collateral chains further increasing risk.

# Intro to Secured Financing Transactions

The U.S. repo market plays a critical role in the expansion of credit and the overall liquidity and depth of our capital markets. Repo, and to a larger extent, the shadow banking system, has been the focal point of criticism and blame for exacerbating the financial market turmoil during the most recent crisis. **In this section, we discuss the following: 1) background on the market; and 2) a brief 'primer' on secured financing.**

## Background on the Repo Market

Figure 9. ~85% of Primary Dealer repo is collateralized by US Treasuries and Agency MBS

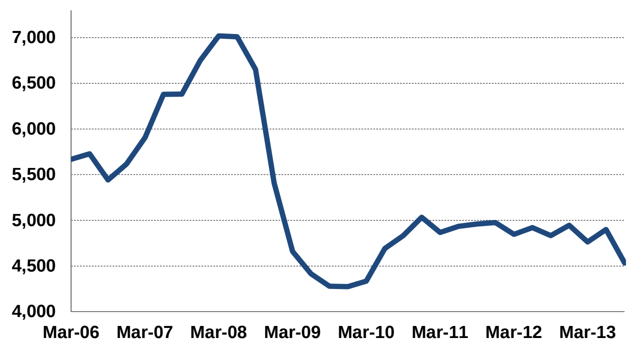



Source: Citi Research, NY Fed Reserve as of 9/4/13

**Despite the size and importance of the repo market, it is still widely misunderstood** – In simple terms, a repo transaction can be thought of as a short-term, over-collateralized loan. The repo market remains an important avenue for both extending credit and providing liquidity. Often cited as the 'grease' behind the wheels, the repo markets are part of the shadow banking system that runs parallel to the 'traditional' banking model.

- **We estimate that the size of the US repo market is ~$4.5 trillion** (see Figure 10) – Our estimate is based off of the primary dealers' reported figures to the New York Federal Reserve and includes both repos ($2.6 tril) and reverse repos ($1.9 tril). Of the $4.5 tril repo outstanding, ~85% of repo outstanding is collateralized by U.S. Treasuries or US agency mortgage-backed securities (see Figure 9). The remainder is evenly spread between equities, corporate bonds, Federal Agency debt, and other (ie non-agency MBS).
  - **There is debate around the overall size of the repo market, with many believing the reported numbers could be understating the true magnitude** – The primary dealers do not represent the entire universe of dealers transacting in the repo market. Most use this $4.9 trillion (which includes both repo + reverse repo) number as a proxy for the market due to the fact that the primary dealers represent a majority of the repo activity. Non-banks can also transact in the repo market, outside the reported data.
- **The repo market has contracted ~35%, since the peak of $7.02 tril in 1Q07...** – Post-crisis, the market has gone through a de-leveraging cycle due to business model changes as broker-dealers decreased risk exposure. Repo participants began de-leveraging post 2008 as well as reducing re-hypothecation policies (the disallowance of re-cycling client assets) leading to fewer transactions. And lastly, as seen in Figure 12, dealer inventory has been reduced significantly, lowering the need for financing from both banks and clients.

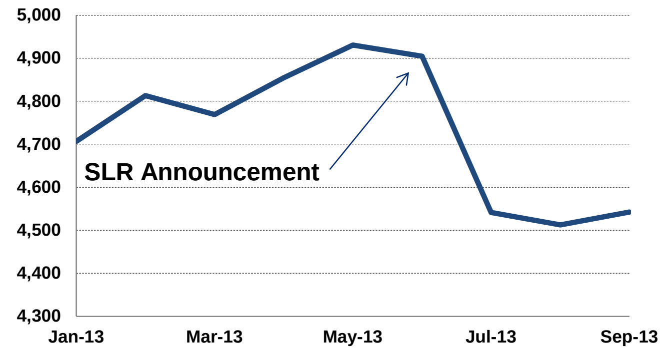
Figure 10. Down 35% since its peak, the US repo mkt currently stands at $4.5 tril…




Source: Citi Research, SIFMA as of 3Q13

Note: Dealer Financing = repo + reverse repo

Figure 11. …And this trend has become more pronounced post SLR announcement




Source: Citi Research, SIFMA as of 3Q13

– **Pre-crisis, the inherent 'safety' of the repo markets led to complacent pricing and over-reliance** – Banks became too comfortable with the ease at which the repo markets functioned and ignored the underlying risks. Banks were very willing to extend financing so long as it drove other trading flows. In doing so, banks were often taking in collateral that was not adequately priced for the risk that it carried. For example, AAA non-agency MBS was priced close to Treasuries, but the market was not nearly as liquid and the underlying collateral proved to be a lot more volatile than expected. Internally, banks often matched their longer-term trading assets with short duration and overnight paper, creating a large funding gap that could not be rolled over in times of stress.

- **…But has come down ~7% post SLR announcement…** – After maintaining a steady level post-crisis, there has been a significant drop in total repo outstanding after the SLR was announced in June (see Figure 11). We believe some banks quickly needed to adjust, but there is likely more to come as banks fully work through their balance sheet reduction options.

- **…And could still have further to decline** – After speaking with various market participants, we believe that the repo market could comfortably decline another ~10-15% before pushing the boundaries (2Q07 low). If the market were to decline further and at a rapid pace, there could be liquidity issues for market participants and knock-on effects for the most commonly used underlying products such as Treasuries and agency MBS.

**While reliance on repo has declined post-crisis, the repo market continues to be an integral piece of every bank's business model** – Banks rely on repo for a variety of reasons including:

- **Dealers offer this cheap financing as a way to drive revenues towards other areas within the firm** – Clients will often direct trading flows to the firm that extends them generous financing. By itself, client financing is not a large profit generator, but instead is used to drive other commissions for trading and investment banking. These client funding transactions take place within two areas of the broker-dealer: cash financing and securities lending.

Figure 12. Dealer credit inventory is down significantly reducing the need for repo


Source: Citi Research, NY Fed Reserve as of 9/2013

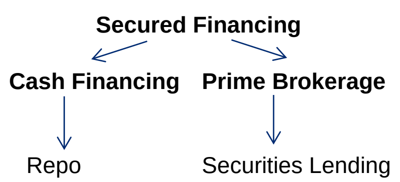
- **Banks rely on repo financing as a source of funding for trading inventory** – Banks often use repo to finance their own inventory positions. Repo is an inexpensive, liquid, and secure way to obtain financing for everyday bank needs or for the financing of various trading products used in market making activities.

