

Managing Liquidity Risk with RiskAuthority™ & RiskConfidence™: US Basel 3 Liquidity Coverage Ratio and Beyond

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Agenda

» Liquidity Risk Management and Regulatory Compliance

- Introduction
- The Basel III Liquidity Requirements
- The US Liquidity Standard
- Implications for US Banking System

» LCR Implementation Challenges

- RAY Liquidity Risk Product Demonstration
- FR-2052 reports (daily liquidity risk reports)
- QView Demo

» LCR Forecasting and Daily Liquidity Risk Reporting

- Joint RAY/RCO Liquidity Modeling Roadmap
- RCO BS Forecasting Functionality

» Liquidity Risk Management and Monitoring

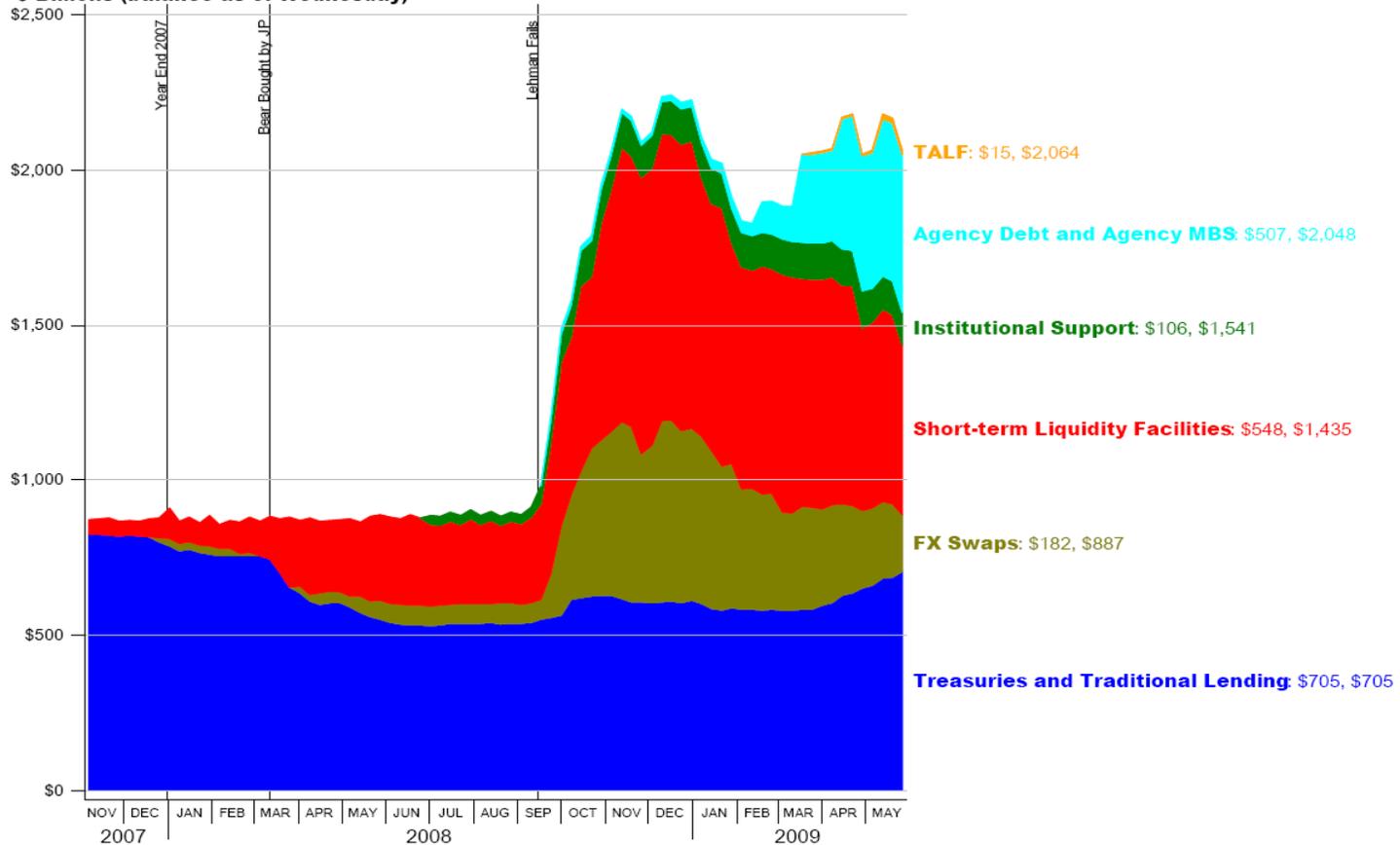
The Context: Systemic Liquidity Mismatches

Federal Reserve Credit

Internal FR

Weekly, November 7, 2007 to May 27, 2009, (with component size and cumulative total for most recent date)

\$ Billions (balance as of Wednesday)



Source: Federal Reserve

The Post-Mortem...

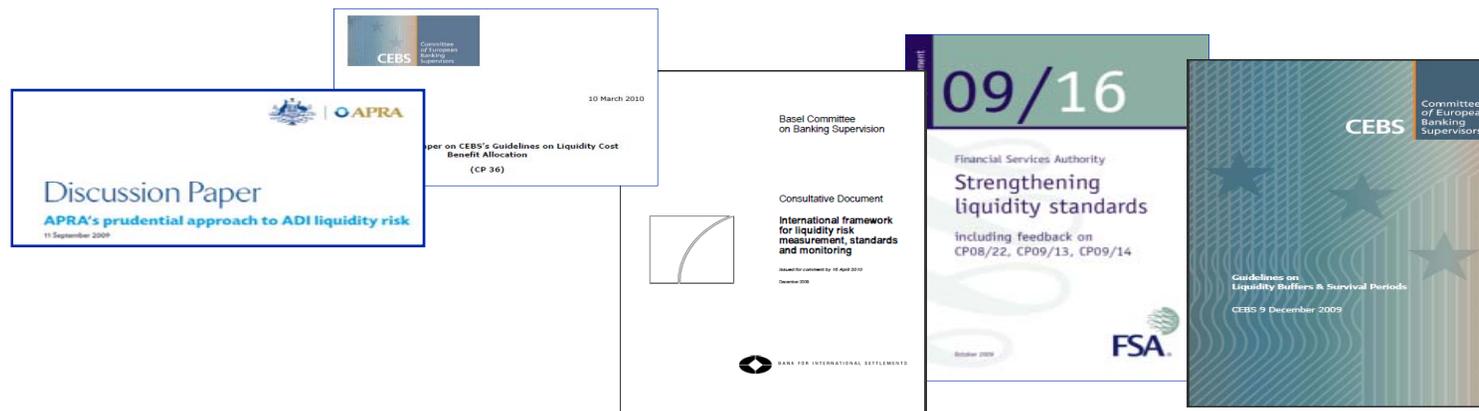
“Measuring and managing bank liquidity risk is as important as capital/solvency risk management”

- The Turner Review: A regulatory response to the global banking crisis; March 2009

“Adoption by the bank regulatory agencies of the LCR will establish, for the first time, a liquidity rule applicable to the entire balance sheet of large bank holding companies. . . The LCR makes liquidity squeezes less likely by limiting large banks from taking on excessive liquidity risk”

5 ½
Years

- Opening Statement by Fed Governor Daniel K. Tarullo, September 2014



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The Basel III Liquidity Ratios

- » Liquidity risk ratios: a short term ratio (LCR) with a 30 day time horizon and a more long term measure (NSFR) with a 1 year time horizon relying on rules based stress test scenario factors.



$$\text{LCR} = \frac{\text{Stock of High Quality Liquid Assets}}{\text{Net Cash Outflow Over 30 Days}} \geq 100\%$$

Roll out:
Tested 2015 to 2018
Binding 2019



$$\text{Net Stable Funding Ratio} = \frac{\text{Available Stable Funding}}{\text{Required Stable Funding}} \geq 100\%$$

Roll out:
Tested 2015 to 2017
Binding 2018

What Is the Liquidity Coverage Ratio (LCR)?

