



Federal Reserve Bank of Richmond Credit Markets Symposium

Prologue: Market Overview Credit Derivatives Market Overview & Update

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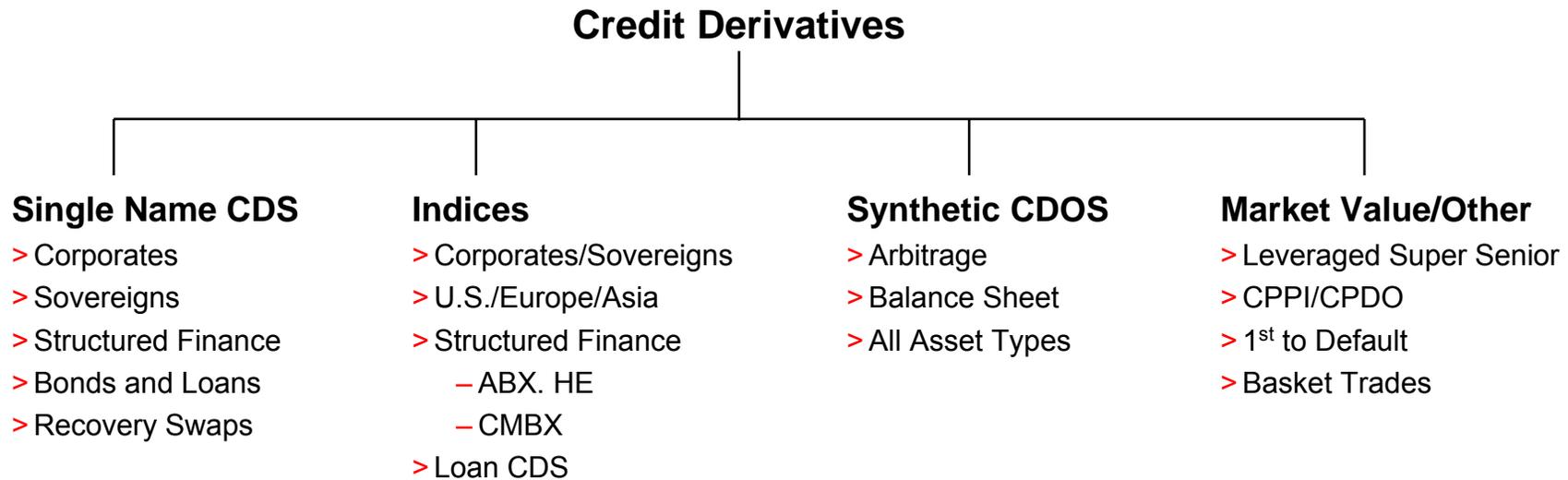


Agenda

- > Overview of Market
- > Recent Developments
- > Credit Market Implications
- > Evaluating Market Risk