- **Dealers maintain a footprint in the repo market to retain liquidity and meet stress test requirements** – The repo book is an avenue for meeting regulatory requirements. Regulations require more liquid balance sheets and longer-term funding, all of which access to the repo market can provide. Dealers often use their repo book for their own Treasury operations, maintaining and optimizing firm liquidity.

## Understanding the SFT Businesses

***The world of securitized financing is widely misconstrued. Below is an attempt to clarify and simplify common terms and definitions. While repo is a term used broadly to define short-term, collateralized trades, we group these transactions into two different types: cash financing and securities lending.***

Figure 13. A breakdown of the terminology used within the secured financing businesses




Source: Citi Research

**The various terminology used in secured financing is often thrown out interchangeably and loosely (see Figure 13).** Secured financing is the umbrella term for collateralized borrowing. ‘Cash financing’ and ‘prime brokerage’ are the business units where these transactions take place. ‘Repo’ agreements are done on a broker-dealer’s cash financing desk, while ‘securities lending’ takes place within the prime brokerage business unit. Both repo and securities lending describe transactions which are used to obtain cash or borrow securities. The term ‘matched book’ is a strategy used within secured financing to offset borrowed and lent positions so that they net to zero.

- **Cash financing involves the lending of cash to clients on a short-term, collateralized basis** – Through the cash financing desk, banks provide short-term repurchase agreements to clients collateralized by high quality, liquid securities. The sources of funding are other clients of the bank which have excess cash and are willing to lend, also on a collateralized basis. The bank serves as an intermediary in the market, matching up lenders and borrowers. Cash financing is largely thought of as a fixed income product, as the collateral used to obtain cash are usually Treasuries or agency MBS. Cash financing often directs trading flow to other fixed income desks within the firm. Collateral used to obtain financing is classified into two groups: 1) general collateral; or 2) specials.

  - **General collateral (GC)** – Refers to assets (ie on-the-run Treasuries) most widely accepted by transacting counterparties and are traded at a standard rate.

  - **Specials** – Refers to assets which are not as liquid and not accepted by all counterparties (ie corporate bonds) and trade at a wider rate.

- **Securities lending helps clients borrow securities to short** – Repo and sec lending have many similarities and are often used interchangeably. The motivation behind the transactions is the key differentiator. Repo is primarily done to obtain high quality, very liquid fixed income securities and is therefore driven by the need to borrow and lend cash; securities lending is more commonly used to borrow equities to sell short. Sec lending is within a firm's prime brokerage unit and helps clients, particularly hedge funds, borrow securities and sell them into the market in order to create short exposure.

**Participants engage in repo/sec lending for a variety of reasons** – The motivation to transact using these instruments can be broken into four categories: 1) short covering – used to facilitate deliveries for the normal course of business as well as support short selling activities of prime brokerage clients, 2) incremental revenue – clients can generate additional income on portfolio by lending assets to market borrowers, 3) financing – this is another way to fund purchases or lever assets, and 4) collateral transfer – can gain access to various collateral to facilitate other transactions.

## 1) Repo

**Banks facilitate short-term lending and borrowing for customers through repurchase agreements** – The ability of a bank to offer cash financing, or repo, is a key determinant of how clients allocate their business. Banks act as intermediaries in the repo market, providing short-term financing to clients in need, funded using excess cash from other clients willing to lend as a short-term investment. Borrowing and lending is done through repurchase agreements, under which a borrower pledges securities as collateral for the loan and agrees to repurchase the securities at the end of the agreement for a higher price, reflecting the original loan amount plus interest.

- **On one side of the market, there are the cash lenders…** – These are mostly money market funds, dealers, and asset managers that are sitting on excess cash and are looking for a way to earn a return on that cash at a low risk and for a short duration. The cash lenders must have the proper back-office operations to receive, value, and hold the collateral received. Repurchase agreements are highly standardized and offered broadly across the Street, making the product highly commoditized.
  - **Some cash lenders need to lend out that money to make a return, while other cash lenders will distribute excess funds not currently being used** – Lenders have different motivations for investing cash. For some, short-term cash investment is part of their investment strategy (i.e. money market funds) while for others it is a way to earn a return on idle cash (i.e. corporations, pension funds, asset managers, endowments).
- **…On the other side, there are the cash borrowers** – Typically, these participants are broker-dealers, hedge funds (largely fixed income and macro funds), and mortgage REITs. This service is highly valued by clients mostly because the lifeblood of their business is reliant on getting financing. Clients are willing to reward firms that provide financing by steering other business, such as trading, to the firm.

**Cash financing is a low-risk business** – Repurchase agreements combine the benefits of being secured, highly liquid, and flexible. Favorable treatment in bankruptcy also adds to the overall security of the transaction.

- **Banks can create "matched books" to reduce their risk** – Banks (from management teams down to the trader level) throughout the day monitor characteristics such as term to maturity, collateral type and size across the portfolio of borrowing agreements and try to match them against the characteristics in the portfolio of lending agreements, creating what is known as the "matched book". This can reduce, but does not eliminate, risk as the borrowing and lending agreements are not perfectly matched on a one-for-one

basis. The matched book is not run as a separate business unit, but instead is run parallel with the bank's own funding needs.

- **Lenders also receive a haircut on collateral which leads to over collateralization of the loan** – Another safeguard against loss of value is the haircut lenders receive on the collateral. For example, a lender may place a 2% haircut on US Treasuries posted as collateral. Therefore, a borrower needing $100 mil of financing will need to post $102 mil of US Treasuries as collateral. Repurchase agreements are also marked-to-market daily – lenders will request additional collateral from borrowers if the original collateral declines in value.

- **Favorable treatment under bankruptcy law is an important characteristic of repo that reduces risk** – Repurchase agreements receive special treatment under bankruptcy law by being exempt from "automatic stay". Should one party to the agreement become insolvent, the counterparty is allowed to sell the corresponding collateral without having to obtain prior court approval. This is important to lenders as it provides quick resolution and reduces counterparty risk.

**Due to such low risk, cash financing is an asset intensive, low ROA business generating between 10-20 bps... –** With spreads on high quality assets very narrow, the repo business on its own is not a big profit maker and requires a lot of balance sheet.

- **…But generous client financing can lead to other commissions and fees such as trading and investment banking** – By extending balance sheet to clients, repo becomes part of the 'client relationship' and clients will often direct business accordingly. For example, a levered hedge fund may take up a large percentage of a bank's balance sheet, but in return, do most of their trading with that same bank.

**Repurchase transactions can be settled in three different forms** – Repo transactions come in three forms depending on how the collateral underlying the transaction is managed and the type of collateral: 1) bilateral repo, 2) tri-party repo, and 3) held-in-custody.