» LCR Definition

$$\frac{\text{Stock of high-quality liquid assets}}{\text{Total net cash outflows over the next 30 calendar days}} \geq 100\%$$

» Objective

- To ensure that banks maintain an adequate level of unencumbered, high-quality liquid assets;
- For a 30 calendar day time horizon;
- Under a significantly severe liquidity stress scenario specified by supervisors.

» Numerator - Stock of high quality liquid assets:

- Level 1: Cash, central bank reserves, sovereign paper, and public sector enterprises (PSEs)
 - » 0% RWA and can comprise unlimited share of HQLA pool
- Level 2a: Sovereigns @ 20% RWA, qualifying corporate and covered bonds AA- or higher
 - » 20% RWA, Minimum 15% haircut, and no more than 40% Level 2 assets of total stock of HQLAs
- Level 2b: Corporate bonds and covered bonds
 - » Minimum 15% haircut, non financial issuer, not issued by bank itself, at least AA-, and no more than 15% HQLA

» Net cash outflow over 30 days:

- Net cash outflow under a severe stress scenario (30 day) = outflows – min {inflows, 75% of outflows}
- Stress scenario: significant rating downgrade, partial loss of deposits, loss of unsecured wholesale funding, increase in a) secured funding haircuts, b) collateral calls, c) calls from OBS exposures
- Under stress scenario, outflows and inflows are calculated according to rules based regulatory factors

What Is the Net Stable Funding Ratio (NSFR)?

» Definition:

- **NSFR = Available amount of stable funding / Required amount of stable funding** (shall be $\geq 100\%$)

$$NSFR = \frac{ASF}{RSF} = \frac{Equity + Debt_{>1yr} + Liabs_{>1yr} + (StableDeposits_{<1yr} \cdot 85\%) + (OtherDeposits \cdot 70\%)}{(GovtDebt \cdot 5\%) + (CorpLoans_{<1yr} \cdot 50\%) + (RetLoans_{<1yr} \cdot 85\%) + (OtherAssets \cdot 100\%)}$$

» Objective

- To promote more medium and long-term funding of assets

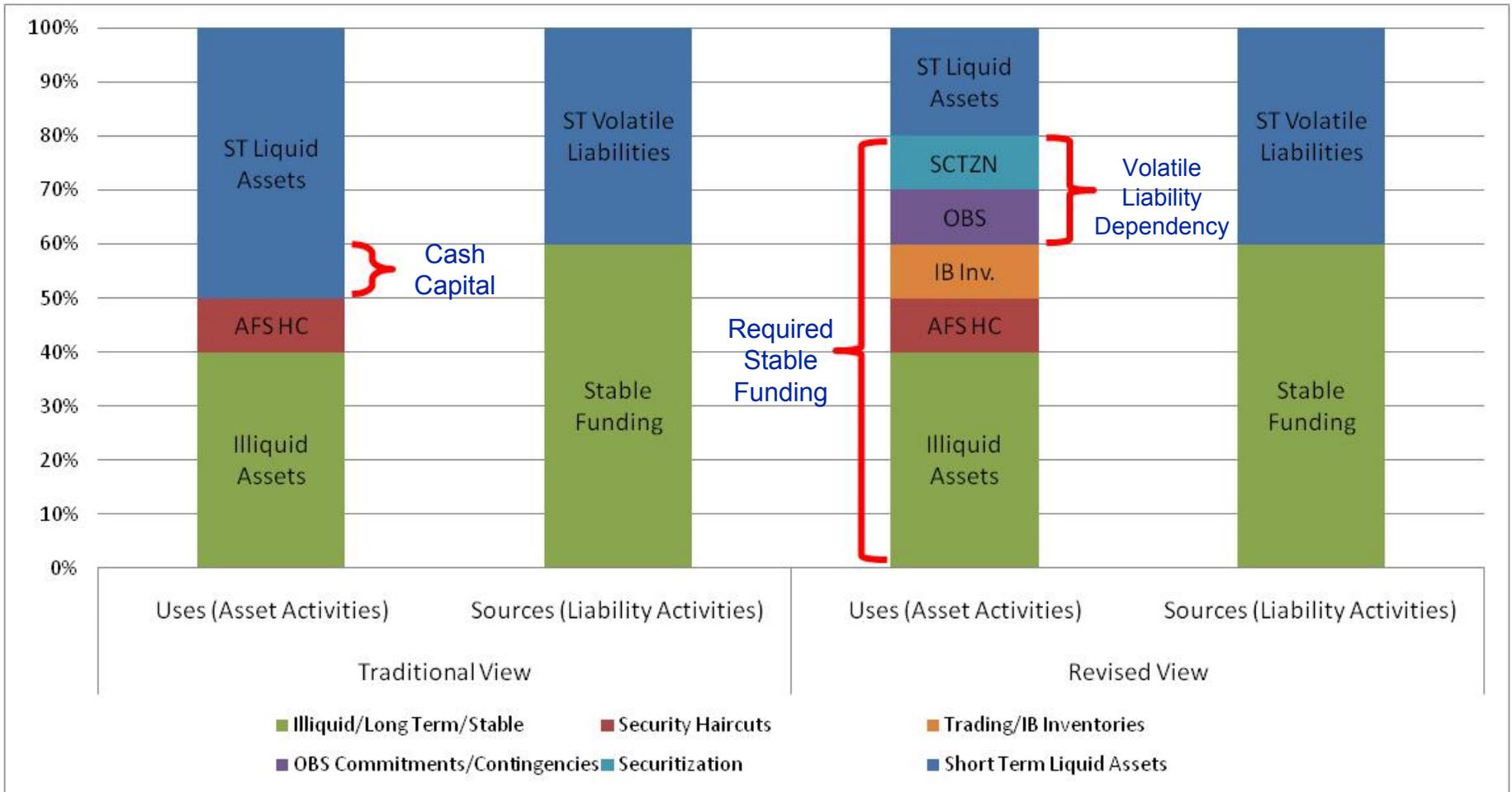
» Available amount of stable funding (ASF)

- Sum of: a) Capital, b) preferred shares c) liabilities with effective maturity > 1yr d) stable deposits and wholesale funding provided by non financial corporate (using appropriate weighting factors)

» Required amount of stable funding (RSF)

- Sum of assets and OBS exposures weighted by required stable funding factors (i.e. 0% for cash and 85% for loans to retail)

