FitchSolutions

CDS Transparency, Liquidity and Pricing Paradigm

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Agenda

- Counterparty Risk Workflow
- CDS Spreads and Implied Ratings
- Liquidity and the cost of funding
- Benchmark CDS

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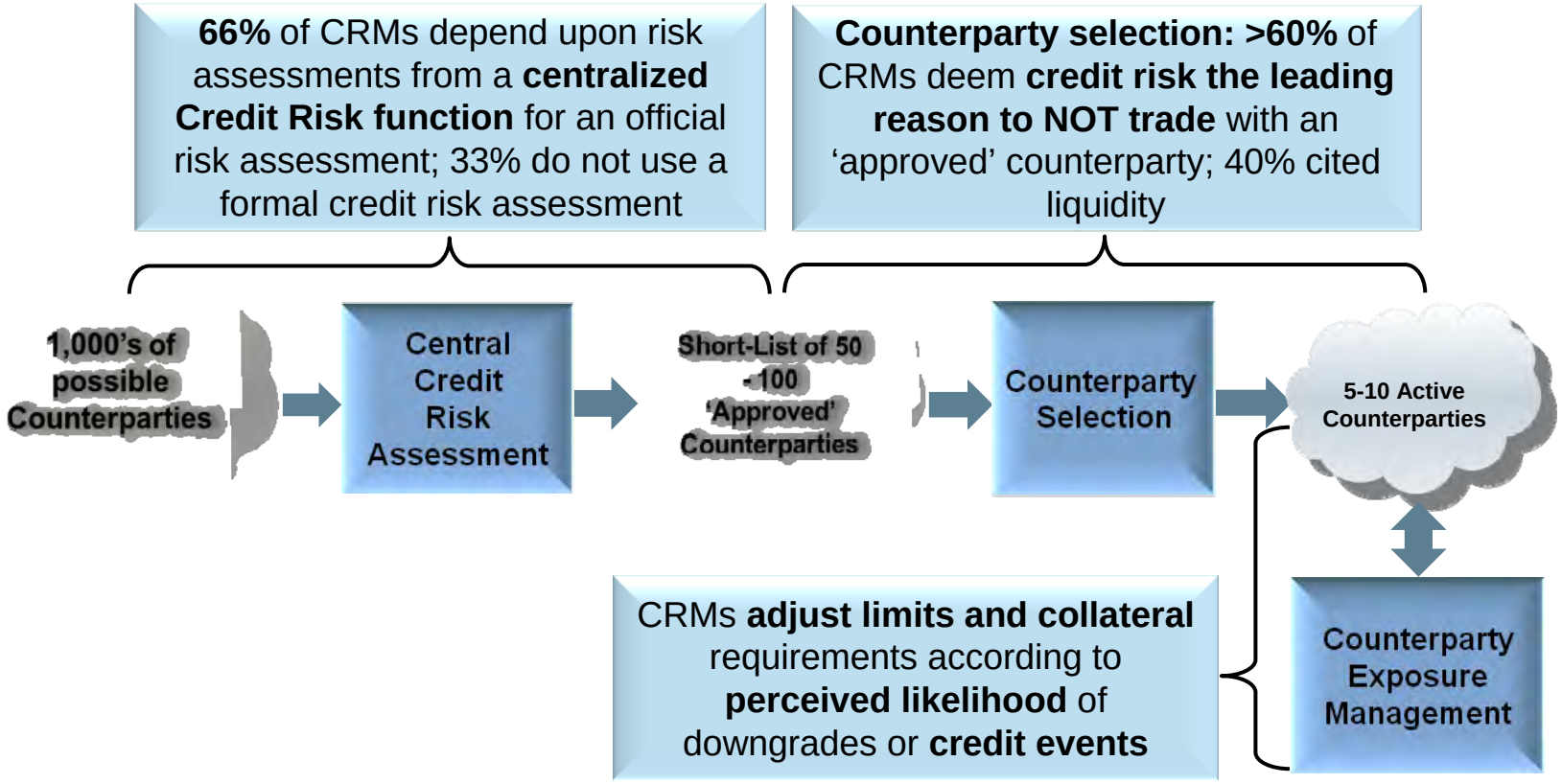
Counterparty and liquidity risk

Mark Lindup

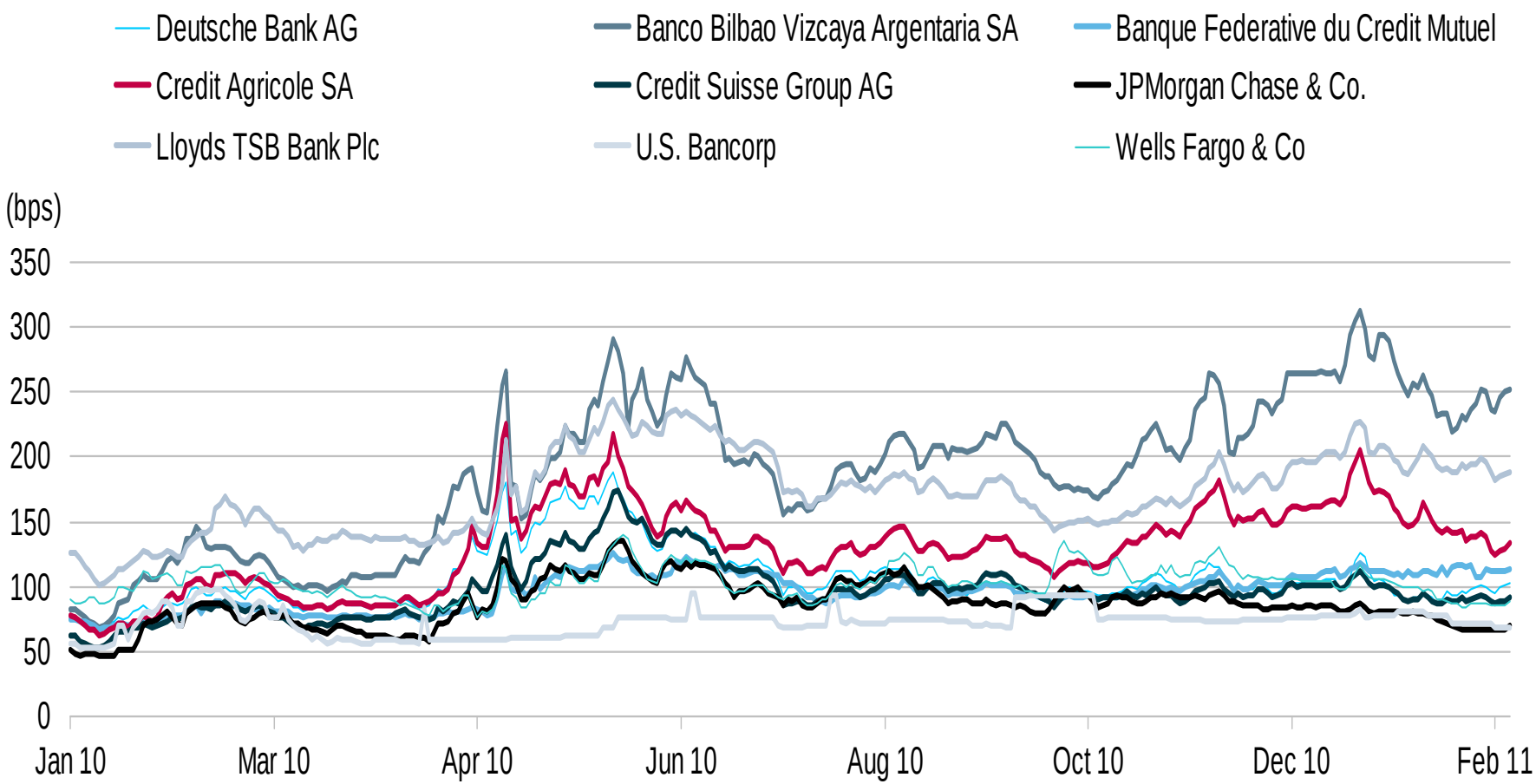
credit FitchSolutions Counterparty Risk Management Survey