- **In bilateral repo, the lender takes possession of the collateral** – Bilateral repo takes place between two counterparties that settle and collect both cash and securities. They rely on their own back office and internal systems to handle settlements and collateral value disparity. These transactions are typically done in order to receive or acquire specific securities, not 'general collateral.'

- **Tri-party repo settles through a clearinghouse...** – This type of transaction involves two counterparties as well as a clearinghouse. In tri-party repo, the repo transaction is executed through a central clearinghouse (only JP Morgan and Bank of New York Mellon are designated clearinghouses in the US) which collects a fee for providing collateral management services. The benefit to tri-party is ease of settlement and collection; the clearinghouses offer operational efficiency through collateral management services. This is very appealing to the money market funds that may not have the technology systems and back-office operations in place to adequately value collateral and collect on settlement dates. The tri-party repo market standardizes the transactions by matching cash against eligible general collateral. Within the tri-party market, the main borrowers (or suppliers of collateral) are concentrated among the primary dealers; the cash lenders are comprised of thousands of money market funds and corporations looking to place cash. Tri-party repo represents roughly ~70% the overall market, according to estimates from the Federal Reserve.

- **….but still sits on the balance sheet of the dealer** – While JPM and BNY serve as clearinghouses for tri-party repo trades, the trades still sit on the balance sheet of the dealer and the other counterparty to the trade. Due to timing gaps between when collateral is received and when cash is sent back, there is intra-day credit risk for JPM and BK, but there have been steps taken to limit this exposure going forward.

- **There is no movement of collateral for held-in-custody repo** – Held-in-custody is the least used settlement type, because it creates the greatest credit risk, as collateral is pledged, but not delivered, to the lender. However, it is also the cheapest since there is no cost to deliver the collateral, giving the lender the highest repo rate.

## 2) Securities Lending

**Clients use dealers to access the securities lending markets to create short exposure** – Dealers provide access to large securities pools to borrow from in order to put on a short position. Due to the ban on 'naked' short selling (ie selling a security you don't already have), in order to create a short position, hedge funds must borrow the stock and then sell it into the market. Dealers also have short exposure, mostly to hedge their trading inventory, and will need access to cover these positions or avoid "failing" on a delivery of securities. Securities lending is a form of secured financing; the borrower pledges cash or securities as collateral against the securities borrowed. The collateral received is often invested in short-term / overnight repo to earn a return, further adding to the connectedness between the two markets. Securities lending is the primary function of a firm's prime brokerage unit, but margin lending is also facilitated for clients of that particular firm. Due to the constant interaction with hedge funds, securities lending is a very important piece of the client relationship that can often direct more business towards other areas within a brokerage.

- **Dealers can play the role of either the lender or intermediary** – Dealers participate in the market in one of two capacities: 1) dealers can lend securities from their own inventory, or 2) dealers can facilitate borrowing for clients from other broker dealers or lending agents, such as custodial banks, which lend on behalf of long-only funds.

  - **Having a strong network is important to the success of the securities lending business** – A hedge fund that requires stock to short will contact their prime broker for a locate on the securities. The prime broker can use their own pool of securities to lend out or may use their contacts to find the specific securities required by the hedge fund. Their contacts may consist of direct clients, like pension funds and mutual funds, or a securities lending agent such as custodial banks that are sitting on large portfolios of stocks. Clients want to build relationships with dealers who have the strongest networks, as this gives them the widest access to securities. For example, Morgan Stanley's retail operations give them an advantage over competitors by providing a large pool of securities held by retail customers to access.

- **Lenders are looking for extra yield on their long securities portfolios** – Participants willing to lend securities are typically long only pension funds, endowments, mutual funds, and asset managers, that can enhance portfolio yield by securely lending out assets held and receiving collateral.

**Securities lending is a low-risk business for dealers** – While there is little risk for dealers processing these transactions, it does enlarge the balance sheet by creating an entry on the asset side for the borrowed stock and on the liability side for the payable to the hedge fund or lender for the cash collateral.

- **Securities lending transactions are fully collateralized…** – The transaction is fully collateralized with cash or other mutually-agreed upon collateral. There is a haircut placed on the collateral (usually between 2-5%) to give the lender some cushion should the market value fall. The margin level depends on the type of security, currency, and credit quality of borrower.

- **…And the collateral and position are marked-to-market daily** – To ensure the lender has adequate collateral, the borrower's position is marked-to-market daily. If that position falls in value, more collateral is posted. In the event that the borrower cannot return the securities, the lender can sell the collateral into the market.

**ROAs on the securities lending business are ~20-50 bps** – Due to the low level of risk for dealers in the securities lending business, spreads are tight, resulting in low ROAs. However, the ROA for securities lending is higher than cash financing, due to the fact that equities, in general, are harder to borrow than general collateral (ie Treasuries and agency MBS).

- **Revenue in the securities lending business is dependent on the type of security borrowed and interest rates** – As with all trading businesses, volume plays the most crucial role in determining revenue for the securities lending business. Supply / demand and overall short interest levels influence the amount of volume that the sec lending business will see. Interest rates determine the spread that the borrower and lender make on the reinvestment of collateral.

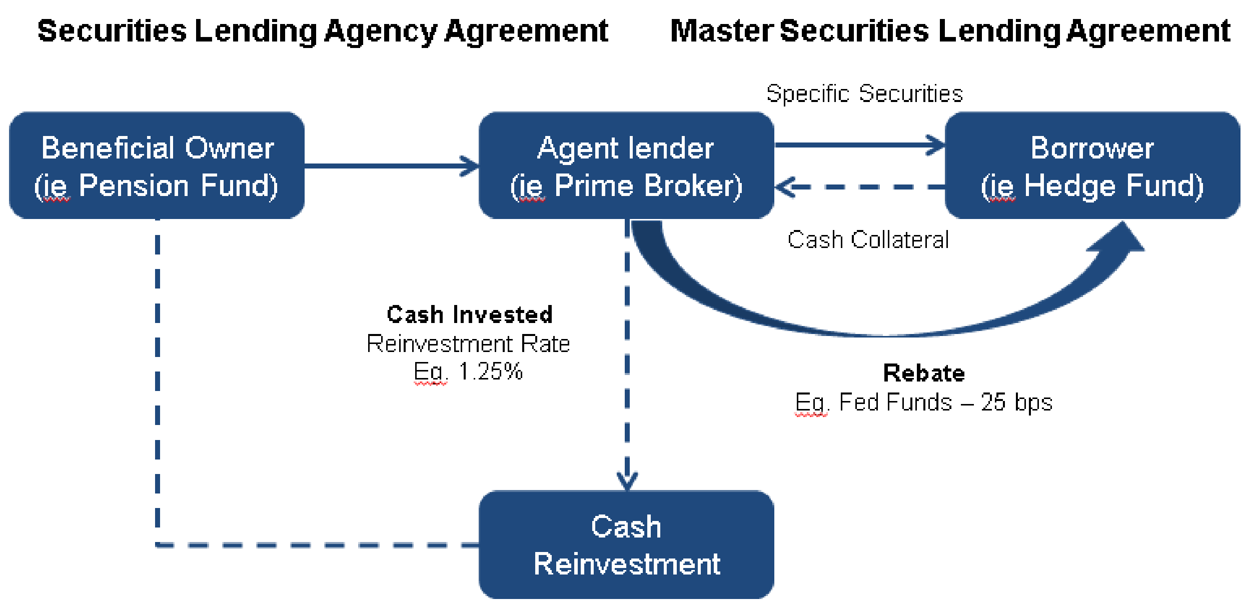
  – **The market availability on the security needed for a short position will help determine the borrowing rate** – If a security is hard to borrow, dealers may charge a premium to obtain that stock. Much like repo 'specials' (ie not general collateral), if the underlying security is not easily obtainable, that will be reflected in a higher price.