Why Do We Need the New Ratios? Traditional Cash Capital Calculations Were Wrong



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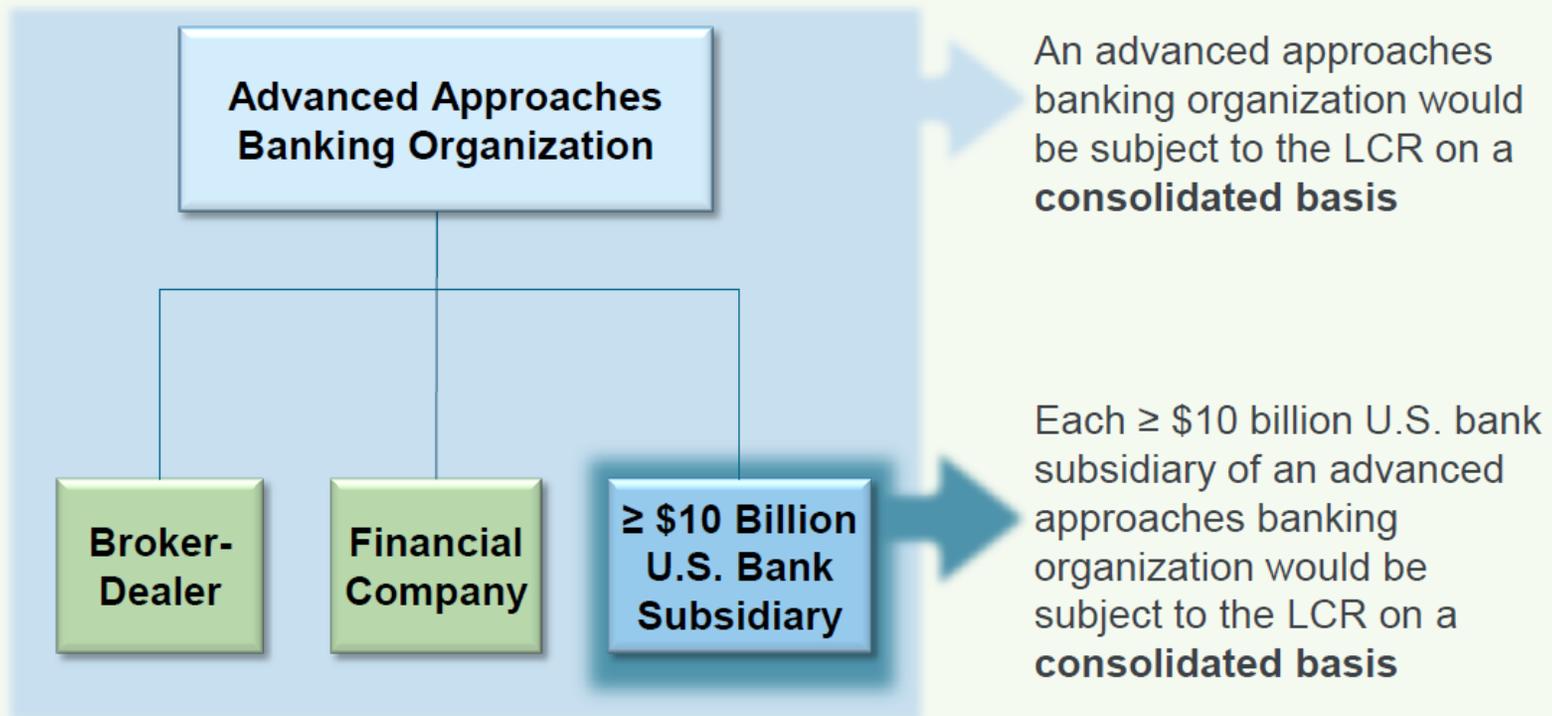
U.S. LCR Requirements Summary

The U.S. LCR is more stringent than the Basel Committee's LCR framework in several significant respects.

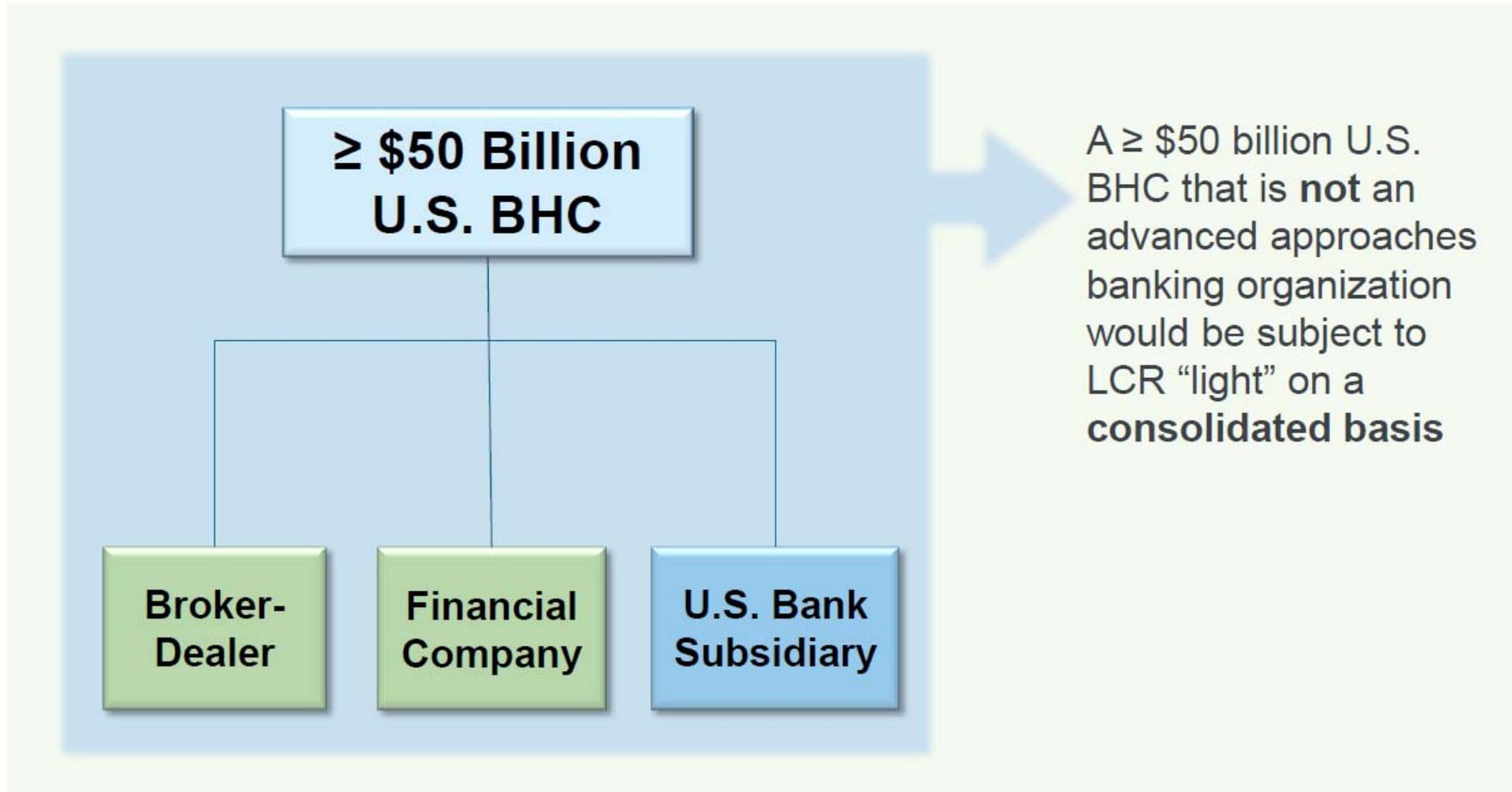
- » The U.S. LCR proposal contains two versions of the LCR:
 - A full version for large, internationally active banking organizations \geq \$250 Billion.
 - A modified, “light” version for bank holding companies and savings and loan holding companies $<$ \$250 billion and $>$ \$50 billion.
 - Institutions $<$ \$50 billion are not subject to the LCR
- » A banking organization must calculate its LCR at the same time on each day.
- » Defines US specific standards for which instruments constitute HQLAs
- » Outflows and inflows are calculated subject to U.S. rules based regulatory factors
- » Prescribes the methodology for calculating total net cash outflows i.e. full version subject to the largest net cumulative outflow day within a 30 day stress period.
- » Under the U.S. LCR final rule, banking organizations must fully comply with the standard by January 1, 2017. This is two years ahead of the Basel Committee's compliance timeline and one year ahead of the EU's CRD IV compliance timeline.

Which Organizations Are Affected?

- Both an advanced approaches banking organization and its \geq \$10 billion consolidated U.S. bank subsidiary would be subject to the full version of the LCR.