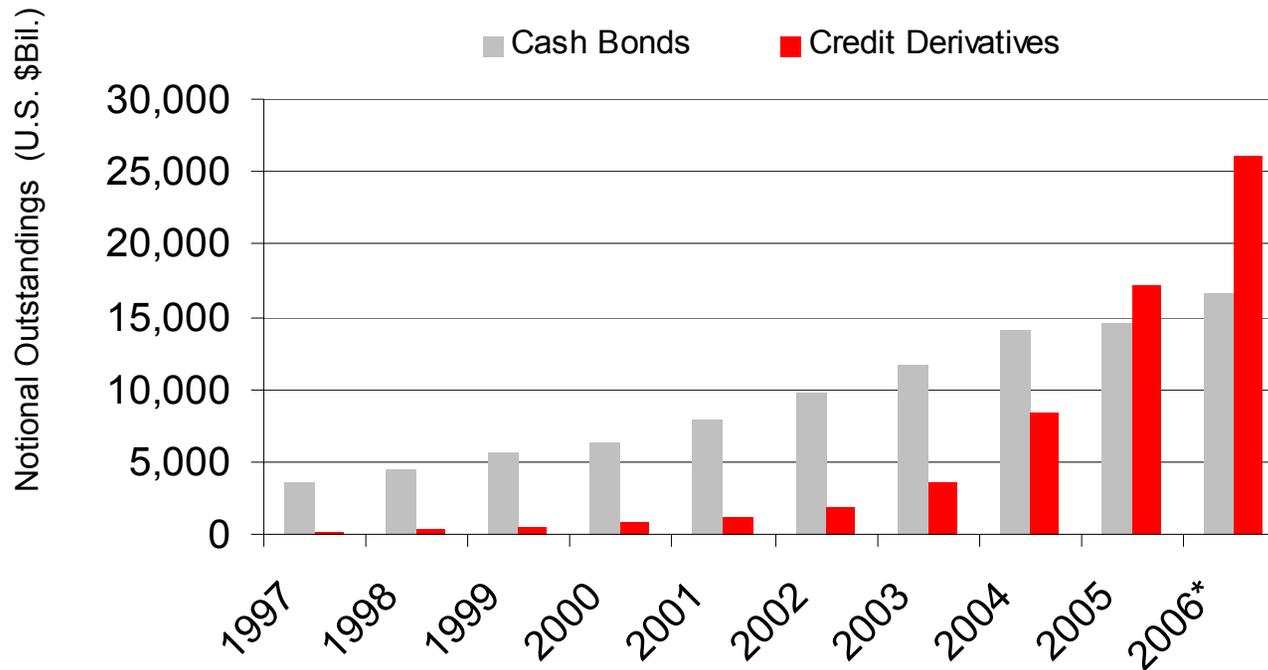


Credit Derivatives — Market Overview





Global Credit Derivatives Market

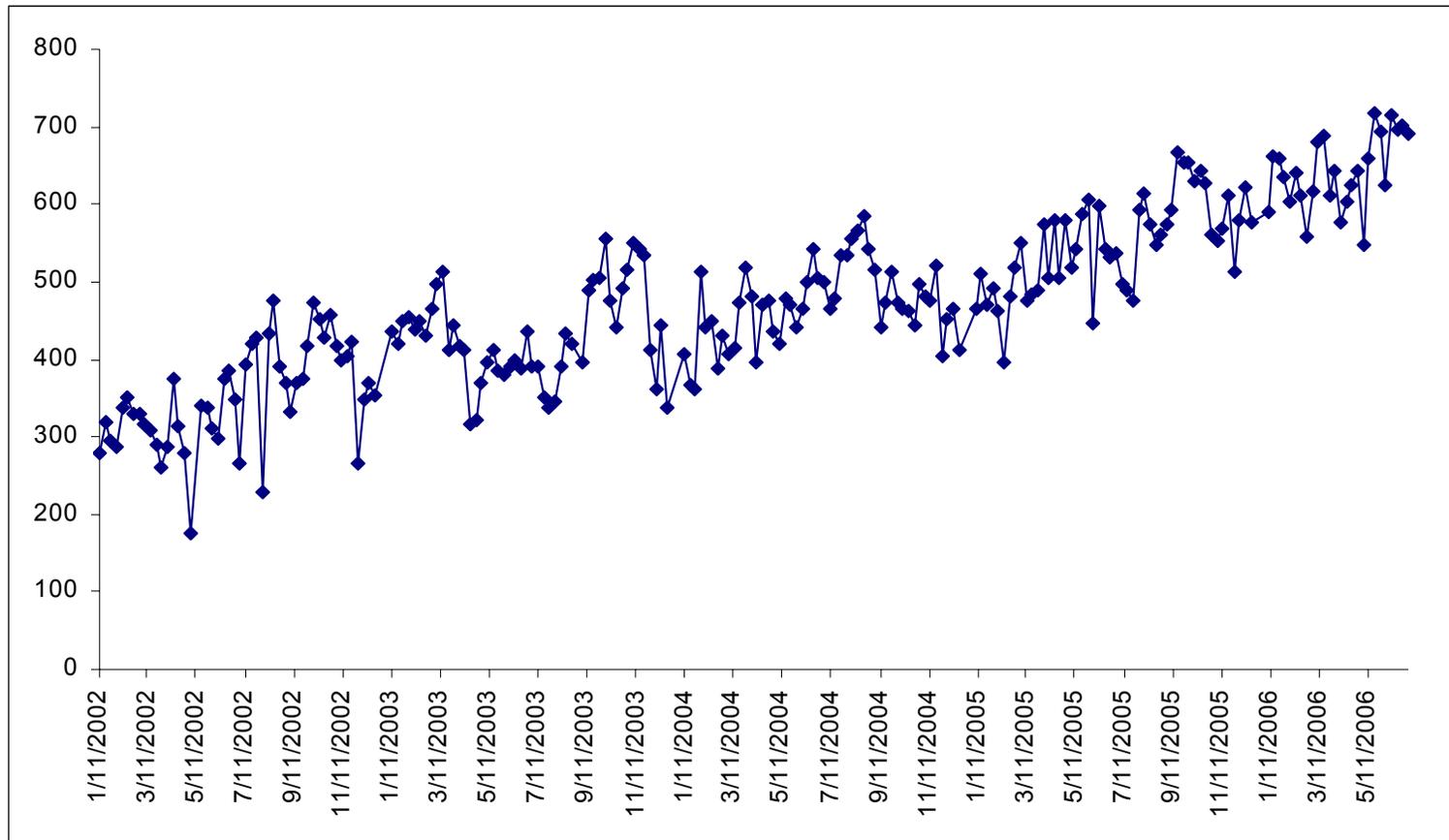


*As of June 2006.