- 85 counterparty risk manager were interviewed
- 11 broad questions were asked re: Current practices and changes since the Lehman default
- Summary of results
  - **Sell side actively hedge using derivatives buy side do-not**
  - **Active collateral management, same day posts, two-way, limit minding**
  - **Active monitoring**
- For more detail see www.FitchSolutions.com

Counterparty Risk Work Flow

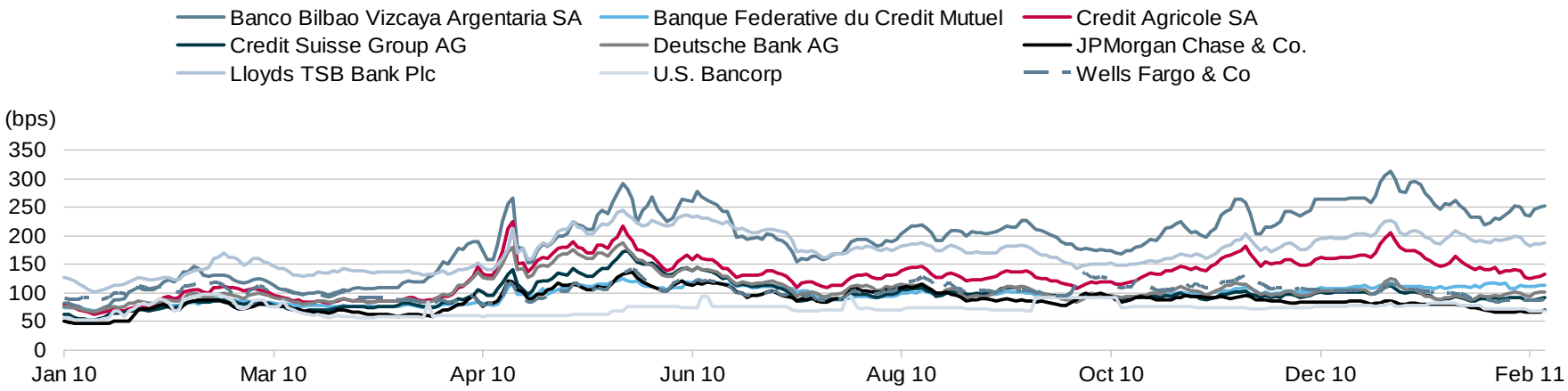


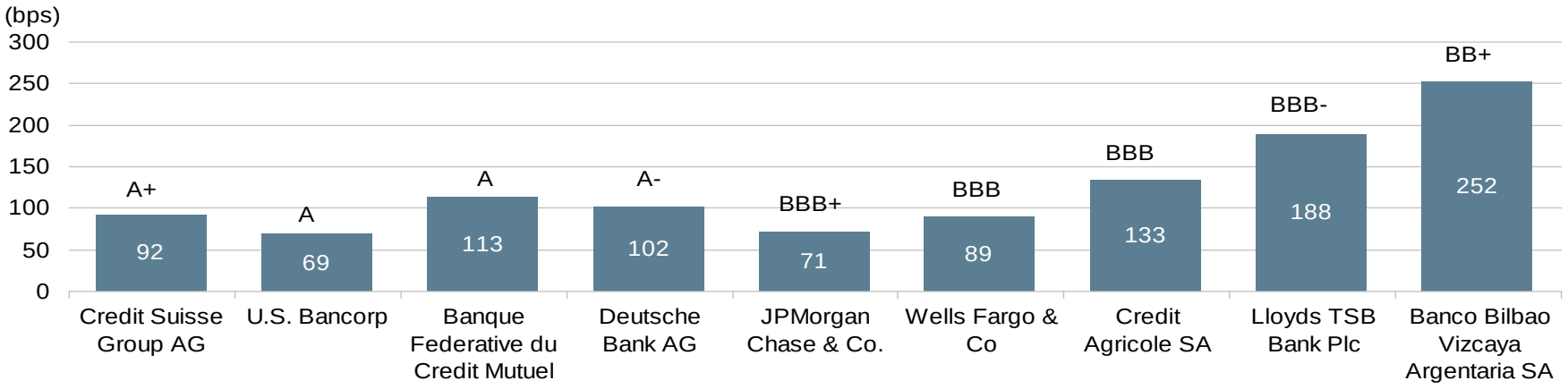
Deutsche Bank AG – CDS



Source: Fitch Solutions

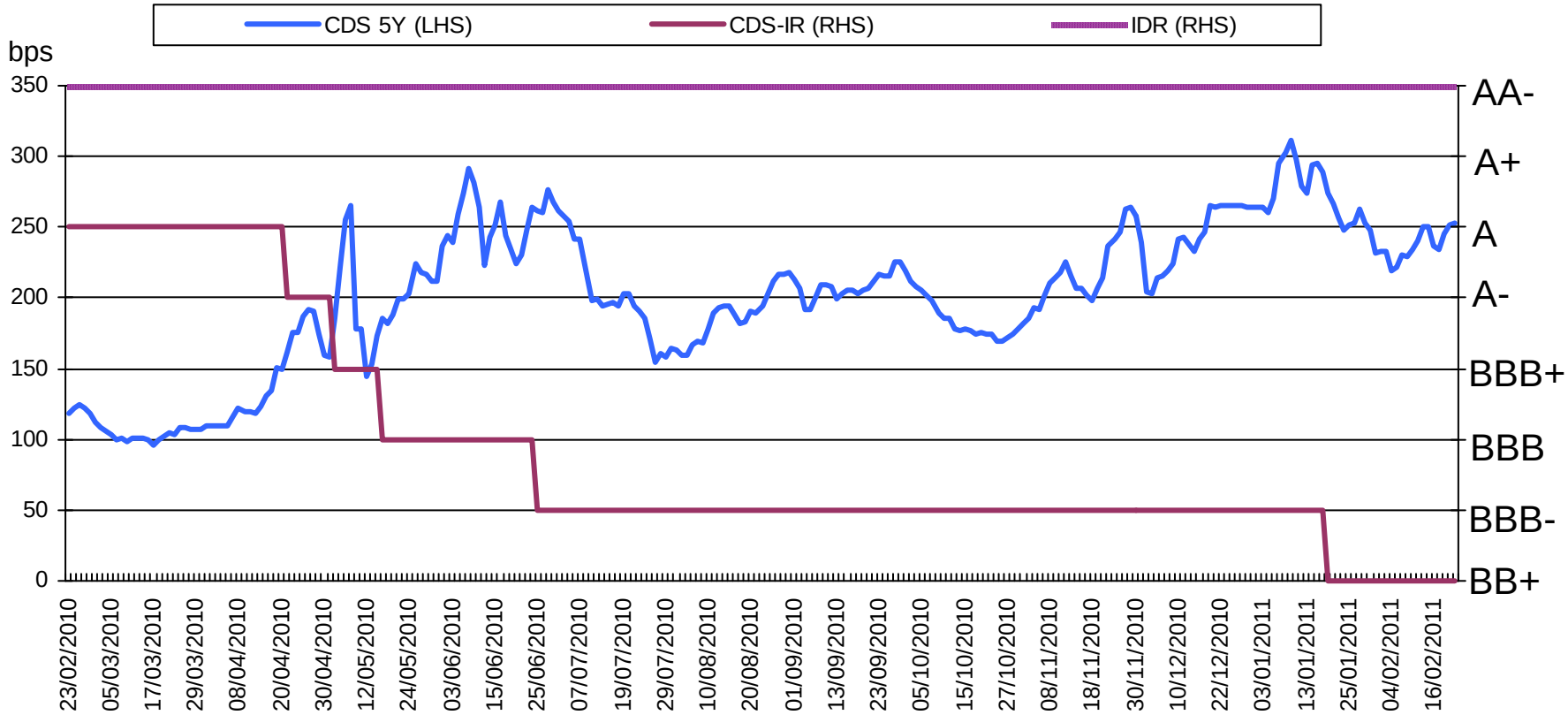
CDS Implied Rating and Spreads 22 Feb 2011