Which Organizations Are Affected?



LCR “Light” vs. Full Version of LCR

- » 30 Day stress period
- » Calculated monthly versus daily
- » HQLAs: Same definitions and eligibility criteria for HQLAs.
- » Total Net Cash Outflow Amount: Same calculation as Full LCR but:
 - Without peak day mismatch add-on
- » End result is multiplied by 70%

Determining Maturity of Instruments and Transactions

- » In calculating outflows and inflows, a bank must make the most conservative assumptions for determining maturity or transaction date. This means assuming:
- The earliest possible date for cash outflows; and
 - The latest possible date for cash inflows.

| | | Option to reduce maturity | Option to extend maturity |
|-----------------|---|---|--|
| Outflows | Option held by investor or funds provider | Assume exercise of option at earliest possible date | Assume no exercise of option |
| | Option held by banking organization | Assume exercise of option at earliest possible date, except if: A. Original maturity > 1 year and option <> in effect for 180 days following issuance; OR B. Counterparty is a sovereign entity | |
| Inflows | Option held by borrower or banking organization | Assume no exercise of option | Assume exercise of option to extend maturity to latest possible date |

Maturity Mismatch Add-on

| | Outflows Likely To Cause Maturity Mismatch <i>(outflows under §§ 32(g), (h)(1), h(2), (h)(5), (j), (k), and (l) and that have a maturity date under § 31(a)(4))</i> | Cumulative Outflows Likely To Cause Maturity Mismatch | Inflows Likely To Cause Maturity Mismatch <i>(inflows under §§ 33(c), (d), (e) and (f) and that have a maturity date under section 31)</i> | Cumulative Inflows Likely To Cause Maturity Mismatch | Net Cumulative Maturity Outflows <i>(floored at 0)</i> |
|---------------|---|--|--|---|--|
| Day 24 | 40 | 390 | 9 | 339 | 51 |
| Day 25 | 20 | 410 | 10 | 349 | 61 |
| Day 26 | 10 | 420 | 125 | 474 | 0 |
| Day 27 | 15 | 435 | 20 | 494 | 0 |
| Day 28 | 20 | 455 | 15 | 509 | 0 |
| Day 29 | 0 | 455 | 0 | 509 | 0 |
| Day 30 | 10 | 465 | 8 | 517 | 0 |

Net Cumulative Peak Day Maturity Outflow: This is the largest net maturity outflow calculated for each of the 30 calendar days after the calculation date.

Net Day 30 Cumulative Maturity Outflow: Net cumulative maturity outflow on day 30.

Maturity Mismatch Add-on = Net Cumulative Peak Day Maturity Outflow (floored at 0) – Net Day 30 Cumulative Maturity Outflow (floored at 0)

$$= 61 - 0 = \mathbf{61}$$

U.S. LCR Proposal Compliance Timeline

| Full LCR Compliance | Jan. 1, 2015 | Jan. 1, 2016 | Jan. 1, 2017 | Jan. 1, 2018 | Jan. 1, 2019 |
|--------------------------------|--------------|--------------|--------------|--------------|--------------|
| U.S. LCR | 80% | 90% | 100% | 100% | 100% |
| Modified LCR | - | 90% | 100% | 100% | 100% |
| EU CRD IV | 60% | 70% | 80% | 100% | 100% |
| Basel LCR Framework (Dec 2010) | 60% | 70% | 80% | 90% | 100% |

| Daily LCR | Jan. 1, 2015 | July 1, 2016 | July 1, 2017 | Jan. 1, 2018 | Jan. 1, 2019 |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|
| >= \$700 Billion | Monthly | Daily | Daily | Daily | Daily |
| < \$700 Billion and > \$250 Billion | Monthly | Monthly | Daily | Daily | Daily |
| < \$250 Billion and > \$50 Billion | - | Monthly | Monthly | Monthly | Monthly |

Basel Committee's LCR Framework vs. U.S. LCR

| Topic | Basel Committee's LCR Framework (Jan. 2013) | U.S. LCR Proposal (Oct. 2013) |
|----------------------|---|---|
| Scope of Application | <ul style="list-style-type: none"> A single version of the LCR designed for all internationally active banking organizations | <ul style="list-style-type: none"> Two versions of the LCR Full version for advanced approaches banking organizations and certain of their U.S. bank subsidiaries "Light" version for large regional BHCs and SLHCs |
| Definition of HQLAs | <ul style="list-style-type: none"> Includes securities issued or guaranteed by certain public sector entities (PSEs) in Level 1 and Level 2A assets Includes certain AA- or higher corporate debt securities and covered bonds in Level 2A assets subject to a 15% haircut Includes certain residential mortgage-backed securities (RMBS) in Level 2B assets subject to a 25% haircut Includes certain A+ to BBB- corporate debt securities in Level 2B assets subject to a 50% haircut | <ul style="list-style-type: none"> HQLAs do not include: <ul style="list-style-type: none"> Municipal bonds Covered bonds and other securities issued by financial institutions RMBS Corporate debt securities are not included in Level 2A assets Investment grade corporate bonds qualify as Level 2B assets but subject to a 50% haircut Equities listed in the Russell 1000 qualify as <i>level 2B assets</i> |

Basel Committee's LCR Framework vs. U.S. LCR

| Topic | Basel Committee's LCR Framework (Jan. 2013) | U.S. LCR Proposal (Oct. 2013) |
|--|---|--|
| Prescribed Cash Inflow and Outflow Rates | <ul style="list-style-type: none"> • Prescriptive, quantitative cash inflow and outflow rates that all banking organizations must use to calculate their total net cash outflow amount over a 30-day liquidity stress period • Total net cash outflow amount is based on the total cumulative amount at the end of the 30-day liquidity stress period | <ul style="list-style-type: none"> • For the full version of the LCR, total net cash outflow based on outflows and inflows over a 30-day stress period, with a maturity mismatch add-on component based on difference between net cumulative peak day and net cumulative outflow amount on last day of 30-day period • Cash inflow and outflow categories use definitions and parameters that are different from the Basel Committee's LCR framework – e.g., special treatment for brokered deposits; no special treatment for trade credit • Prescribed cash inflow and outflow rates are broadly similar to the Basel Committee's LCR framework in a number of categories |
| External Credit Ratings | <ul style="list-style-type: none"> • Relies on external credit ratings to define certain HQLAs | <ul style="list-style-type: none"> • Dodd-Frank prohibits references to external credit ratings in federal regulations • Definition of HQLAs does not include references to external credit ratings |
| LCR Falling Below 100% | <ul style="list-style-type: none"> • A banking organization may dip into its stock of HQLAs such that its LCR falls below 100% during periods of idiosyncratic or systemic stress • A banking organization should notify its regulator immediately if its LCR has fallen, or is expected to fall, below 100% | <ul style="list-style-type: none"> • A bank must notify its banking regulator on any business day when its LCR is < 100% • If its LCR is < 100% for three consecutive business days, the banking organization must submit a liquidity compliance plan |

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U.S. Specific Issues Related to Basel III Liquidity

The U.S. LCR is more stringent than the Basel Committee's LCR which overstates the liquidity risk profile of Covered Banks and makes internationally active U.S. banks less competitive:

- » The LCR should not separately apply to subsidiary depository institutions of US Bank holding companies to avoid the potential for unnecessary “trapped liquidity” in those subsidiaries.
- » The definition of HQLA should be broadened using market objective criteria.
 - Agency MBS should be included as level I assets i.e. FNMA and FHLMC are classified as level 2a assets, are subject to a 15% haircut and a 40% cap even though GNMA's are classified as level but are they are less liquid.
 - Private label residential MBS (“RMBS”) that meet the same market criteria as corporate debt securities should be classified as level 2B assets.
 - Obligations of some U.S. municipalities should be considered level 2A assets.
 - A framework for including covered bonds as level 2B assets should be established.
 - Asset backed securities that meet the same market criteria as corporate debt securities should qualify as level 2B assets.