Source: British Bankers Association, Bank for International Settlements, ISDA



CDS Market Growth – Reference Entities

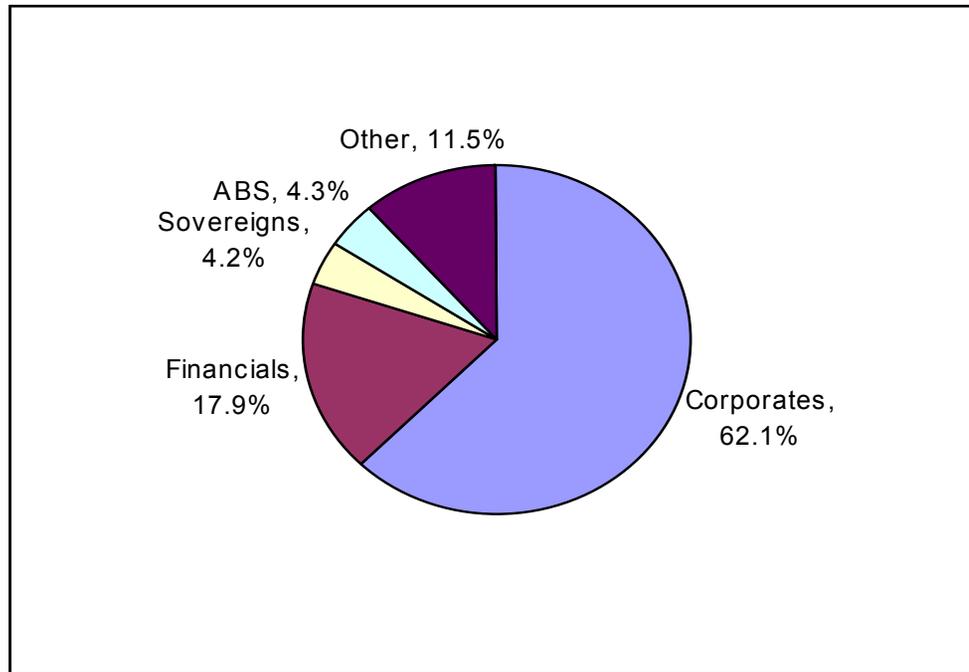


Note: In reality, there are many more entities that have been referenced. This sample takes into account only those corporate entities referenced (by single-name CDS) that particular week as indicated by the data provider cited; nonetheless, the growth in the market in names referenced is clearly evident.

Source: Fitch, GFI



Global Reference Entities by Type

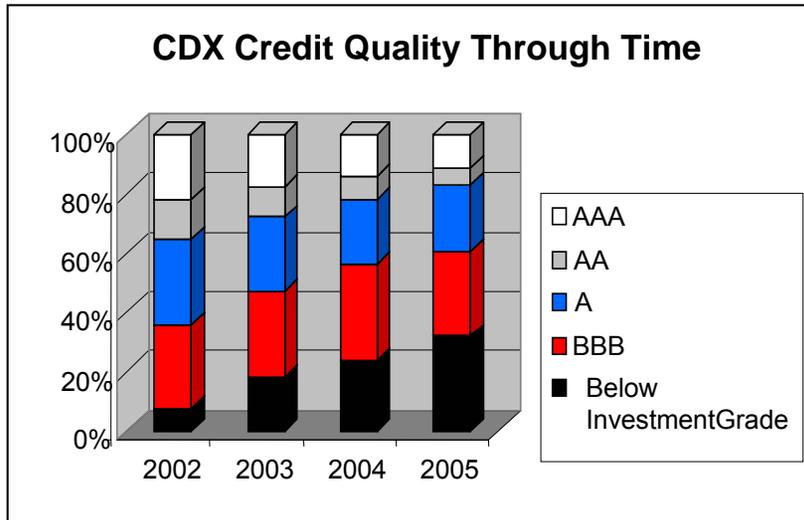


Source: Fitch Ratings Global Credit Derivatives Survey, September 2006

Source: Fitch



Exposure by Rating — Average Quality Has Been Sliding



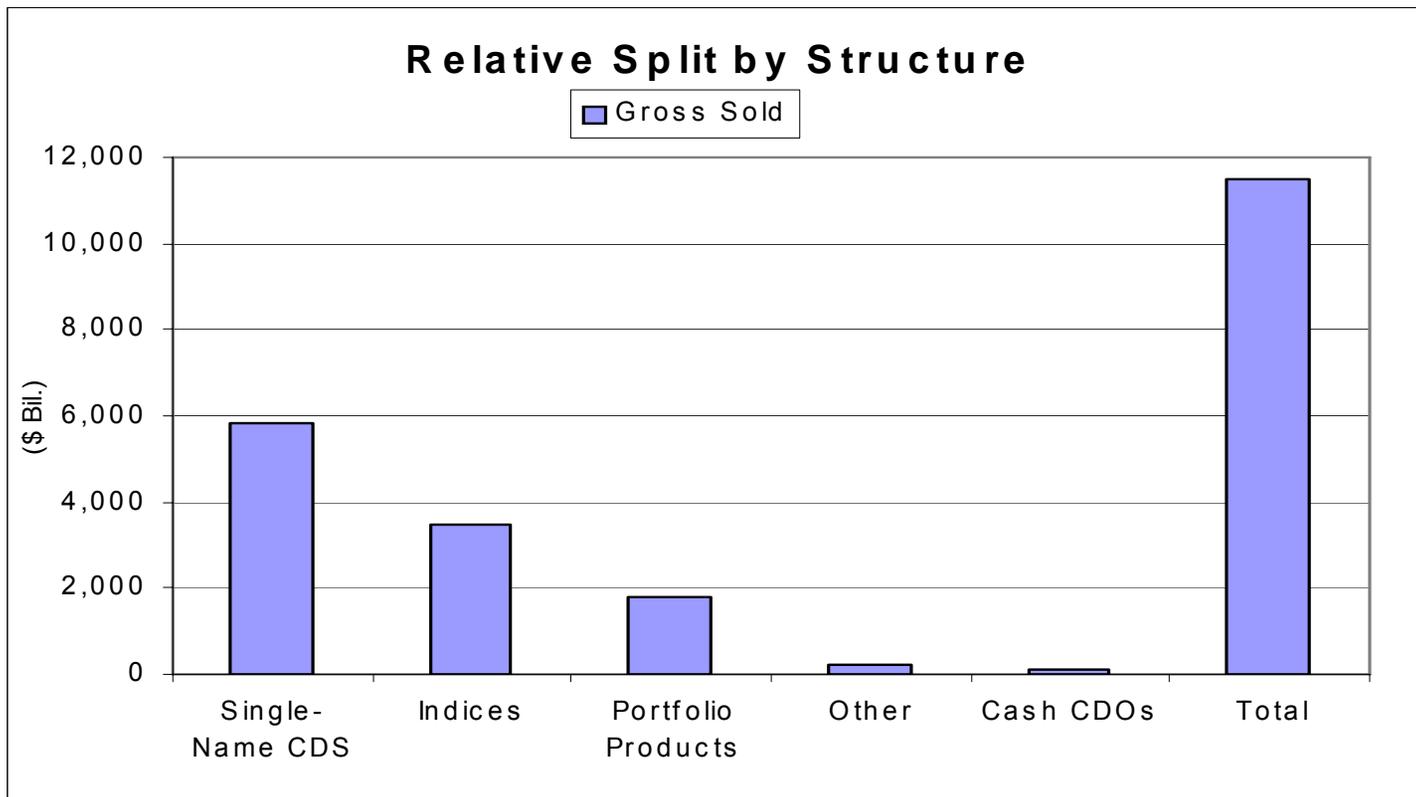
CDX Credit Quality	2002	2003	2004	2005
AAA	22%	17%	14%	11%
AA	14%	10%	8%	6%
A	29%	25%	22%	23%
BBB	28%	29%	32%	29%
Below Investment Grade	8%	18%	24%	31%