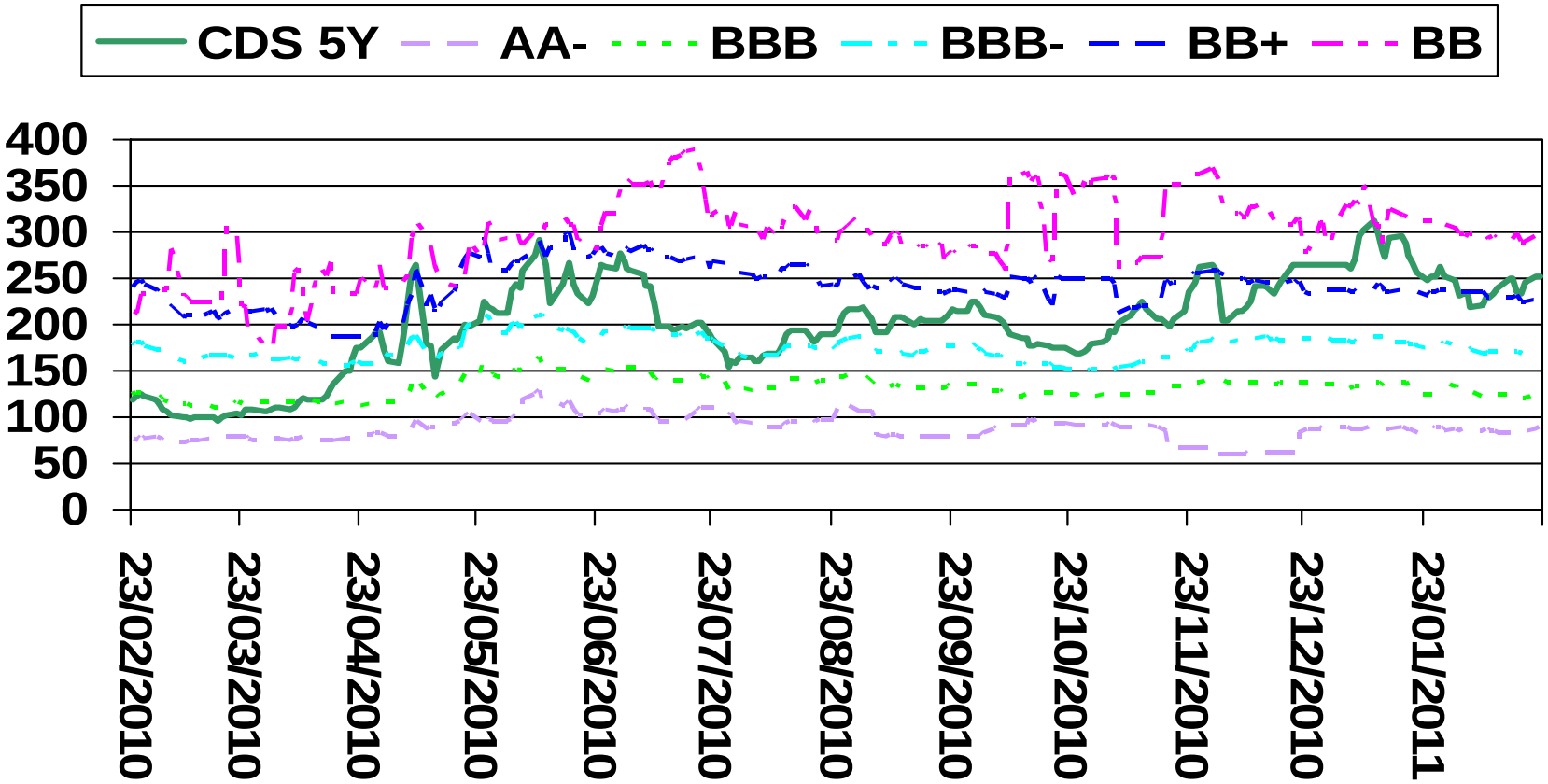
Source: Fitch Solutions

BBVA CDS Spread and CDS Implied Rating 22 Feb 2011



Source: Fitch Solutions

BBVA - CDS Implied Rating Bands 22 Feb 2011



Source: Fitch Solutions

Using Fitch Liquidity Indicators Usage

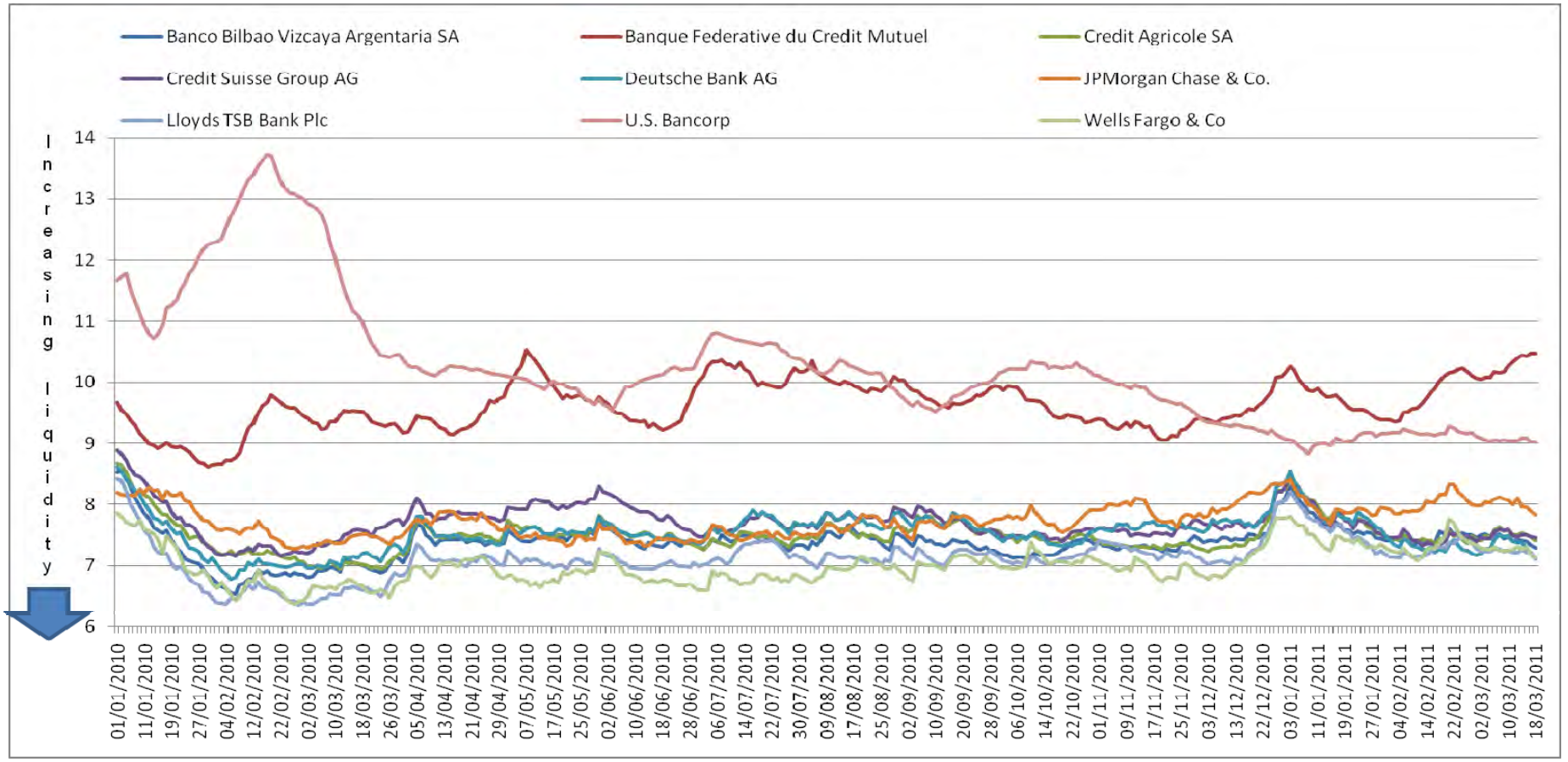
- Monitor CDS pricing quality
  - Low liquidity difficult to get a good average market price (client challenges)
  - Premium for low liquidity
  - Easy of closing out or taking a position
- Track market interest in an entity
  - Changes in liquidity can signal future events; good or bad
  - Generally market interest and hence liquidity increases in advance of an event and decreases when the risks are better understood
- Liquidity reserving
  - Adjust bid-offer spreads to account for liquidity