U.S. Specific Issues Related to Basel III Liquidity

- » Net cash outflows should be revised to reflect more realistic assumptions:
 - Final US LCR classifies multi purpose commitments as liquidity facilities which have higher outflow rates.
 - 100% drawdown rate for credit and liquidity facilities of special purpose entities could limit the ability of Covered Banks to fund business needs through securitization credit facilities,
 - Notional balances under FNMA and FHLMC loan standby programs should be treated as inflows.
 - Outflow rates for debt securities where the covered bank is the primary market maker should be established based upon realistic assumptions rather than the prescribed 3% to 5%.
 - The approach to determining maturities under the final US LCR is overly conservative and should be modified to reflect more realistic and rational outcomes i.e.:
 - » Early redemption of a callable debt security
 - » Wholesale counterparties violating their contractual obligations
 - Operating expenses should be excluded from outflows as they are in the BIS LCR.

U.S. Specific Issues Related to Basel III Liquidity

- » Net cash outflows should be revised to reflect more realistic assumptions continued:
 - **The calculation of collateral outflows relating to derivative transactions should take into account potential collateral inflows that may offset collateral outflows.**
 - The requirement to calculate net outflows from derivative transactions as the absolute value of the largest 30 consecutive day cumulative net market value collateral outflow or inflow over the preceding 24 months as an outflow with a forward looking approach with an alternative method.
 - **Spot FX transactions considered derivatives should be treated as a single transaction with off-setting cash flows rather than as separate outflows and inflows. Otherwise, the inflows are subject to a 75% cap.**
 - Provisions relating to prime brokerage activities should be modified to create a more credible liquidity requirement for outflow and inflow rates of these services i.e. margin loans, short positions, etc.
 - **The outflow rate assigned to partially insured deposits should reflect the benefit of such partial insurance as does the BIS standard rather than be treated as uninsured deposits.**
 - Brokered deposits of retail customers maturing more than 30 days after the calculation date are a significant US specific source of funding. However, they are addressed as non retail deposits and subject to a 10% outflow rate. This rate is unjustified based on the features of these deposits.
 - **US LCR should extend recognition of deposit insurance regimes to include non-US regimes that meet certain criteria.**

What's Next in Bank Liquidity Reforms?

- » Interaction Between LCR and Central Bank Operations: There is ongoing international study of the interaction between the Basel III LCR and central bank operations.
 - U.S. Implementation: U.S. banking agencies are working with the Basel Committee on these matters and may consider amending the U.S. LCR proposal if the Basel Committee proposes modifications to the Basel III LCR.
- » Net Stable Funding Ratio (NSFR): According to the Basel Committee, the NSFR—Basel III's longer-term structural liquidity standard—is “currently under review . . . to address any unintended consequences prior to its implementation” by January 1, 2018.
 - U.S. Implementation: U.S. banking agencies are considering what changes to the NSFR they may recommend to the Basel Committee. They anticipate issuing a proposal to implement the NSFR in the United States ahead of its scheduled global implementation in 2018.
- » Final Version of Dodd-Frank Qualitative Liquidity Framework: The Federal Reserve plans to finalize the Dodd-Frank enhanced prudential standards, including the Dodd-Frank qualitative liquidity framework, as set forth in the domestic proposal and FBO proposal.
- » Measures to Address Risks Related to Short-term Wholesale Funding: The Federal Reserve is considering possible measures to address risks related to short-term wholesale funding, including additional liquidity and capital requirements.

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Demonstration

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Monitor The Regulatory Ratios

- » Moody's Analytics solutions will offer the ability to forecast the liquidity ratios at future points in time.

- » Forecasting these regulatory indicators will help
 - Banks to monitor their liquidity
 - Anticipate any shortfall in the future.
 - Comply with liquidity funding plans

- » Two types of analysis will be available:
 - **Static analysis:**
 - » only existing deals, without any behavioral assumptions
 - **Dynamic analysis:**
 - » behavioral assumptions and generation of new volume transactions

Static Analysis

» Goal:

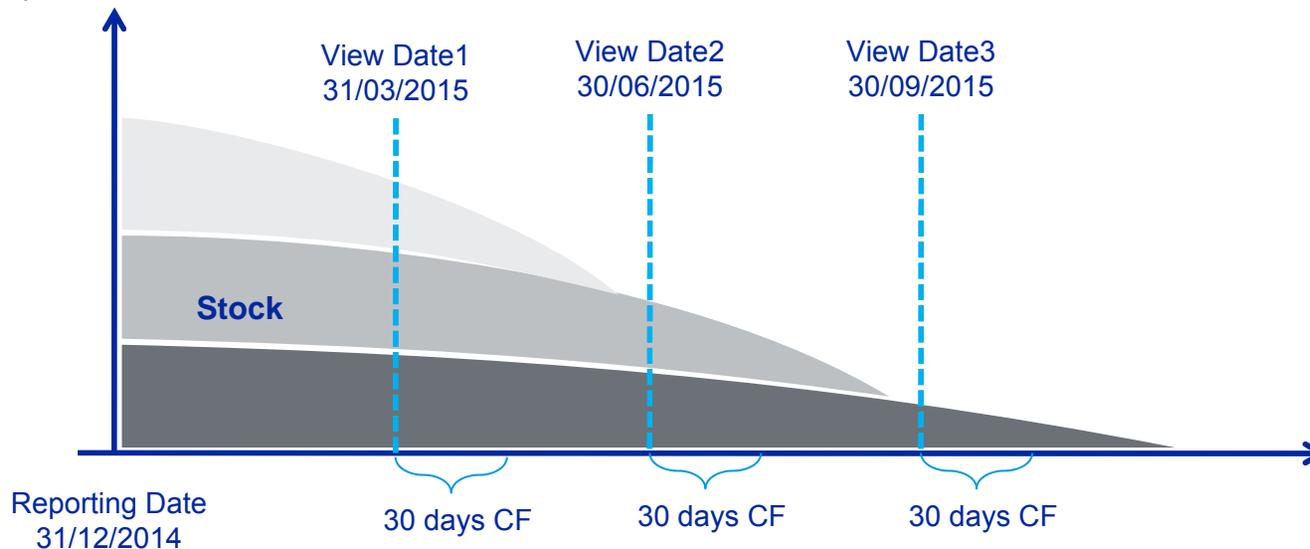
- Anticipate the effect of time on the regulatory ratios

» Computation:

- Only existing deals at Reporting Date are taken into account, no new volume deals generation.
- In addition, 'manual' deals can be added on top of the balance sheet at Reporting Date in order to analyze their impact on the regulatory ratios.
- This analysis only requires contractual cashflows, no behavioral assumptions are used.
- The run only includes one scenario (which is the scenario used to calculate the regulatory ratios at Reporting Date).