Source: Fitch

Numbers may not add due to rounding; Below Investment Grade category includes unrated securities



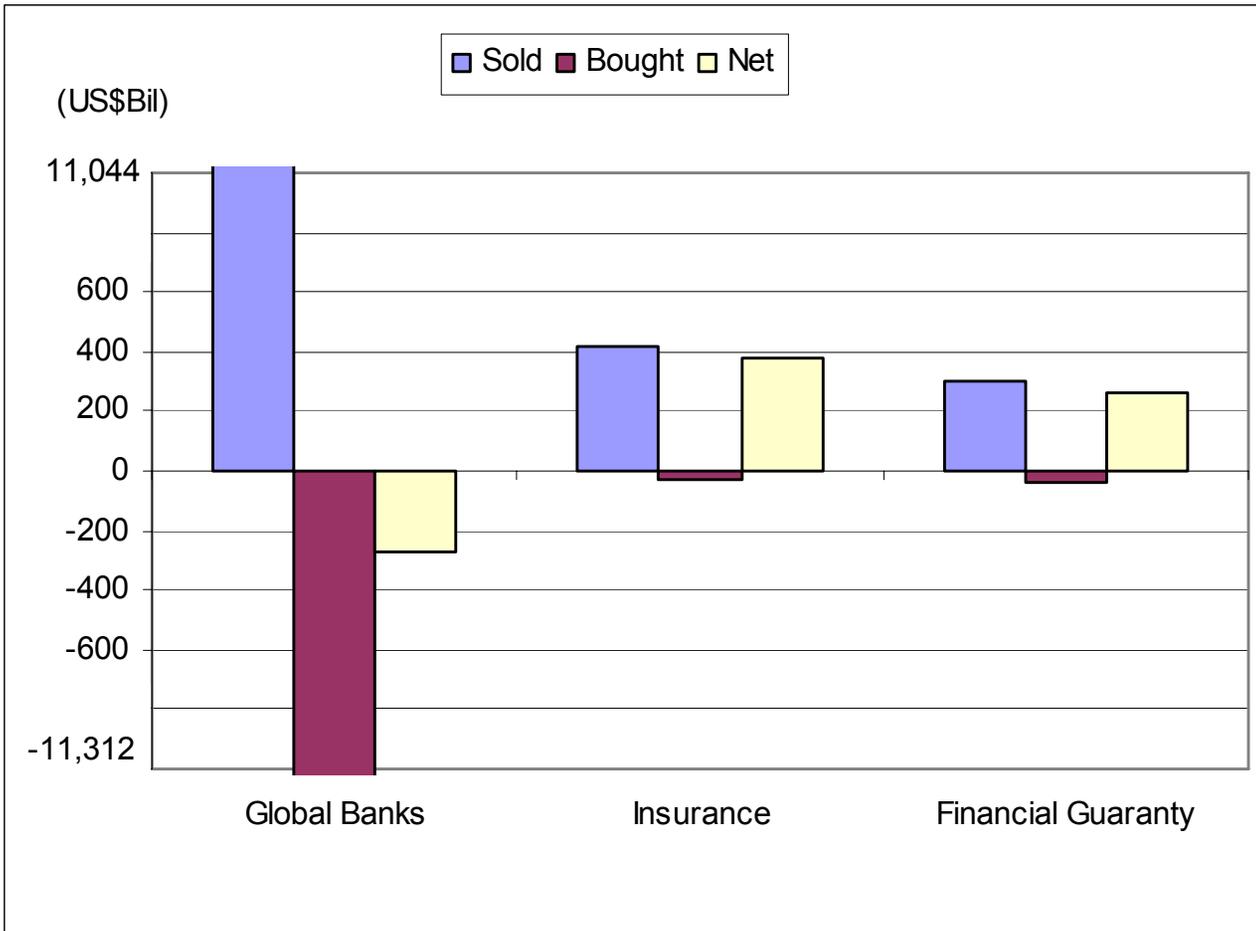
Relative Split by Structure



Source: Fitch Ratings Global Credit Derivatives Survey, September 2006



Global Positions by Sector (Notional)