  – **Interest rates determine how much the borrower and lender receives** – When a client wants to sell short a security, it is sold into the market and cash is generated. That cash is then used as collateral for the position. The collateral is reinvested in a short-term security, one that is usually highly liquid and safe, such as a US Treasury or a money market fund. If current interest rates are low, that return will not be very high leaving less money to split among the borrower and the lender.

- **Below, we walk through a typical securities lending transaction** – The cash collateral that is reinvested is one piece that determines the amount the lender and prime brokerage agent gets paid. Both the lender of securities and the intermediary agent get paid off the reinvestment return. From a borrower's perspective, the 'rebate' determines the rental fee for borrowing the securities. In some cases (negative rebate rate), the borrower has to pay to borrow the securities usually trading on 'special,' but in some cases the borrower gets some collateral reinvestment returned (positive rebate). In this circumstance, think of the 'rebate' as compensation to the borrower for the opportunity cost of putting the cash up as collateral rather than investing it.

– **In the current low interest rate environment, the borrower's rebate on investment of cash collateral is negative** – Given the current low rate environment, returns on collateral are not enough to compensate the prime broker for their services. As a result, the hedge fund must pay the dealer the difference between the set fee and the rebate to compensate the dealer for their services.

Figure 14. Rebate Illustration for Securities Lending




Source: Citi Research

# Understanding SFT Accounting Disclosure

**Repo accounting disclosure is difficult to navigate** – Trying to understand and size repo books can be frustrating. Terms such as “repo” and “matched book” can have multiple meanings, confusing market participants. In addition, accounting disclosure can make it difficult to determine the size of the cash financing vs securities borrowing businesses, and different accounting policies can make it difficult to compare US and European banks due to different netting policies.

- **Repo terminology is used interchangeably, which can cause confusion** – The term “repo” itself can be confusing as it is used to refer at times to the entire client financing business, including both cash financing and securities financing, while at other times it can be used to refer to just the cash financing alone. The term “matched book” is also used interchangeably to refer to just the client cash financing business or at other times the entire cash repo book, which can include repo the firm does to finance its own inventory.

- **Some banks lump repo and securities borrowed together, making it hard to size the two businesses** – Some firms, for example BAC, do not provide a breakout of cash repo and securities borrowing. Both are included together in one line item on the balance sheet, making it impossible to know how much of the balance sheet consists of cash repo and how much is in securities borrowing.

- **Differences in netting policies under IFRS and GAAP make it hard to compare repo books between the US and European banks** – Netting policies under US GAAP are much more generous than netting policies under IFRS. As a result, the repo on US bank balance sheet can look much smaller than their actual repo book relative to the European banks. This can makes comparing repo businesses looking at balance sheets alone very difficult.

**We have done an analysis to compare repo books across the banks...** – Recently, US banks and some European banks have begun providing additional disclosure to help investors size repo books. The additional disclosure now shows how much of the repo and securities borrowing has been netted off the balance sheet, allowing investors to get to the true size of the repo book. We have gone through the disclosures of the individual banks and in Figure 15 below we show the gross size of the repo books for both European and US banks in order to perform an apples-to-apples comparison.

**…But there are limitations to the use of the data as Goldman’s best-in-class disclosure reveals** – Unfortunately, while the additional disclosure is helpful, it still prevents us from understanding how much of the repo book is actually used to provide client financing vs how much the firms uses to finance its own operations. GS is the only bank that provides the disclosure necessary to gauge the size of the matched book, or the financing provided to clients.

- **We consider only 45% of the total repo shown on the asset side of the balance sheet to be secured client financing…** – In Figure 16, we walk through GS’s disclosure, which breaks out the asset side of the balance sheet by its use across the firm. Looking at the balance sheet alone, the secured financing included on the balance sheet is $329 bil – which includes $154 bil of securities purchased under agreements to resell and $174 bil of securities borrowed. However, not all of this secured financing is financing for clients. The amount of client financing is included in the secured client financing category. As of 2Q13, only $62 bil of securities purchased under agreements to resell and $86 bil of securities borrowed would be considered part of the matched book, resulting in a

total matched book of $148 bil, which makes the matched book only ~45% of the total secured financing on the balance sheet.

- **…While the rest of the secured financing is held for liquidity purposes or used to cover shorts in GS's trading inventory** – $51 bil of the securities purchased under agreements to resell and $32 bil securities borrowed are classified as excess liquidity and cash, which are transactions GS has entered into to lend out its own cash on a collateralized basis. The remaining $40 bil of securities purchased under resell agreements and $56 bil of securities borrowed in Institutional Client Services are transactions GS has entered into to cover shorts in its own inventory. In each case, the transactions in the securities purchased under agreements to resell and securities borrowed lines are economically similar, but are just classified differently depending on the type of legal agreement used.

**We believe problems from the past that allowed some banks to mask the size of their repo books are now fixed** – Accounting standards pre-financial crisis allowed banks to move assets off balance sheet without disclosure and did not provide an accurate picture of banks' financial health. In particular, loose interpretation of guidance on financial standards allowed Lehman Brothers and MF Global to mask their true exposure and reliance on short-term funding.