Static Analysis

- A snapshot of the balance sheet is taken at future points in time called ‘View Dates’ (defined by the user):



- The regulatory ratios are calculated at each view date:
 - » The amount of High Quality Liquid Assets takes into account existing deals at the view date (and possibly ‘manual’ deals)
 - » The net outflows are calculating from the view date

Dynamic Analysis

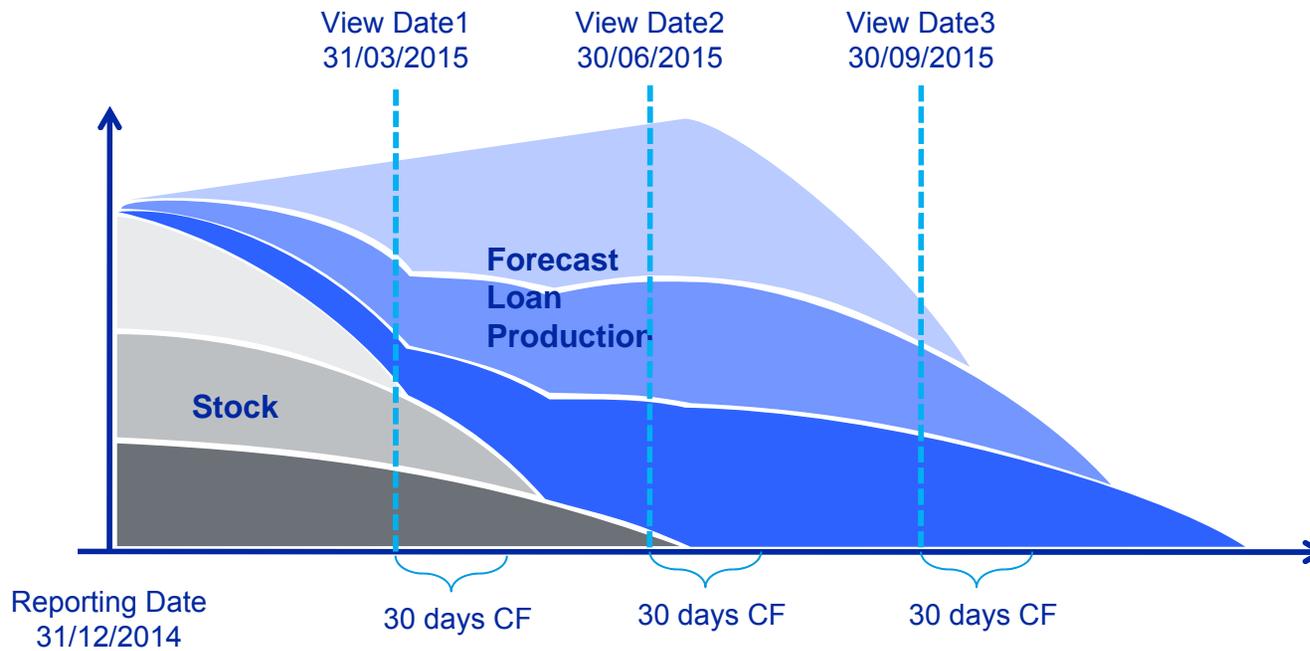
» Goal:

- Simulate all the changes of the balance sheet and estimate their effect on the regulatory ratios

» Computation:

- Several scenarios can be analyzed (business as usual and/or stress scenarios) in one single run
- RiskConfidence 'Balance Sheet Strategy' functionality is used to simulate future deals:
 - » Assets: origination of new loans, purchases of securities, new reverse repos
 - » Liabilities: new debt issuances, sales of securities, new repos
 - » Derivatives
 - » Lines of credit
- In addition, outright sales or repurchase agreements can be simulated using haircuts based on the characteristics of the bonds that are sold or repo-ed out.

Dynamic Analysis



Dynamic Analysis

- » Behavioral assumptions are modelled through RiskConfidence Multi Factor Behavior Model or profiles:
 - Loans prepayments, delayed payments, releasing
 - Facilities drawdowns and reimbursements
 - Deposits run-off

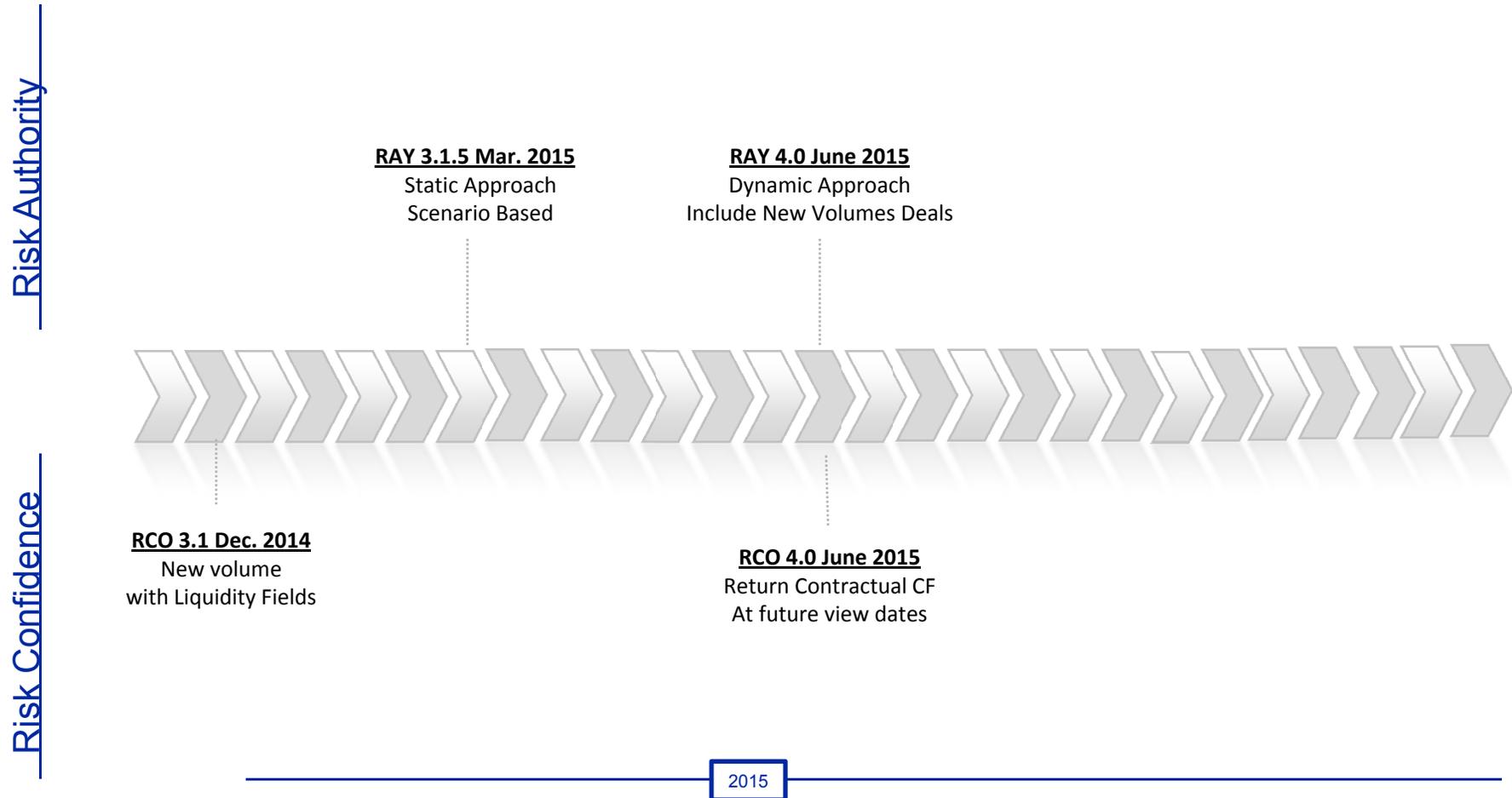
- » The amount of High Quality Liquid Assets is impacted by the economic conditions:
 - Assets valuation depending on the rate shifts and narrowing/widening credit spreads
 - Simulation of credit rating migration

- » At each View Date, the regulatory ratios are calculated based on the simulated balance sheet:
 - Determination of the eligibility of all deals (existing deals at Reporting Date and New Volumes) taking into account their forecasted characteristics
 - Calculation of the net outflows in the following days after the View Date
 - Changes of the regulatory rules can be simulated: eligibility criterias, haircuts, caps on Level 2 assets, outflow rates...