Source: Fitch Ratings Global Credit Derivatives Survey, September 2006



Recent Developments

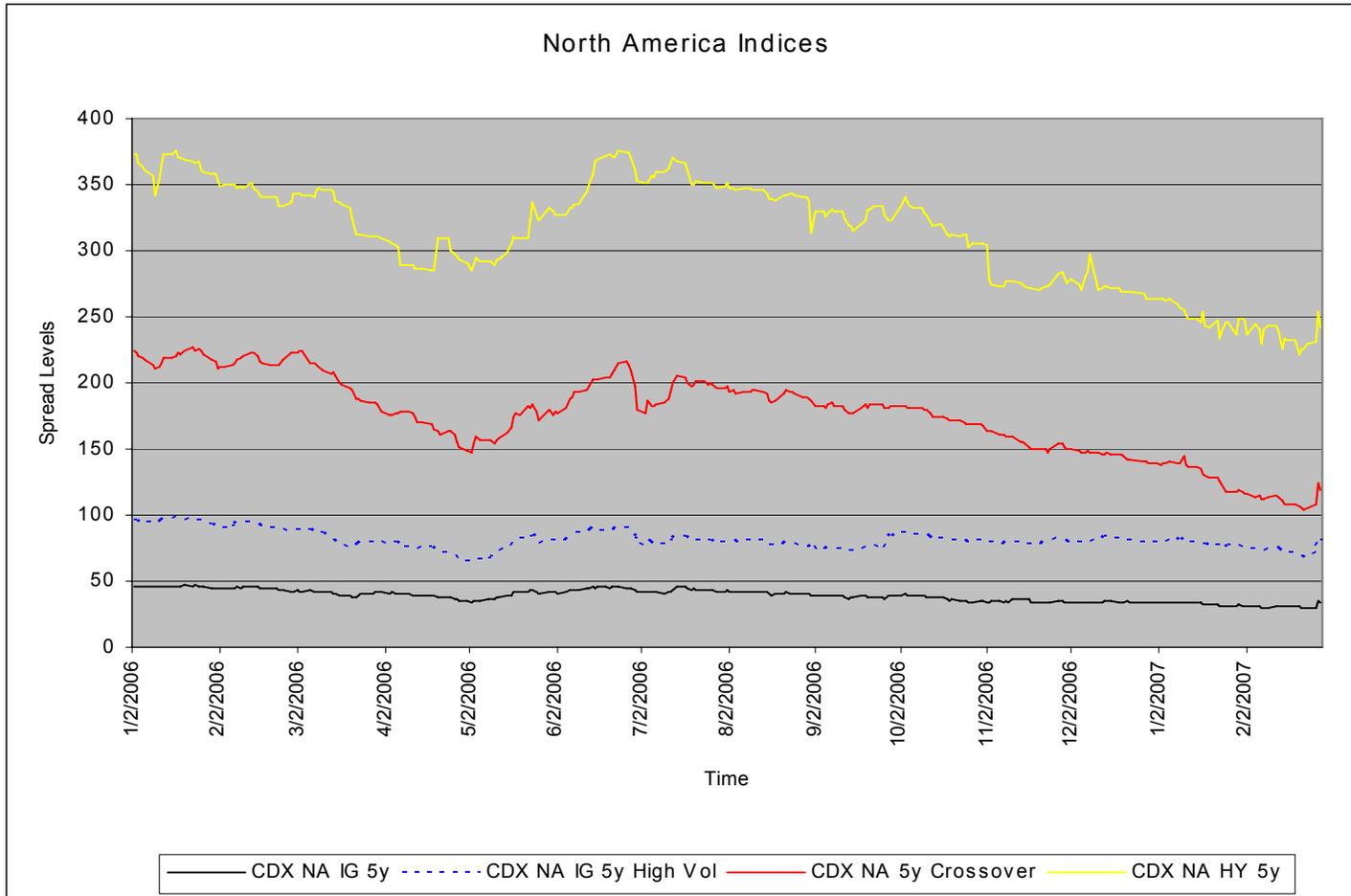
- > Spread trends
- > Volume trends
- > Market developments and new structures