- **MF Global used a practice called 'repo-to-maturity' to keep exposure to peripheral EU sovereign debt off-balance sheet** – Under US GAAP, whether a transaction is recognized as a secured financing transaction or an outright sale of assets is based upon whether or not the seller of the assets / borrower of the funds has lost or retains 'effective control' of the assets. With repo-to-maturity, MF Global lost 'effective' control as the funding for its bond holdings matured at exactly the same time as the bonds themselves did. Both ends of the transaction would end simultaneously and could therefore be kept off balance sheet and classified as a sale. The ability of MF Global to de-recognize their $6 bil investment in peripheral Euro debt allowed their balance sheet to look cleaner than it actually was. From an accounting perspective, these transactions are still allowed; however, we do not believe these transactions are still being used given the scrutiny around MF Global.

- **Lehman's use of repo 105 misled investors as to the size of their balance sheet** – During the financial crisis, in order to improve their reported leverage ratio by temporarily removing assets from the balance sheet, Lehman used an accounting maneuver called 'repo 105.' Under Lehman's internal accounting policies, these transactions were booked as a 'sale' rather than a secured financing transaction due to the overcollateralization or higher than normal haircut on the collateral. By taking a larger than normal haircut, Lehman could claim that they had lost effective control and count this a sale. Lehman would then take the cash received and pay down debt around reporting periods. This policy was based on a loose interpretation of SFAS 140 guidance.

  - **New accounting standards limit the ability of banks to hold assets off balance sheet** – In 2009, FASB issued accounting standard 166 to replace the misused FAS 140. FAS 166 changed the way broker-dealers were accounting for securitizations and special-purpose entities. It clarified the conditions for the surrender of control over transferred financial assets and also enhanced disclosure requirements. As a result of this rule, billions of assets were brought onto balance sheets in 2010.

**The one remaining issue with poor disclosure is around borrowed vs pledged (BVP) transactions** – While new accounting standards have forced banks to bring secured financing assets on balance sheet, the one exception is certain borrowed vs pledged transactions.

- **BVP transactions involve an exchange of securities-for-securities and can still be held off-balance sheet** – Any transaction that involves an exchange of cash must be held on balance sheet. In a BVP transaction, a bank will exchange securities in exchange for other securities. Since cash does not change hands as part of a BVP transaction, the transaction is allowed to be held off-balance sheet and therefore does not impact the leverage ratio for the banks. In a BVP transaction, the borrower is allowed to keep the transaction off balance sheet, but the lender still has to keep it on balance sheet. If the bank has a large amount of BVP borrowings, there may be a large amount still held off balance sheet.

  – **A simple example of a BVP transaction** – A bank decides to loan $100 to a client and receives collateral of $150 of corporate bonds. To finance this $100 loan, the bank has two choices: 1) repo out the $150 corporate bonds, or 2) enter a BVP transaction to exchange corporate bonds for Treasuries, then repo out the Treasuries to obtain the cash. In the past, banks used option 2 since it gave them a slightly higher spread on the transaction.

- **Risk associated with BVP transactions may differ across regions as the application of haircuts differs** – While European banks are allowed to apply a haircut to BVP transactions, US banks cannot. As a result, a BVP transaction may entail more risk for US banks, as they don't have the protection from overcollateralization that European banks have.

- **There is no disclosure around the amount of BVP transaction in financial statements** – There is nothing in the footnotes of the financial statements that discloses the amount of a bank's BVP transactions, making it impossible to size this book of business.

Figure 15. A breakdown of broker-dealer cash financing and securities lending businesses

| | Cash Financing | | | Securities Lending | | | Total Secured Financing | | |
|---|---|---|---|---|---|---|---|---|---|
| | Net | Offset | Gross | Net | Offset | Gross | Net | Offset | Gross |
| **JP Morgan** | 252,507 | 117,183 | 369,690 | 117,158 | NA | 117,158 | 369,665 | 117,183 | 486,848 |
| **Goldman Sachs** | 153,555 | 44,524 | 198,079 | 174,798 | 9,821 | 184,619 | 328,353 | 54,345 | 382,698 |
| **Morgan Stanley** | 142,494 | 81,963 | 224,457 | 129,114 | 6,284 | 135,398 | 271,608 | 88,247 | 359,855 |
| **Citigroup** | 136,519 | 66,233 | 202,752 | 126,686 | NA | 126,686 | 263,205 | 66,233 | 329,438 |
| **Bank of America** | | | | | | | 224,168 | 102,843 | 327,011 |
| **Wells Fargo** | | | | | | | 148,665 | 5,315 | 153,980 |
| **State Street** | | | | | | | 5,569 | 26,167 | 31,736 |
| **Bank of New York** | | | | | | | 9,978 | - | 9,978 |
| | | | | | | | | | |
| **Barclays** | | | | | | | 339,047 | 186,517 | 525,564 |
| **Societe Generale** | | | | | | | 258,430 | 88,161 | 346,591 |
| **Deutsche Bank** | | | | | | | 291,510 | 39,569 | 331,078 |
| **BNP Paribas** | | | | | | | 215,855 | 95,215 | 311,070 |
| **HSBC** | | | | | | | 210,081 | 88,777 | 298,858 |
| **Credit Agricole Group** | | | | | | | 180,940 | 61,726 | 242,665 |
| **RBS** | | | | | | | 150,935 | 84,293 | 235,228 |
| **Credit Suisse** | | | | | | | 183,541 | 43,292 | 226,832 |
| **UBS** | | | | | | | 143,318 | 34,718 | 178,037 |
| **Credit Agricole S.A.** | | | | | | | 180,940 | 61,726 | 242,665 |
| **Total** | | | | | | | **3,594,867** | **1,182,602** | **4,777,468** |

Source: Citi Research, 2Q13 Company Reports; In USD, Credit Agricole S.A. excluded from totals

Figure 16. Goldman Sachs disclosure shows only 45% of the assets viewed as repo on the balance sheet are actually related to secured client financing

| | As of June 2013 | | | | | |
|---|---|---|---|---|---|---|
| *in millions* | Excess Liquidity and Cash | Secured Client Financing | Institutional Client Services | Investing and Lending | Other Assets | Total Assets |
| Cash and cash equivalents | $ 72,398 [1] | $ - | $ - | $ - | $ - | $ 72,398 |
| Cash and securities segregated for regulatory and other purposes | - | 51,930 [4] | - | - | - | 51,930 |
| Securities purchased under agreements to resell and federal funds sold | 50,623 [2] | 62,116 [5] | 40,375 [8] | 441 | - | 153,555 |
| Securities borrowed | 32,361 [2] | 86,191 [6] | 56,246 [8] | - | - | 174,798 |
| Receivables from brokers dealers and clearing organizations | - | 6,268 | 16,981 [9] | 4 | - | 23,253 |
| Receivables from customers and counterparties | - | 37,171 [7] | 27,410 [9] | 9,523 [11] | - | 74,104 |
| Financial instruments owned, at fair value | 34,293 [3] | - | 276,617 [10] | 45,251 [12] | - | 356,161 |
| Other assets | - | - | - | - | 32,257 | 32,257 |
| Total assets | $189,675 | $243,676 | $417,629 | $55,219 | $32,257 | $938,456 |