Fitch Solutions Approach to Modeling CDS Liquidity

- Fitch solutions sought the inclusion of market derived indicators as a proxy for all characteristics of asset market liquidity
- Liquidity can be measured by the following factors
  - Inactivity and staleness of quotes (resilience)
  - Dispersion of mid quotes across contributors (depth)
  - Scaled bid-ask spread (tightness)
- These factors are then put into a logistic regression to produce an aggregated liquidity score

  Liquidity score = Function (resilience, DEPTH, tightness)
- How do we disentangle credit risk from the regression results?
  - The regression has a series of dummy variables including Fitch CDS implied ratings, these controls for credit risk mean the output is net of default risk

Liquidity Scores - Counterparty banks

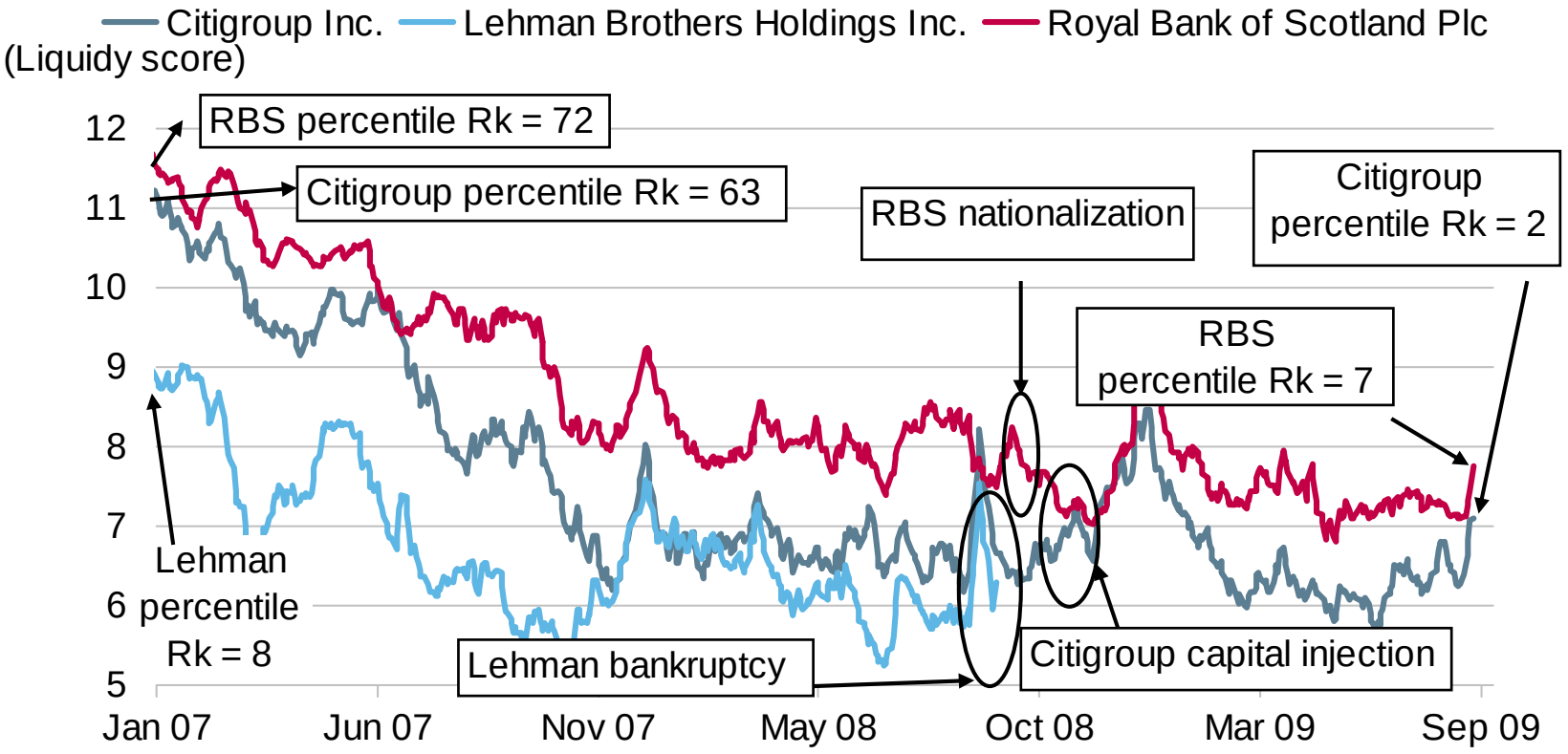


Source: Fitch Solutions

Liquidity Score data

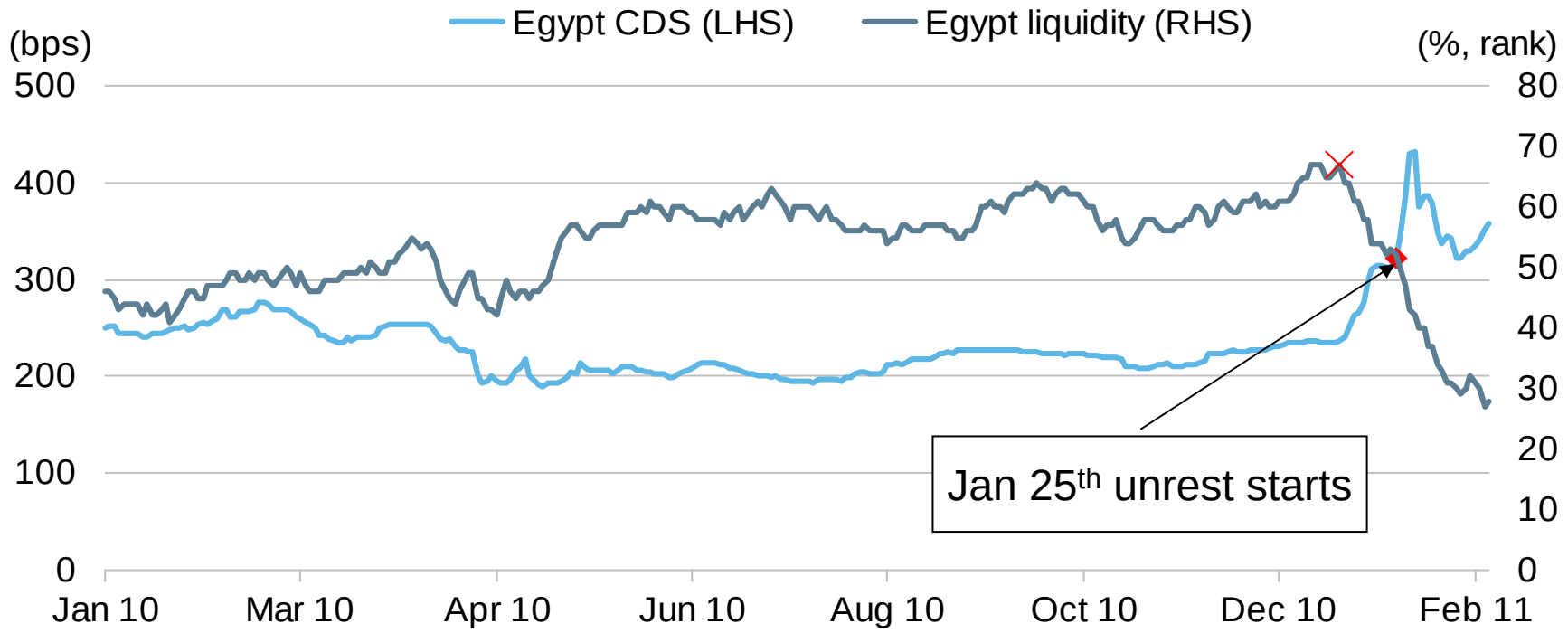
- Reference Entity contract information
- Liquidity Score (4 – 29 lower the score the more liquid the contract)
- Global percentile ranking
- Regional percentile ranking
- Change in Global rank, daily, weekly, monthly, etc
- Change in Regional rank, daily, weekly, monthly, etc
- ICB Sector information
- Country and region information
- CDS spreads (if required)