Spread and Volume Trends



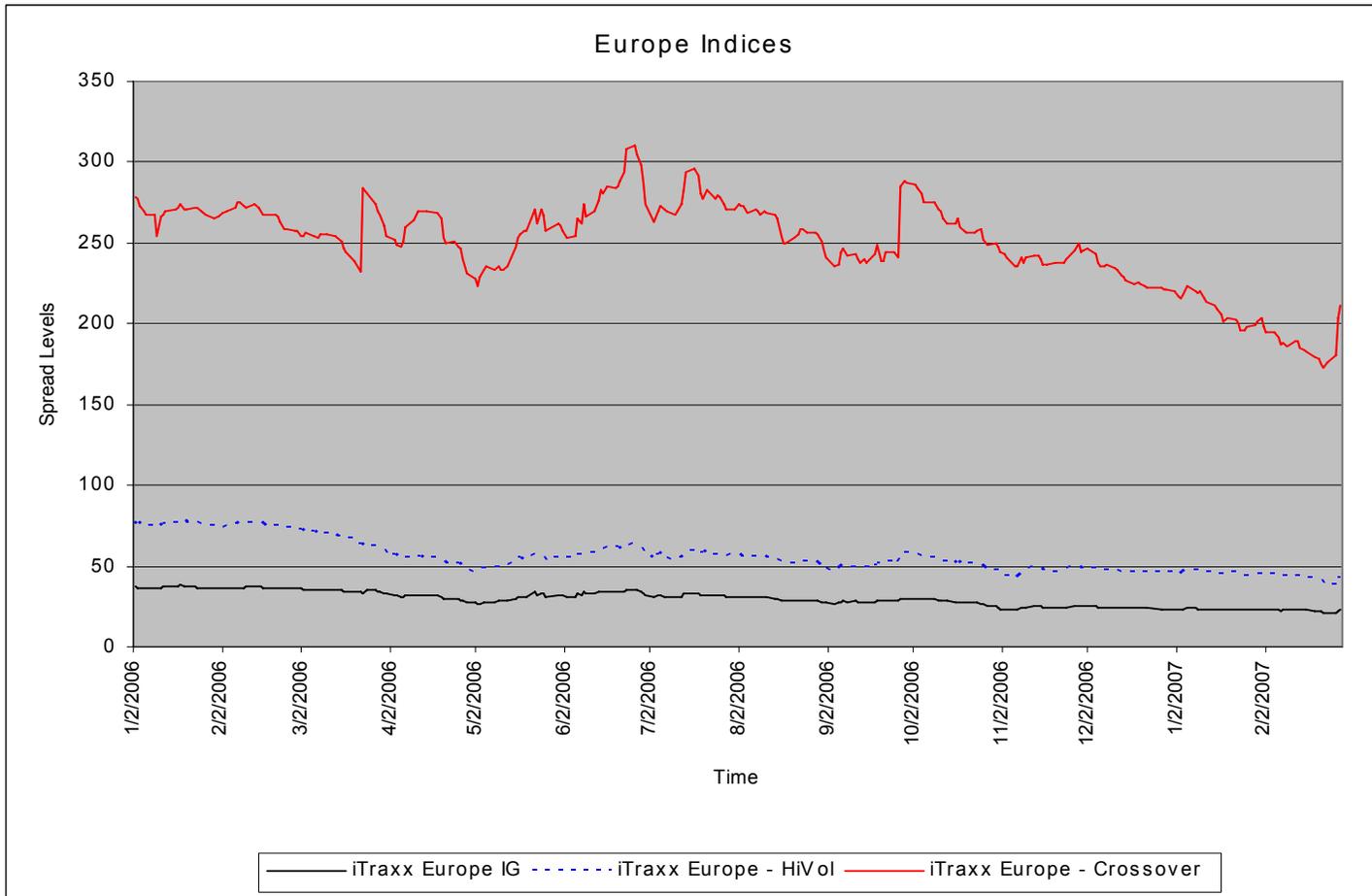
Spread Evolution – North American Indices



Source: Fitch, Valuspread



Spread Evolution – European Indices



Source: Fitch, Valuspread



Growth In Usage By Sector

2006 CDS Activity by Industry - USD Denominated

% of Total

FITCH INDUSTRY	2006	2005	2005-2006 (%)
Aerospace & Defense	0.3%	1.0%	-64%
Automotive	21.0%	38.1%	-44%
Banking & Finance	14.0%	9.7%	47%
Broadcasting & Media	1.7%	1.2%	38%
Building & Materials	0.9%	0.5%	92%
Chemical	1.7%	1.3%	34%
Computers & Electronics	1.2%	1.1%	9%
Consumer Products	1.8%	2.4%	-22%
Energy	1.3%	1.7%	-24%
Food, Beverage & Tobacco	2.5%	1.7%	48%
Gaming, Lodging & Restaurant	3.4%	2.5%	38%
Healthcare & Pharmaceutical	1.5%	0.7%	122%
Industrial / Manufacturing	1.7%	1.4%	19%
Insurance	0.1%	0.4%	-66%
Leisure & Entertainment	0.1%	0.3%	-54%
Metals & Mining	1.2%	0.8%	54%
Miscellaneous	2.0%	1.0%	97%
Paper & Forest Products	1.3%	0.6%	116%
Real Estate	0.4%	0.4%	-12%
Retail	2.1%	5.1%	-58%
Sovereign	29.4%	15.5%	94%
Supermarkets & Drug Stores	1.0%	3.0%	-65%
Telecommunication	3.9%	5.4%	-26%
Textiles & Furniture	1.4%	1.1%	28%
Transportation	1.2%	0.9%	31%
Utilities	3.1%	2.2%	49%
Total	100.0%	100.0%	2%
Total Ex Autos	79.0%	61.9%	30%

2006 CDS Activity by Industry - Euro Denominated

% of Total

FITCH INDUSTRY	2006	2005	2005-2006 (%)
Aerospace & Defense	0.7%	1.3%	20%
Automotive	5.4%	5.4%	114%
Banking & Finance	8.8%	13.9%	35%
Broadcasting & Media	7.1%	3.8%	304%
Building & Materials	1.2%	2.1%	18%
Chemical	2.8%	2.2%	174%
Computers & Electronics	0.4%	0.6%	47%
Consumer Products	1.8%	2.4%	65%
Energy	0.4%	0.5%	63%
Food, Beverage & Tobacco	2.1%	4.4%	1%
Gaming, Lodging & Restaurant	0.4%	0.7%	17%
Healthcare & Pharmaceutical	0.9%	1.6%	21%
Industrial / Manufacturing	2.0%	3.0%	43%
Insurance	3.1%	4.8%	39%
Leisure & Entertainment	0.9%	1.5%	36%
Metals & Mining	0.8%	1.3%	24%
Miscellaneous	1.2%	1.5%	83%
Paper & Forest Products	1.0%	0.9%	123%
Real Estate	0.1%	0.1%	429%
Retail	2.4%	2.9%	77%
Sovereign	0.0%	0.0%	1300%
Supermarkets & Drug Stores	4.0%	4.5%	91%
Telecommunication	22.4%	25.2%	91%
Textiles & Furniture	0.3%	0.2%	185%
Transportation	2.4%	1.5%	239%
Utilities	1.6%	1.8%	90%
Traded Indices	26.0%	12.2%	359%
Total	100.0%	100.0%	114.6%
Total Ex Indices	74.0%	87.8%	80.9%