Source: Citi Research, GS 2Q13 10Q pg 147

**Excess Liquidity and Cash**

**1) Cash and Cash Equivalents** – Unencumbered cash deposits

**2) Securities Purchased under Agreements to Resell and Securities Borrowed** – Reverse repo; done to diversify excess liquidity holdings

**3) Financial Instruments owned, at fair value** – High quality, liquid, unencumbered assets (ie government bonds); done to diversify excess liquidity holdings

**Secured Client Financing**

**4) Cash and Securities Segregated for Regulatory and Other Purposes** – Client funds not available for use by GS (ie client clearing deposits and cash related to rule 15c3 lockup requirements)

***Matched Book Funding (5 & 6)***

**5) Securities Purchased Under Agreements to Resell** – Assets that clients post as collateral for reverse repo transactions. Clients will 'reverse in' securities as collateral and GS will pass along the cash. GS will match this asset with an offsetting liability, creating a matched portfolio

**6) Securities Borrowing** – Securities borrowed on behalf of clients primarily looking to obtain short exposure. Securities Borrowed is often interchangeable with (5) depending on the type of legal agreement governing the transaction

**7) Receivables from Customers and Counterparties** – Primarily margin loans to clients (ex-excess credit held in cash and securities segregated for regulatory purposes)

**Institutional Client Services**

**8) Securities Purchased Under Agreements to Resell and Securities Borrowed** – Securities held to cover short positions used to hedge trading inventory

**9) Receivables from Broker Dealers and Clearing Organizations and Receivables from Customers and Counterparties** – Receivables for outstanding settlements from trades with clients and other dealers

**10) Financial Instruments Owned, at fair value** – Trading inventory held as a market maker

**Investing and Lending**

**11) Receivables from customers and counterparties** – Loans to private wealth clients

**12) Financial instruments owned, at fair value** – Private equity and debt investments from both the Special Situations Group and the Merchant Bank

# Current State of the Repo Market

Quantifying the impact of a pullback in repo lending can be difficult given that disclosure is weak and limited market statistics inhibit our ability to successfully account for all of the various knock-on effects that could happen. The next best option is knowing which signs to watch to see changes that are taking place in the repo market. With this in mind, we have put together a dashboard of both market and liquidity indicators, which can provide signals on changes in capacity, as well as warnings of a potential rise in systemic risk.

- **Impacts to the repo market have been insignificant thus far, but seeing some changes on the margin** – Banks are still examining the different paths they can take to meet the minimum leverage ratio requirement and as of yet, we have not seen any significant impact to the repo market since dealers are reluctant to shut out clients before regulations are clarified and finalized.

  – **Repo rates remain at relatively low levels, but volumes have come down…** – Post the SLR announcement in June, repo outstanding has declined as dealers have marginally brought down client funding (see Figure 11). Repo rates remain at very low levels as demand for safe, short-term assets continues to drive repo rates lower and cash remains plentiful. Although recent uncertainty around the debt ceiling and budget talks has caused overnight rates to spike higher, they are still at incredibly low levels.

    • **Treasury and agency MBS liquidity has already been negatively affected due to other regulatory factors, but a reduction in repo may accelerate this trend** – In speaking with industry experts, liquidity in the US Treasury and Agency MBS markets has been reduced due to a confluence of factors including liquidity coverage ratios, and stress testing under CCAR which have all led banks to shrink the size of their balance sheets. A pullback in repo by the larger dealers could further reduce liquidity as repo provides an additional source of demand in these markets, and could result in wider bid/ask spreads at the margin.

  – **…And based on discussions with various participants, there has been some impact on longer-term repo** – Short-dated repo has not been affected, but participants looking for term financing longer than 3 months may have trouble as liquidity has started to dry up with uncertainty around new proposed regulations. Recently, the US debt ceiling debate has made it harder for any term funding to get transacted.

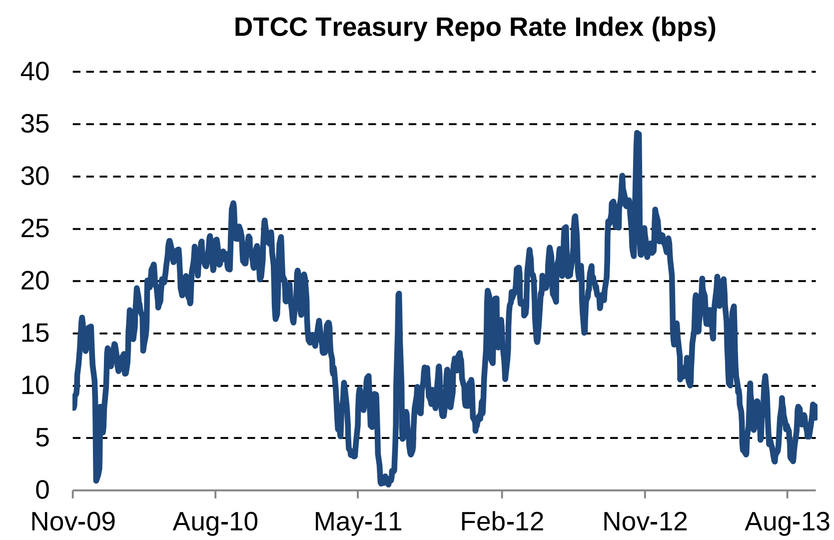
## Market Indicators

**Weekly volume data and Repo Rate Indices can signal whether banks are pulling back on repo** – The NY Fed provides data weekly on the daily average outstanding repo for the 21 primary repo dealers. There is also an Index of rates for repo collateralized by Treasuries, Agencies, and Mortgage-Backed Securities provided by DTCC and available on Bloomberg.

- **Volumes have remained steady post-crisis…** – Daily average outstanding repo has remained at ~$4.5-5.0 tril since 2010, but recent data is showing signs that banks may be adjusting to recent capital constraints by pulling back from lending.

- **… And pricing has not yet increased** – Repo rates have remained fairly range-bound since April 2013. Banks may have to increase pricing in an effort to control capacity, but recent data shows that rates remain in the 4-8 bps range.