BBVA CDS Implied Ratings Bands 22 Feb 2011



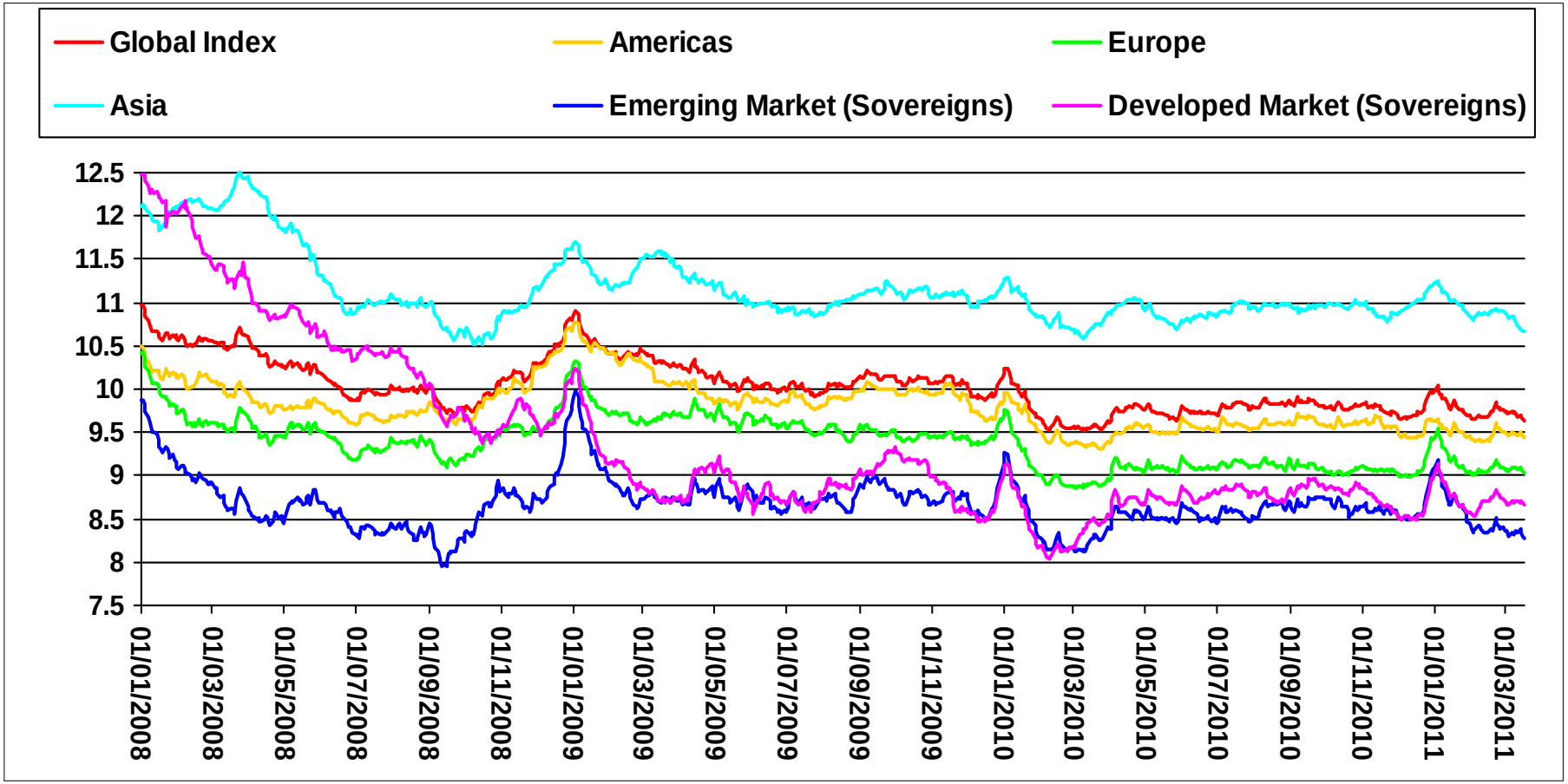
Source: Fitch Solutions

Egypt Liquidity and CDS Spreads



Source: Fitch Solutions

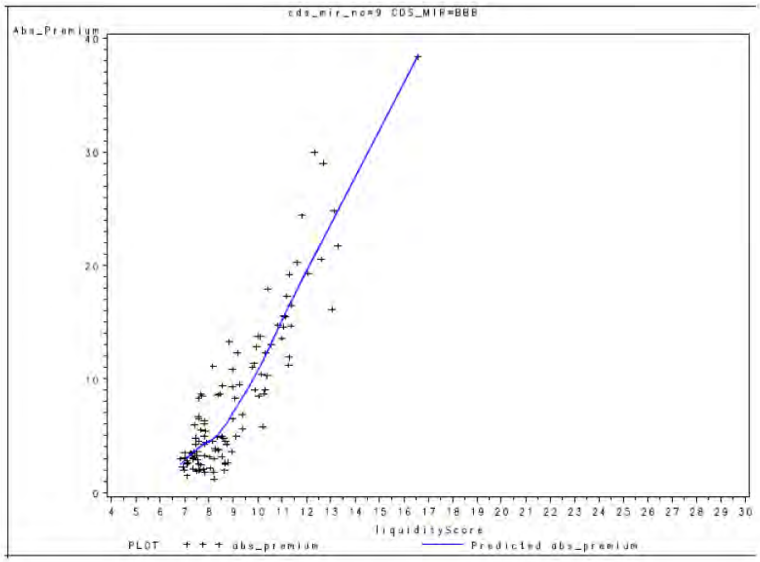
Fitch Liquidity Indices

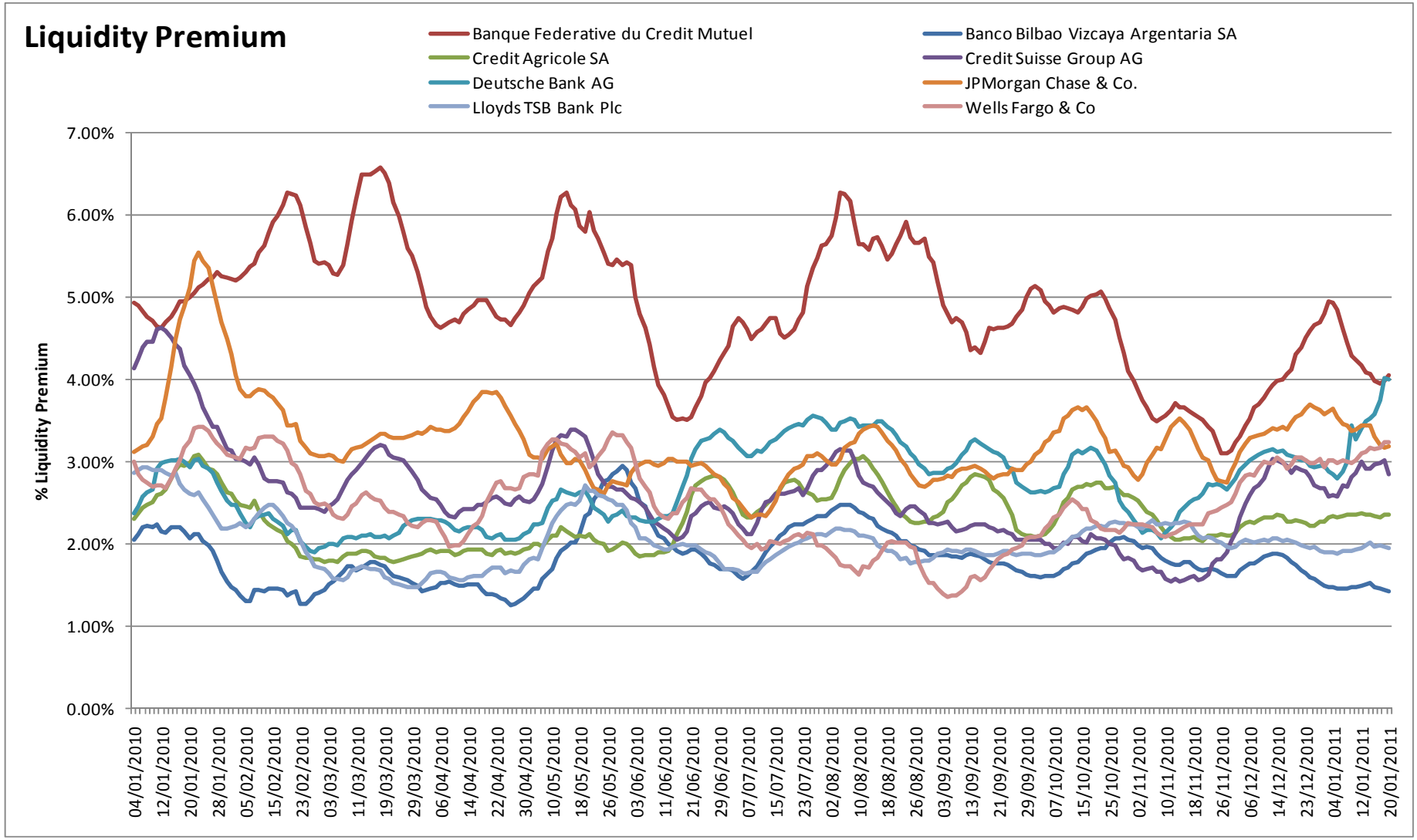


Source: Fitch Solutions

Liquidity Premium Model

- Extension of the current Liquidity Score model
- Liquidity Premium Model = Function[Bid-Offer, Mid Spread]
- Different fits based on credit quality using CDS implied ratings otherwise function fit is non-monotonic especially for lower credit quality
- Corporate, Sovereign, Financials
- BBB CDS Implied Rating
- X-axis Liquidity score
- Y-Axis absolute premium





Source: Fitch Solutions

Liquidity and Cost of Funding

- Fitch Solutions finds that the liquidity of a sovereigns CDS is highly correlated with the level of underlying bond yield.
- Where sovereign CDS liquidity is high, bond yields tend to fall, thus reducing the cost of funding for sovereigns
- Conversely bond yields increase when liquidity in the CDS market falls
- The research also demonstrates liquidity in the CDS market offers an indicator of the future direction of yield levels that is external to the credit risk factors.