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Joint RAY/RCO Liquidity Modeling Roadmap



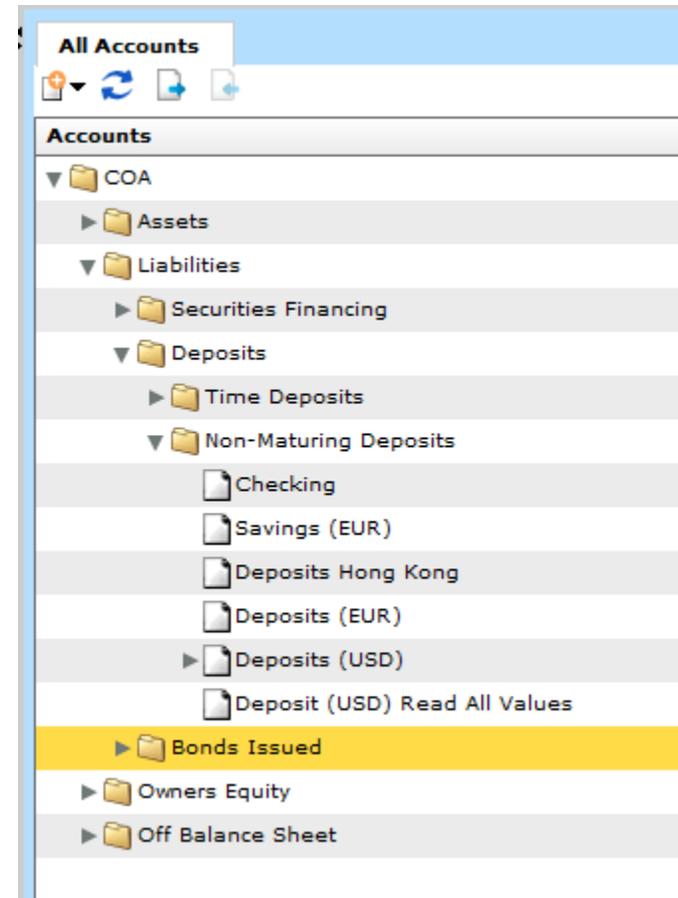
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Chart Of Accounts

A tree structure that allows deals:

- » To be organized into groups (nodes and accounts)
- » That are consistent in their attributes
- » And that should be handled in a consistent fashion
- » During a RiskConfidence process.

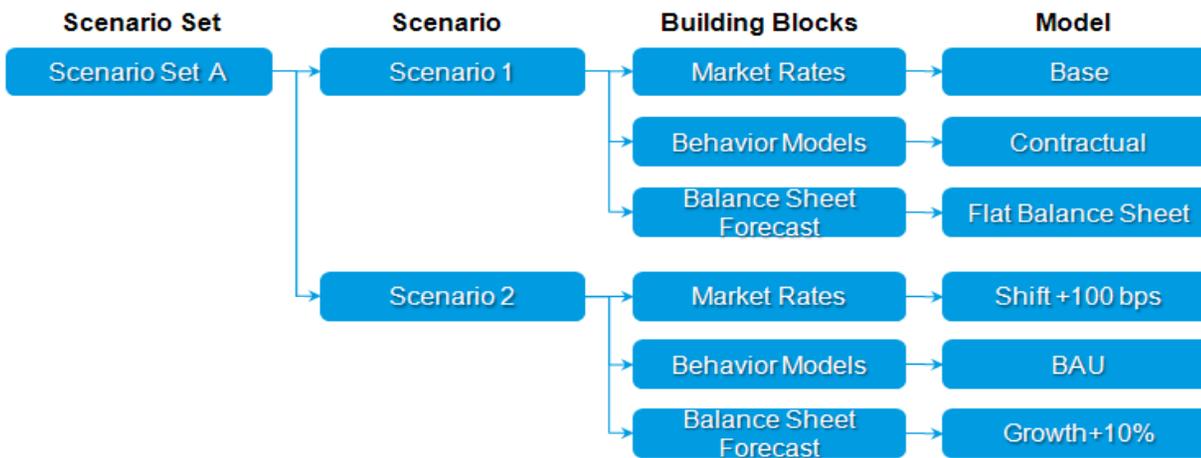


Behavior Modeling Options By Type

- » Loan
 - Loan prepayment based on behavior model or profile
 - Delayed payment
- » Deposit *runoff*
 - Behavior model objects
 - Simple behavior set up in Account settings
 - Runoff schedules, saved in the Datamart
- » Facility *usage/net draw/reimbursement*
 - Net Draw and Usage behavior model objects
 - Dual models, separated modeling of draws and repayments

Holistic LCR Stress Test via Scenario Modeling

» Scenario building blocks



| | |
|------------------------------|--------------------------|
| Name | * RAY LR Internal Models |
| Description | RAY LR Internal Models |
| FX | |
| FX Set | FX Dataset |
| Transformation To ... | |
| BSS | |
| Business Projection | |
| IR | |
| Interest Rates Dat... | IR Dataset |
| Transformation To ... | Rate Shift +100 bps |
| PDM | |
| 1. Runoff Behavior | Runoff BAU |
| 2. Prepayment Beh... | BAU Prepayment Set |
| 3. Facility Behavior | |
| Selloff | |
| 1. Selloff Set | |
| 2. Haircut Set | |

•

New Production Targets: 'Balance Sheet Strategy'

» Targets are defined as Average Balance, Ending Balance or New Business Volume.

» New volume deals can be simulated with a daily precision.

» The formula builder can be used to calculate target amounts.

Details: BSS Daily - Regulatory Ratios

Name: Time Segmentation:

Description: Time Segmentation Status: Valid

[Add Field](#) | Filter by Account Set Active Accounts Only

| Accounts | Formula | Use | 1 08/01/11 | 2 08/02/11 | 3 08/03/11 |
|------------------------------|----------------------|---------|---------------|---------------|---------------|
| GL | | | 08/01/11 | 08/02/11 | 08/03/11 |
| Assets | | | | | |
| Commercial Loan | | | | | |
| New Business Volume (USD) | f(x) | Amount | 50,000,000 | 45,000,000 | 45,000,000 |
| Liabilities | | | | | |
| Demand Deposits | | | | | |
| Segment Ending Balance | f(x) | Amount | 3,000,000,000 | 2,900,000,000 | 2,850,000,000 |
| Repo New Volumes | | | | | |
| Segment Ending Balance (USD) | f(x) | Formula | | | |

`average_balance(seg) =
account("Reverse Repos").segment[seg].average_balance*0.75`

New Volume Deals Generation: 'Explode' Functionality

- » For each target amount, several deals can be created (up to 10 deals).
- » Each deal has its own characteristics (for example, several deals can be generated in different deal books).
- » Regulatory liquidity characteristics can be defined for new volume deals (liq_sub_type...). They will be used to determine the eligibility of new volume deals or their regulatory inflow/outflow rates.

Details: COA / Liabilities / NV Deposits (USD) /

Run Mode: Original

Name: NV Deposits (USD) Node Type: Account

Description: NV Deposits Instrument Type: DEPOSIT

Deals Aggregated Deals Runoff New Volume FTP Replicating Model

Product Template: NV Target Currency: USD

Deal: Select Deal

| Name | 1 | 2 | 3 | 4 |
|-----------------------|--------------------|------------------------|-------|-------|
| | Value | Value | Value | Value |
| New Volume Weight (%) | 80 | 20 | | |
| Accrual Basis | Basis 30 360 | Basis 30 360 | | |
| Accruals | | | | |
| Book Code | DB_FM | DB_FM_2 | | |
| Calc Day Convention | No Date Adjustment | Next Good Business Day | | |
| Calendar Code | | | | |
| Contract Type | OD | @SAVINGS | | |
| Legal Withdraw | true | false | false | false |
| Liq Sub Type | OnDemand_A | LIA_OTH | | |
| Product GL Criteria | | | | |
| Protected Balance (%) | 10 | 30 | | |
| Rate Type | FLOATING | FIXED | | |
| Reset Frequency | | | | |
| Transactional Account | true | false | false | false |

New Volume Deals Generation: 'Product Template'

» Product templates can be used to generate new volume deals.