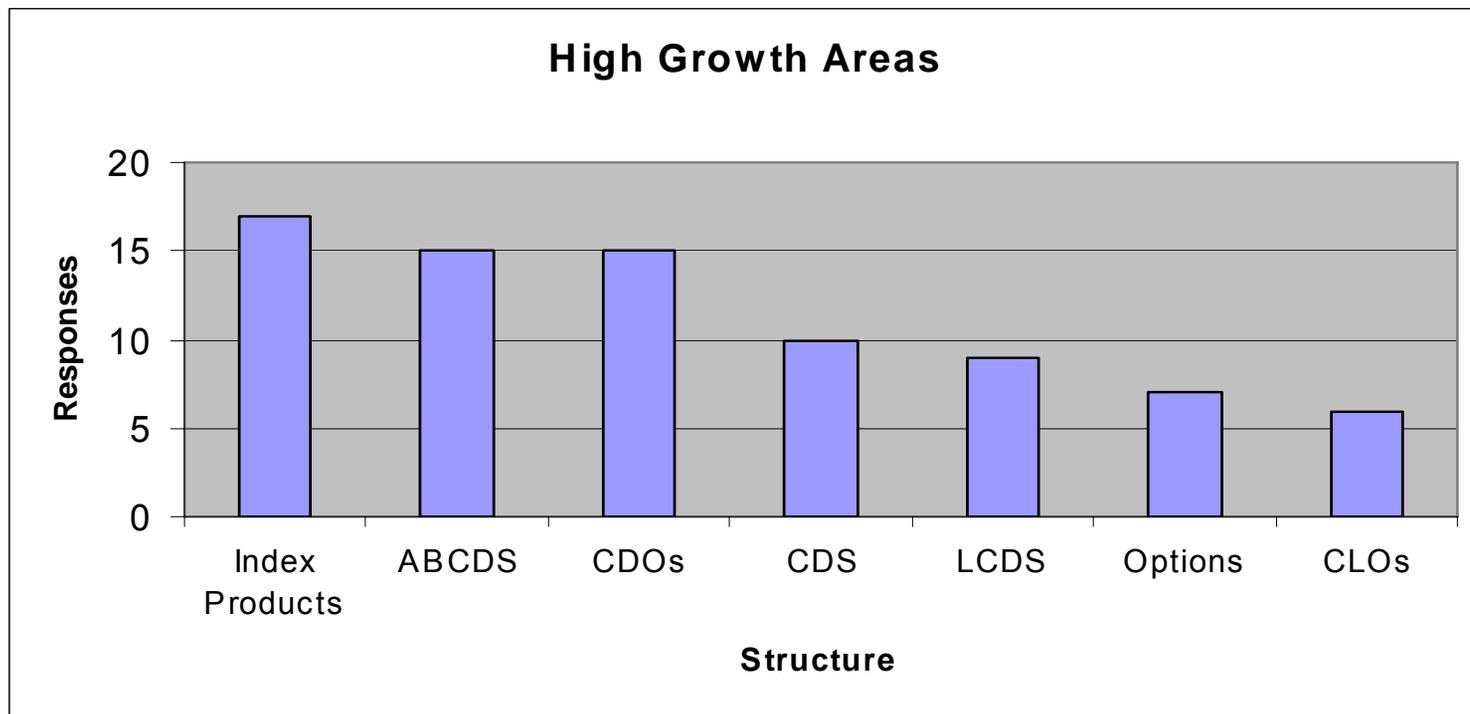
Source: Fitch, GFI



Market Developments and New Structures



CDX Survey – High Growth Areas



Source: Fitch Ratings Global Credit Derivatives Survey, September 2006



Traded Indices Are A Big Deal

	Series	Reference Entities
CDX	NA Investment Grade	125
	NA IG High Volatility	30
	NA Crossover	35
	NA High Yield	100
	NA High Yield BB	variable
	NA High Yield B	variable
	Emerging Markets Sovereign	14
	Emerging Markets Diversified	40
	Asset Backed (HE)	20
	LevX (Europe)	35
iTraxx	Europe	125
	Europe High Volatility	30
	Crossover	40
	CJ (Japan)	50



ABS CDS – ISDA Launches Pay As You Go (PAUG)

- > Standardized documentation and market standards
- > Created primarily for RMBS and CMBS
- > Designed to mirror cash markets
- > Credit Events - Two-way: FTP principal, principal writedown, interest shortfall; One-way: distressed ratings downgrade ('CCC' or lower), maturity extension
- > Option for the protection buyer to physically settle all or part of a reference asset in case of FTP principal, principal writedown, and distressed downgrade
- > Reference obligation is a specific tranche
- > Maturity/termination is ABS legal final maturity



ABX.HE – Sub-prime RMBS CDS Index

- > Introduced in January 2006 with three series to date
- > Allows market participants to take a view on subprime RMBS
- > Largest issuers and most liquid RMBS
- > Index constructed by CDS IndexCo LLC, a consortium of 16 investment banks.
- > Reflects aggregate performance of a basket of CDS of subprime RMBS
- > Buyer of Protection = Index Seller = Short Credit Risk
- > Seller of Protection = Index Buyer = Long Credit Risk