- The analysis does not demonstrate causality as fundamental credit issues are prevalent in the movement of bond yields. However, realised correlations do highlight the importance of the market attaches to liquidity.
- http://www.fitchratings.com/creditdesk/reports/report_frame.cfm?rpt_id=563406

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Dealing with illiquidity

Catherine Downhill

CDS in risk management

- CDS spreads provide a valuable information when looking at risk:
  - **Provides granular measure of credit risk on both cardinal and rank ordered scales**
  - **CDS spreads are a tangible value actively used in CVA and capital charges**
  - **PDs can be derived from spreads…albeit carefully!**
  - **CDS spreads capture risk migration, not only default and/or failure**
  - **When handled properly, the CDS market proved to be the most accurate credit signal available**

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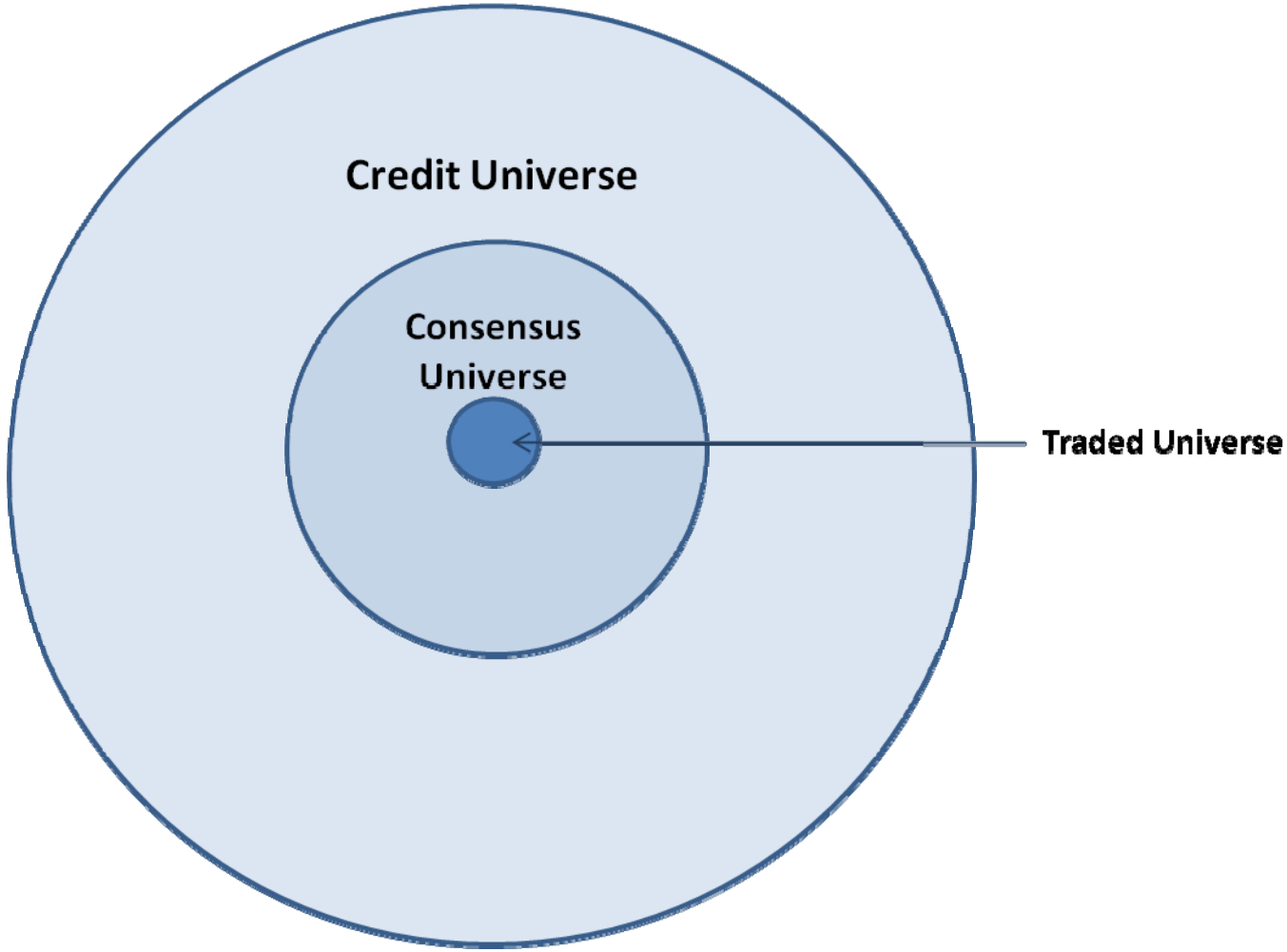
The Credit Default Swap Universe



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What about CDS spreads for entities where there is no readily available market information?