» Product templates are available for the following instruments:

- Loans
- Deposits
- Positions on bonds and equities
- Swaps
- Repos
- Facilities

Detail:New Volume Facility Template1



Name: Instrument Type:

Description: Template Type:

Fields

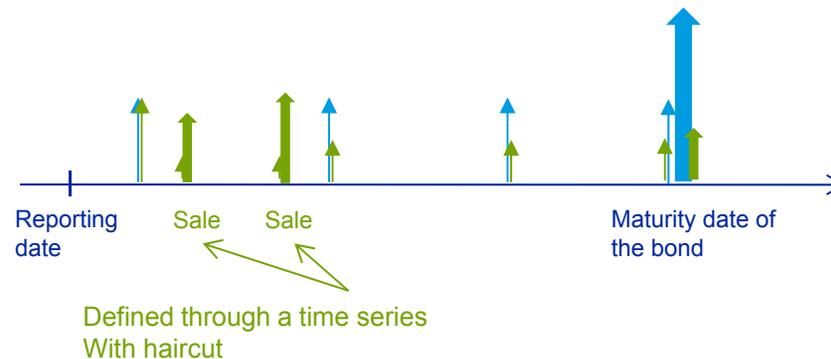
| Available Fields | |
|------------------------|--|
| Name | |
| Accrual Basis | |
| Accruals | |
| Book Code | |
| Calc Day Convention | |
| Calendar Code | |
| Client Proprietary | |
| Compounding Frequency | |
| Counterparty Code | |
| Discount Curve Name | |
| Facility Purpose | |
| Facility Purpose Other | |
| Facility Type | |
| Facility Type - Other | |

>> <<

| Selected Fields | |
|-----------------|-----------------|
| Name | Value |
| Contract Type | @FACILITY |
| Currency | USD |
| Interest Rate | 4 % |
| Liq Type | Credit Facility |
| Maturity Date | 2Y |
| Rate Type | Fixed |
| Revolving | true |
| Status | Committed |
| Value Date | 1D |

Selloff Feature: Overview

- » Identify unencumbered positions including long, short positions and repos
- » Simulating outright sales or repurchase agreements with Time Series : 20% of the position in day, 50% in one week
- » Business day adjustment is done according to national market defined at security level



$$CF(t) = Available\ Securities \times TS\ \% \times price \times (1 - hc)$$

Selloff Feature: Haircuts

- » The haircuts can be assigned based on the securities' characteristics using 'Deal Selection Expression' filter.
- » Additional filters are used to define the perimeter of deals on which the haircut is applied:
 - Desk: Banking, Trading or Investment
 - Booking Company

| | Evaluation Order | Deal Selection Expression | Sta... | Desk | Booking Company |
|--|------------------|---------------------------|--------|---------|-----------------|
| | 1 | bond.issuer_code="US_GOV" | Valid | Banking | Demo_CC |
| | 2 | bond.issuer_code="FR_GOV" | Valid | Banking | Demo_CC |

Definition for Deal Selection Expression

Check Syntax

Evaluation Order: 1

Deal Selection Expression: bond.issuer_code="US_GOV"

Status: Valid

Haircut Criteria

Desk: Banking Haircut: 10.00 %

Booking Com...: Demo_CC

Selloff Feature: Perimeter

- » The securities can be filtered according to their characteristics
- » Funding type: Outright Sale or Repurchase Agreement
- » A Product Template can be used to define the characteristics of the simulated deal (counterparty...)
- » The time series defined the dates at which the securities will be sold/repo-ed out.

| Evalua... | Deal Selection Expression | Status | Funding Type |
|-----------|--|--------|---------------|
| 1 | bond.rating(agency,"MOODY'S",long)="Aaa" | Valid | Outright Sale |

▼ Definition for Deal Selection Expression

Check Syntax

Evaluation Order: 1

Deal Selection Expression: bond.rating(agency,"MOODY'S",long)="Aaa"

Status: Valid

Parameters

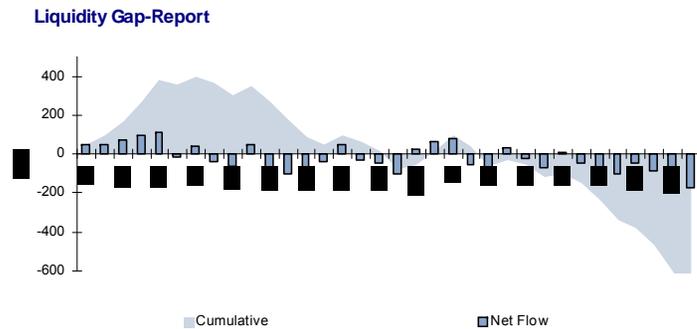
| | | | |
|-------------------|----------------------|------------------|------------|
| Funding Type: | Outright Sale | Selloff Profile: | Time Serie |
| Desk: | Banking | Booking Comp...: | Demo_CC |
| Product Templ...: | Volume Bond Template | | |

Agenda

- » Liquidity Risk Management and Regulatory Compliance
 - Introduction
 - The Basel III Liquidity Requirements
 - The US Liquidity Standard
 - Implications for US Banking System
- » LCR Implementation Challenges
 - RAY Liquidity Risk Product Demonstration
 - FR-2052 reports (daily liquidity risk reports)
 - QView Demo
- » LCR Forecasting and Daily Liquidity Risk Reporting
 - Joint RAY/RCO Liquidity Modeling Roadmap
 - RCO BS Forecasting Functionality
- » Liquidity Risk Management and Monitoring

The Basel Liquidity Ratios Are Just the Beginning

» Liquidity Gap



» Concentration of Funding

A. Funding liabilities sourced from each significant counterparty

The bank's balance sheet total

B. Funding liabilities sourced from each significant product/instrument

The bank's balance sheet total

C. List of asset and liability amounts by significant currency

» Available Unencumbered Assets

» LCR by Significant Currency

Intra-Day Liquidity Management

- » “A bank should actively manage its intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis under both normal and stressed conditions and thus contribute to the smooth functioning of payment and settlement systems”
- » Proposed intraday liquidity indicators:

Indicator of:

- (i) Daily maximum liquidity requirement
 - (ii) Available intraday liquidity
 - (iii) Total payments
 - (iv) Time-specific and other critical obligations
 - (v) Value of customer payments made on behalf of financial institution customers
 - (vi) Intraday credit lines extended to financial institution customers
 - (vii) Timing of intraday payments
 - (viii) Intraday throughput
-



Q&A

To learn more about this topic:

- » **Make an appointment to meet 1-1 with our experts in the Solutions Café:**
 - Pierre-Etienne Chabanel, Managing Director, Product Management
 - Yannick Fessler, Senior Director, Product Management
 - Olivier Brucker, Senior Director, Sales
 - Aditya Singh, Associate Director, Solution Specialist

- » **Attend related sessions taking place after this session:**
 - Centralizing the CCAR Process – 3:00pm
 - Inter-agency Regulator Panel – 4:30pm

- » **Read related materials available in the RPC Mobile App:**
 - Whitepaper: Adapting Financial Institutions' Liquidity Risk Management Frameworks to the New Regulatory Environment



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