Figure 17. No significant changes in pricing have occurred post-SLR



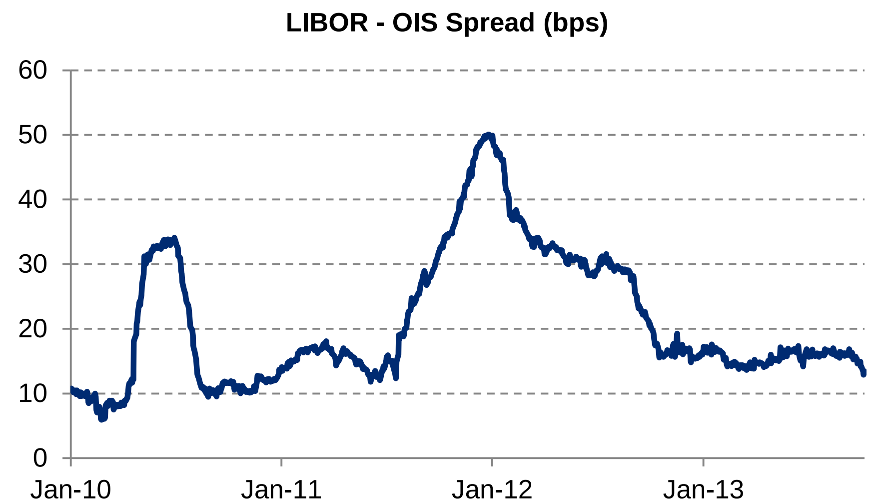

Source: Citi Research, Bloomberg as of 10/9/13

## Liquidity Indicators

**Rising spreads between interbank lending rates and government bond yields signal that risk is increasing** – In times of stress, investors move towards risk-free assets, such as government bonds, pushing yields down. At the same time, banks pull back on lending, raising interbank lending rates. Measures such as the LIBOR-OIS spread (3 month LIBOR vs Overnight Indexed Swap Rate) and the TED spread (3 month T-bill vs 3 month LIBOR) can provide early signs of increased market stress and reduced liquidity. Widening spreads indicate increased nervousness on the part of banks, which pull back on lending as investors move to reduce risk.

- **The LIBOR-OIS spread has remained steady** – Currently the repo market is liquid as the LIBOR-OIS spread has stayed around 15 bps. This is compared to spreads of 50 bps between LIBOR and OIS in early 2012 as concerns about European sovereign debt roiled markets.

Figure 18. The repo market remains liquid and banks seem willing to lend as the Libor-OIS spread remains low




Source: Citi Research, Bloomberg as of 10/9/2013

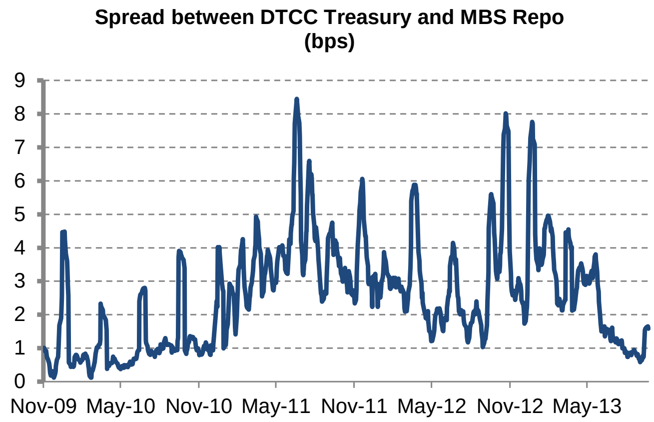
- **Banks' willingness to accept various types of collateral can also be an indicator of liquidity** – In times of market stress, banks are less willing to accept riskier forms of collateral, such as mortgage-backed securities. This dynamic will push up rates on repo collateralized by riskier securities faster than rates on repo collateralized by risk-free and liquid US Treasuries. The spread between repo collateralized by MBS vs repo collateralized by Treasuries can therefore provide a good indicator of market liquidity (see Figure 19).

  – **Spreads between Treasury repo and MBS repo remain low, indicating strong liquidity in the market** – Due to the difference in risk between Treasuries and agency MBS, a tighter repo spread (currently ~1-2 bps) indicates strong market liquidity and little stress as investors are indifferent as to which security they receive as collateral.

- **High failed trade levels indicate collateral shortages, indicating lower liquidity levels** – Failed trades occur when a counterparty in a repo trade fails to deliver the collateral for the trade. For a dealer, a counterparty failing to deliver could leave them with a short position in inventory and/or prevent them from returning collateral to a borrower in order to get cash back in another trade, squeezing the dealer's liquidity.

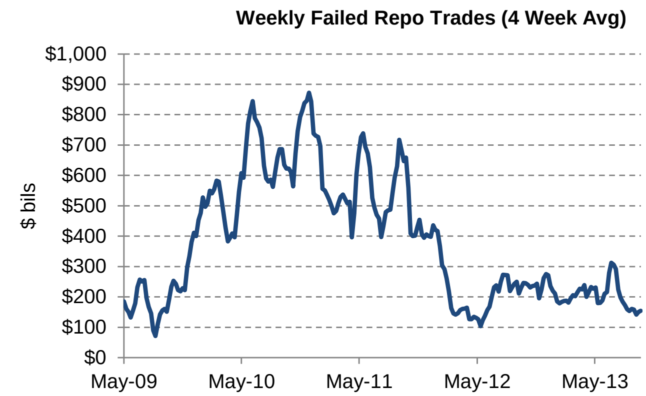
  – **Fails To Deliver remain low, in part to due to 3% fail charge implemented in 2009** – Weekly fails to deliver data released by the New York Federal Reserve show that fails levels remain low, which is a function of both solid market liquidity, as well as a new charge implemented in the market in May 2009. Any counterparty that fails to deliver a trade is now charged a penalty of 3% of the notional value of the trade. Pre-crisis, in times of market stress, counterparties holding high quality collateral may not have been willing to part with that collateral, fearing it would leave them with market exposure, especially when keeping the collateral had no associated penalty. The 3% penalty discourages this behavior and reduces liquidity risk in times of market stress.

Figure 19. Spreads between Tsy and Agency MBS remain tight indicating a high degree of market liquidity




Source: Citi Research, Bloomberg as of 10/9/13

Figure 20. Fails To Deliver have declined since the 3% charge on failed trades came into effect and remain at low levels




Source: Citi Research, NY Federal Reserve as of 9/25/13

# Bank Reliance on Repo Funding

**We believe that changes have been already made on the funding strategies and see little incremental impact** – The other side of the repo equation is that it continues to be a significant source of funding for the bank trading portfolios. As shown in Figure 21, we found that the percentage of portfolio funded by repo is similar to 2007 (~45% of US bank trading assets by securitized financing vs ~42% during the financial crisis), but there have been three significant improvements: 1) mix of assets has shifted away from level 3 assets to a much more liquid portfolio, 2) the maturities for funding illiquid assets has been extended, and 3) banks have significantly expanded the amount of counterparties they are able to source funding from.