- Demand for CDS spreads on a broader universe of names has been increasing as there use in risk management expands as well the need for accurate valuations on CDS positions for these less liquid CDS

- This demand is leading to the development of benchmarked spreads to assist particularly in CVA and risk management

- Benchmarked spreads can be validated against and calibrated to a large current and historical data universe…many times larger than observed bank defaults

Benchmarking CDS Entities

- An indicative price for a less liquid CDS, derived from entities/instruments where market prices is readily available.
  - Pricing illiquidity entities – today's liquid entity = tomorrow's illiquid entity
  - Additional Basel III requirement
- Common CDS Benchmarking Methodologies
  - Rating, Region, Sector
  - Bond - Bond basis
  - Equity probability of default type model
  - Derived Data
  - Hybrid models

Benchmarking Methodologies

- Rating, Region, Sector
  - Group together entities with CDS curves by Rating, Region and Sector and aggregate the group as a proxy for entities without CDS spreads within the same grouping
- Bond – Basis
  - Find an appropriate bond for an Entity, find its spread over the risk-free rate and this approximates for the CDS spread, more advance version adjust for CDS-Bond basis and maturity mismatches.
- Equity probability of default type model
  - Group similar probabilities to create Equity implied ratings; use the Equity implied ratings instead of agency rating in the first approach above

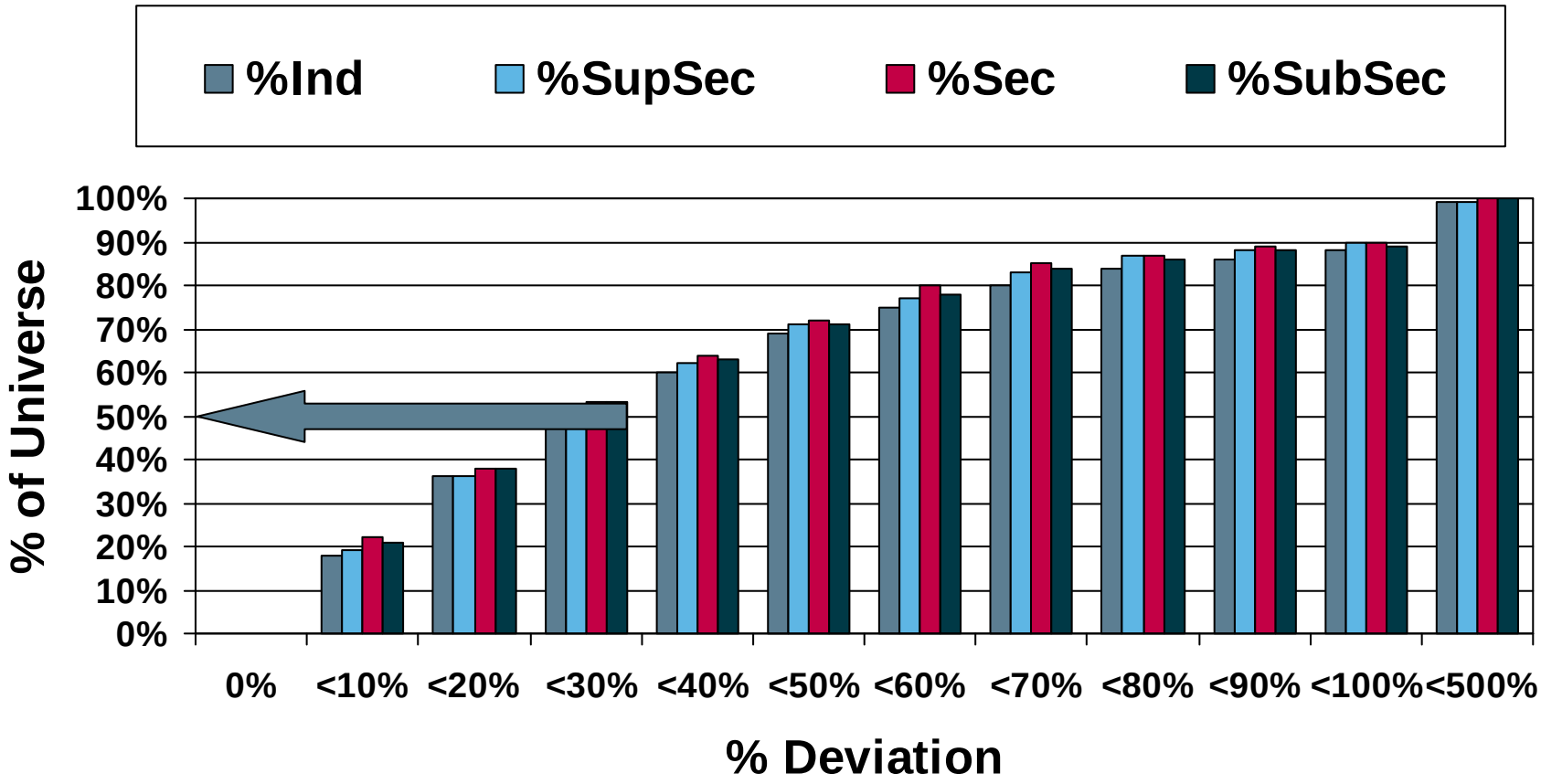
Benchmarking Methodologies (continued

- Derived data
  - Have a good CDS curve but need a curve for the same entity but with different attributes, adjusting good curve for ; Debt subornation level, Currency, restructuring differences.
- Hybrid models
  - Combining the other methodologies above. to group and aggregate CDS curves which can then be used as proxies to entities without CDS curves but having the same characteristics.
  - Enhancements include using the bond and CDS bonds basis as a cap and floor

Which CDS benchmarking methodology do think is best?

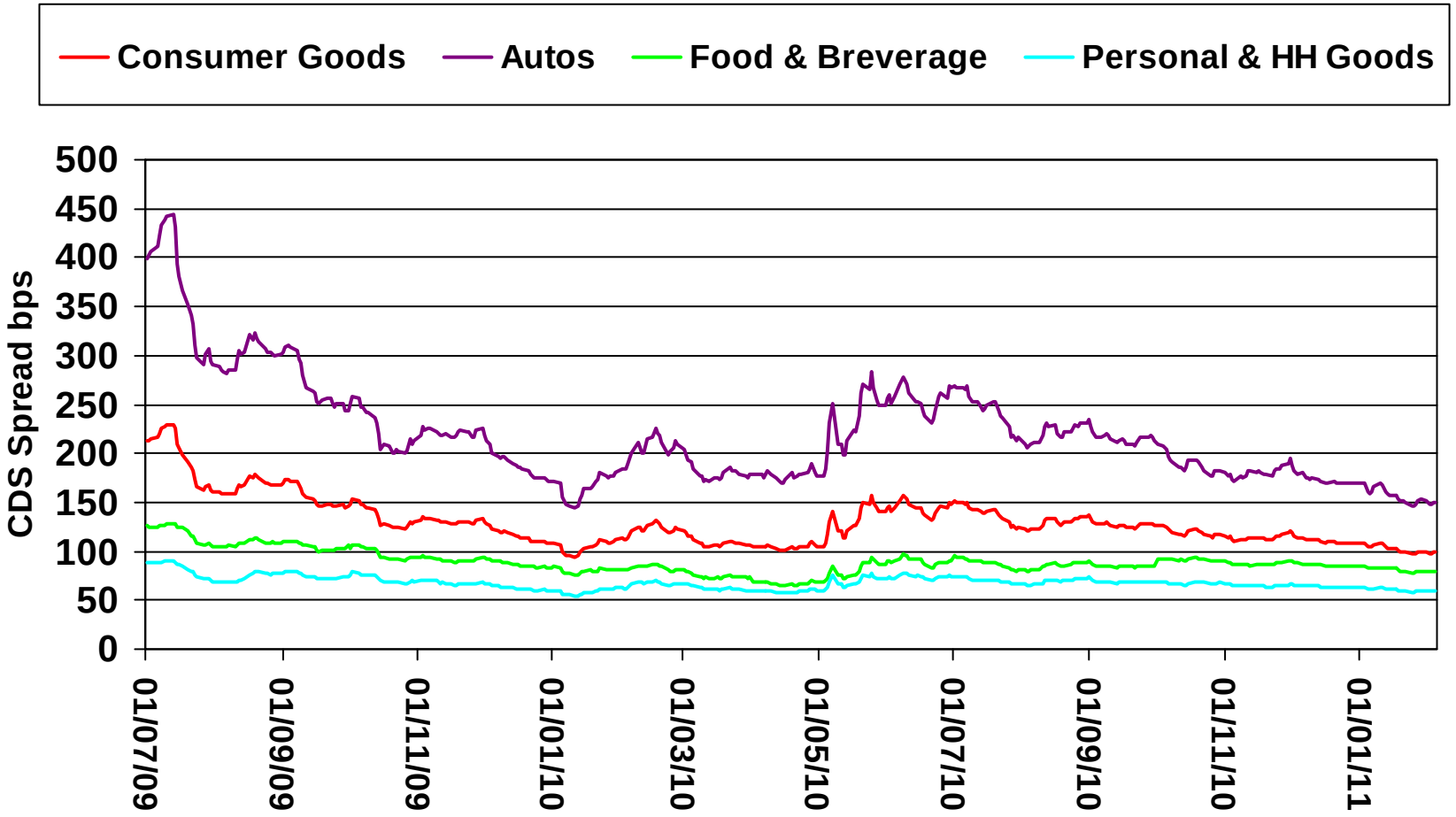
1. Rating, Region, Sector
2. Bond - Bond basis
3. Equity probability of default type model
4. Hybrid models of above models
5. Other
6. None work to your satisfaction