Figure 21. We estimate banks fund 35-55% of their trading inventory via repo

| 2Q13 | GS | BAC | MS | JPM |
|---|---|---|---|---|
| **Total Trading Assets** | 370,457 | 283,242 | 260,038 | 401,366 |
| **Pledged Securities** | 162,748 | 102,124 | 145,191 | 174,239 |
| **Pledged Loans** | 4,364 | 332 | - | 1,229 |
| **Amount Funded by Repo** | 45% | 36% | 56% | 44% |

Source: Citi Research, Y9-C, Company Reports

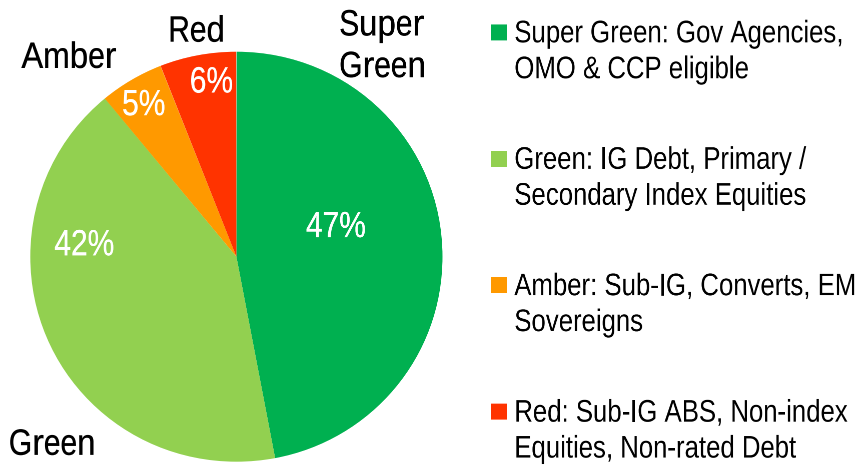
MS: Numbers were taken from the 10Q rather than Y9C, per mgmt's suggestion. In Y9-C, MS pledged assets include treasuries that have been sourced on behalf of clients to use as collateral and are not part of MS's trading inventory.

- **The exposed flaw in bank funding models came to light during the crisis, as banks were caught using short-term repo to fund longer-term, illiquid assets…** – Before the crisis, banks used short-term repo (sourced from both clients and the market) to fund their balance sheet that had a relatively heavy mix of illiquid assets. Despite being offered higher incentives (ie more collateral) investors pulled the cash that banks were using to fund their businesses and assets. Clients, however, still expected easy access to repo funding, which then required banks to either provide funding from cash reserves or sell illiquid securities at a loss to fund clients. This quickly became a solvency issue and highlighted the importance of a functioning securitized financing market.

- **…But there have been significant changes to the funding model that we believe leaves the funding side less exposed than last cycle**

  – **1) Banks have increased the asset fundability in their trading inventory** – Asset fundability, or how easy it is to find a secured investor to accept the asset as collateral, has increased drastically post-crisis. Trading inventory now consists of primarily highly liquid and widely accepted repo-able assets, reducing the risk of solvency issue if liquidity disappears. For example, the majority of Morgan Stanley's assets that are funded by repo are highly liquid, safe and easily repo-able to ensure constant access to financing markets (see Figure 22).

Figure 22. 89% of Morgan Stanley's trading assets funded by repo are highly liquid assets




Source: Citi Research, MS 2Q13 Fixed Income Presentation

Figure 23. Weighted average maturity for repo has lengthened post crisis

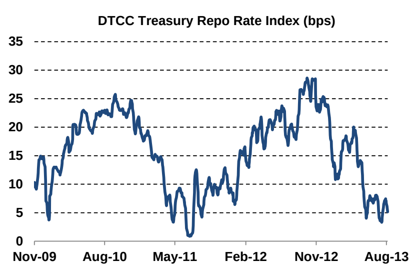
| Average Maturity of Secured Funding (days) | 2Q08 | 2Q13 |
|---|---|---|
| GS | >90 | >100 |
| MS | >40 | >120 |
| LEH | >40 | - |

Source: Citi Research, Company Reports
Typically excludes repo of government bonds and agencies

– **2) Banks have lengthened the maturities of their harder to fund, more illiquid assets…** – Another post-crisis improvement has been the extension of terms for financing agreements (see Figure 23) on their harder to sell / value inventory. Banks have been increasing the maturities of their financing agreements, especially for assets that have limited market tradability. By funding assets with longer-term liabilities, banks have time to find alternative sources of financing should liquidity dry up.

– **3) Diversity of funding books has improved** – Banks have been working to broaden out their financing networks. Bank financing is no longer dependent on just a handful of broker-dealers and money market funds; their expanded sources of funding have increased availability and reduced the risk of being shutout of the market due to overreliance on one counterparty. Banks have also increased the various counterparties that will accept hard-to-value and illiquid assets as collateral for funding. For example, MS has improved their sources of financing for 'non-super green' assets to over 100 providers (see Figure 25). This means that over 100 clients will accept MS's more illiquid assets as collateral for financing.

Figure 24. Repo spreads should remain low as demand for short-term investments continues




Source: Citi Research, DTCC, Bloomberg 10/4/13

Figure 25. Morgan Stanley has expanded and diversified their network of repo funding sources

| | 2009 | 2013 |
|---|---|---|
| # of Term Investors > 30 days | 15 | 116 |

| | 2009 | 2013 |
|---|---|---|
| Americas | <10 | >40 |
| Europe | <10 | >50 |
| Asia | <5 | >40 |

Source: Citi Research, Company Reports

- **Even if banks pull back repo operations due to leverage ratio concerns, money market demand is unlikely to decline, leaving plenty of cash for financing** – Money market funds and other cash investors that are not affected by the leverage ratio will continue to demand short-term, collateralized investments. Reducing the supply of repo does nothing to stem or replace demand for a highly liquid, short-term, securitized product. This demand should continue to put pressure on already low repo rates (see Figure 24).

# Appendix A-1

## Analyst Certification

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

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|---|---|---|---|---|---|---|
| *Data current as of 30 Sep 2013* | Buy | Hold | Sell | Buy | Hold | Sell |
| Citi Research Global Fundamental Coverage | 48% | 40% | 12% | 6% | 87% | 6% |
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Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to

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