Benchmarking Accuracy – Breakdown by Rating, Sector, Region, Currency, Restructuring (11 March 2011)



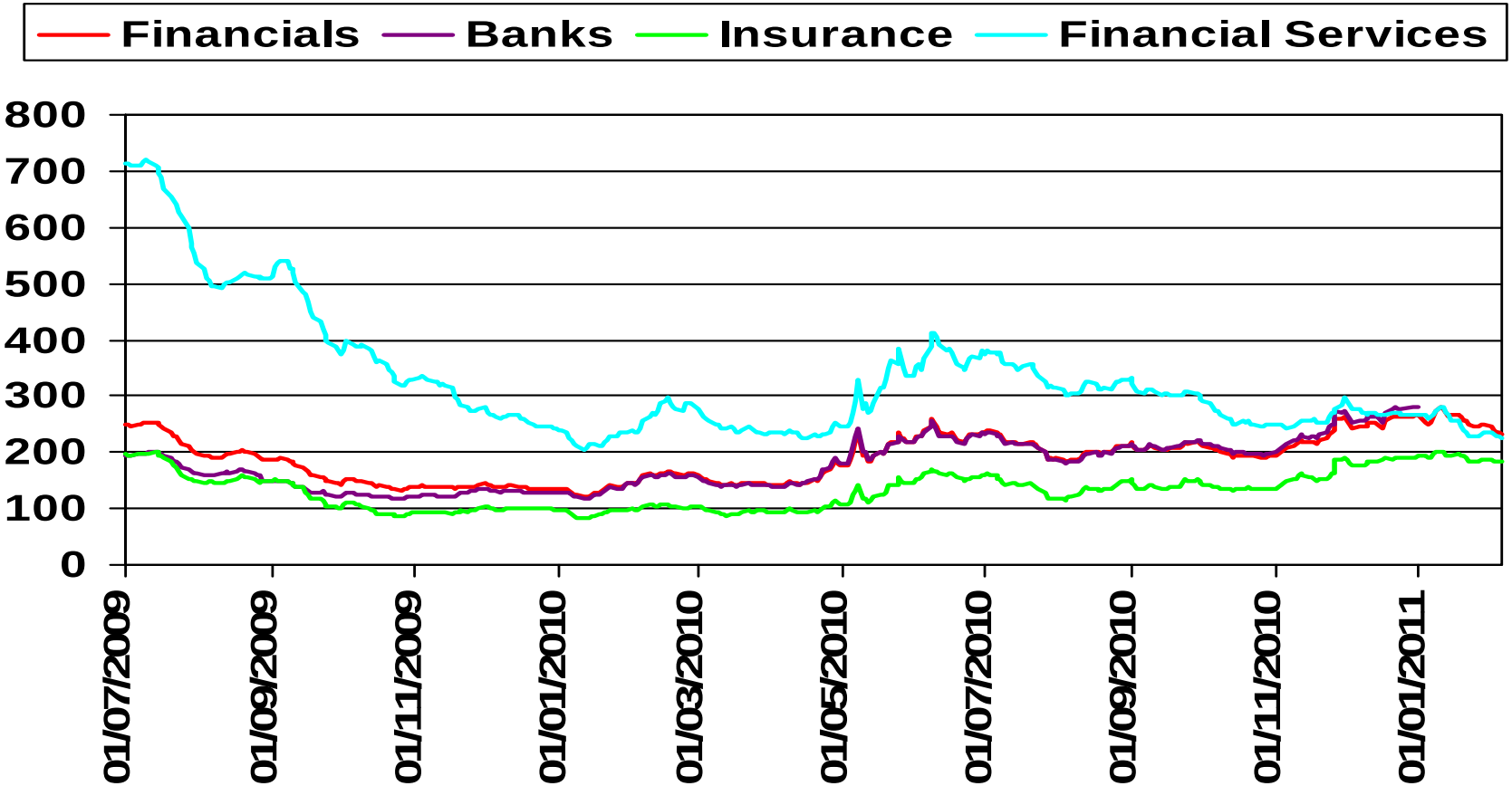
Source: Fitch Solutions

Indices – Global Consumer Goods



Source: Fitch Solutions

Indices – Global Financials



Source: Fitch Solutions

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A Counterparty Risk Manager Requires Timely and Accurate Data to Meet 3 Key Needs

Need	Implications & Repercussions	Components
Central Risk Assessment	Determines capital charges and 'approved' list of potential counterparties for CRMs	Fundamental financials
		Agency Ratings
		Market data
		Historical data for backtesting
Decision-making support	Exposure management; limit setting, collateral requirements	Timely delivery
		Screening tools
		Easy to use/integrate
		Single-point of access
		Data coverage
		Data quality
		Tailored content
Early Warning	Advanced notice of future events (downgrades, credit deterioration, defaults, etc.)	Market data (CDS Pricing)
		Benchmark comps
		Sound market-based risk metrics (CDS IRs)
		Outlooks/Watches

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Fitch Solutions Client Best Practices: Counterparty Credit Risk Monitoring

Mid-sized buy-side firm transacts with financial institutions for interest rate, foreign exchange hedging, and utilizes banks for cash management.

Per internal credit policy, maximum exposure limit scales with the **Fitch individual rating**.

Centralized risk management determines 'approved' counterparties by using the **Fitch ratings and Fundamental Financials feeds** and **Fitchresearch.com** to screen the global bank universe for firms with individual rating of 'B' or better, at least $100bn in assets and a maximum leverage ratio.

Create **FitchReasearch.com portfolio alerts** for 'approved' counterparties to track research, announcements and changes in financial condition.

The Counterparty Risk Manager selects counterparties and monitors credit exposure depending on perceived risk migration. To do so, **Fitch Risk and Performance Platform** is used to monitor the portfolio of counterparties on:

Fitch CDS Implied Ratings (and 'gap' with **Agency ratings**), **Fitch CDS pricing** spot-spreads and CDS benchmarks

Fitch Ratings status (outlooks, watches) and research and announcements

Fundamental financial results

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Contract Group	Contract Region	ISDA Transaction Type	Fixed Coupons (bps)	Senior / Tier 1 Recovery	Subordinated Recovery
North America		Standard North American Corporate	100 / 500	40%	20%
Europe		Standard European Corporate	25 / 100 / 300 / 500 / 750 / 1000	40%	20%
		Standard Subordinated European Insurance Corporate	25 / 100 / 300 / 500 / 750 / 1000	40%	20%
		Standard Western European Sovereign	25 / 100 / 300 / 500 / 750 / 1000	40%	20%
Emerging Markets	Europe / Middle East	Standard Emerging European Corporate	100 / 500	25%	25%
		Standard Emerging European Corporate LPN	100 / 500	25%	25%
		Standard Emerging European & Middle Eastern Sovereign	100 / 500	25%	25%
	Latin America	Standard Latin America Corporate B	100 / 500	25%	25%
		Standard Latin America Corporate BL	100 / 500	25%	25%
		Standard Latin America Sovereign	100 / 500	25%	25%
Asia	Ex-Japan	Standard Asia Corporate	100 / 500	40%	20%
		Standard Asia Sovereign	100 / 500	40%	20%
	Singapore	Standard Singapore Corporate	100 / 500	40%	20%
		Standard Singapore Sovereign	100 / 500	40%	20%
	Japan	Standard Japan Corporate	25 / 100 / 500	35%	15%
		Standard Japan Sovereign	25 / 100 / 500	35%	15%
Oceania	Australia	Standard Australia Corporate	100 / 500	40%	20%
		Standard Australia Sovereign	100 / 500	40%	20%
	New Zealand	Standard New Zealand Corporate	100 / 500	40%	20%
		Standard New Zealand Sovereign	100 / 500	40%	20%
North America		Bullet LCDS	0 / 100 / 250 / 500	70%	