ABX.HE Index – Inclusion Rules

- > Each index series consists of a basket of credit default swaps that reference 20 U.S. HEL ABS, all of which are equally weighted
- > Each index is made up of 5 sub-indices based on the class ratings of the HEL ABS
- > One bond from each deal is referenced in each index (AAA, AA, A, BBB, & BBB-)
- > A new series is created every 6 months with CDS referencing a new set of 20 HEL ABS
- > The index trades with the ISDA Pay-As-You-Go (PAUG) template designed to closely mimic cashflows of underlying bond

Reference Obligation Guidelines

Minimum deal size of \$500M

No more than four deals with same originator

No more than six deals with same master servicer

Each tranche must have a weighted avg life of 4-6 years (AAA tranche must be > 5 yrs)

Must be issued within past 6 months of series roll

At least 90% of deal's assets comprise 1st lien mortgages

Weighted Avg FICO score < 660

Referenced tranches must pay interest at 1mLIBOR

Deals must pay on the 25th of each month



ABX.HE

RMBS 1 RMBS 2 RMBS 3 RMBS 4 RMBS 5 RMBS 6 RMBS 7 RMBS 8 RMBS 9 RMBS 10 RMBS 11 ... RMBS 20

'AAA' RMBS	...	'AAA' RMBS											
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ABX.HE.AAA

'AA' RMBS	...	'AA' RMBS											
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ABX.HE.AA

'A' RMBS	...	'A' RMBS											
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ABX.HE.A

'BBB' RMBS	...	'BBB' RMBS											
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ABX.HE.BBB

'BBB-' RMBS	...	'BBB-' RMBS											
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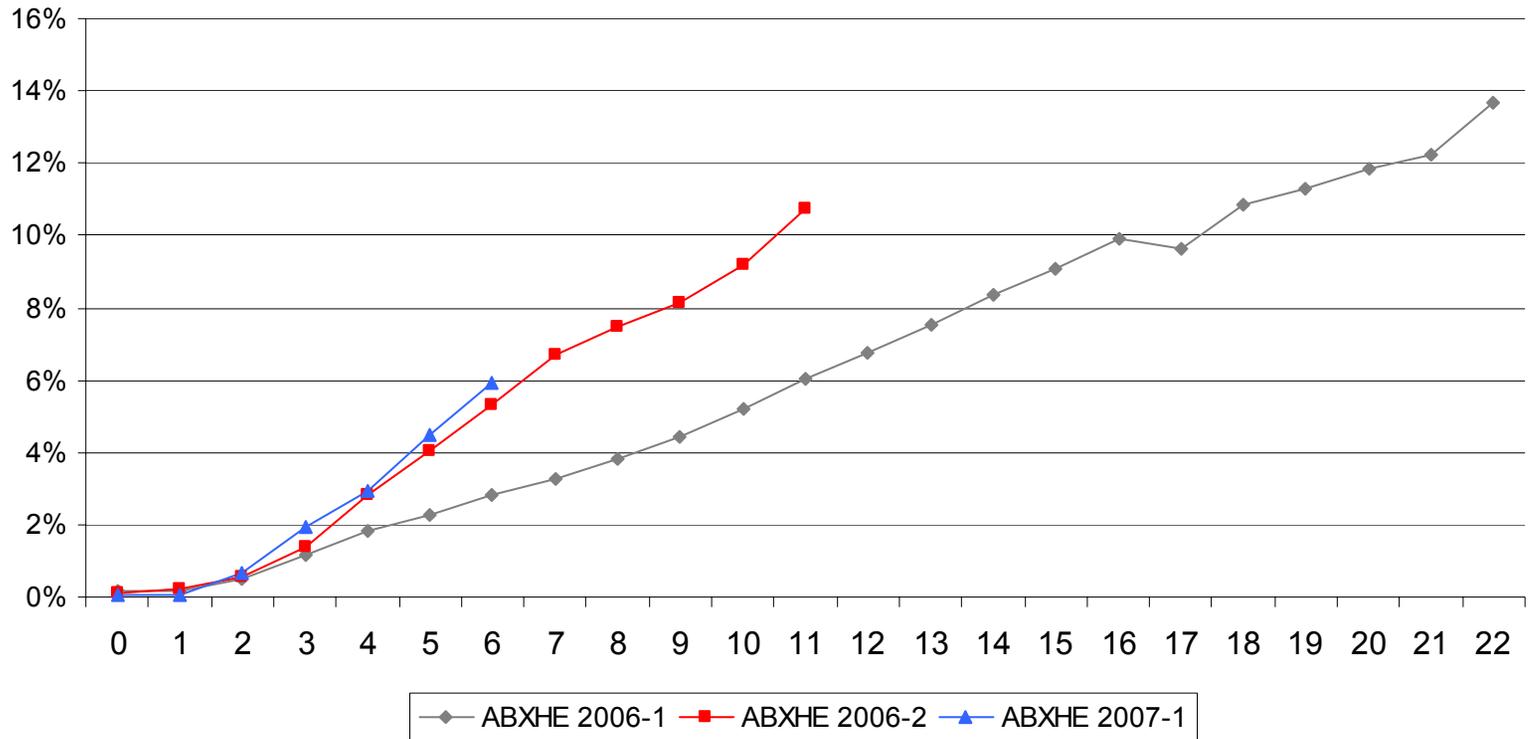
ABX.HE.BBB-

Residual	...	Residual											
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ABX.HE 06-02 & 07-01 – Underperforming 06-01

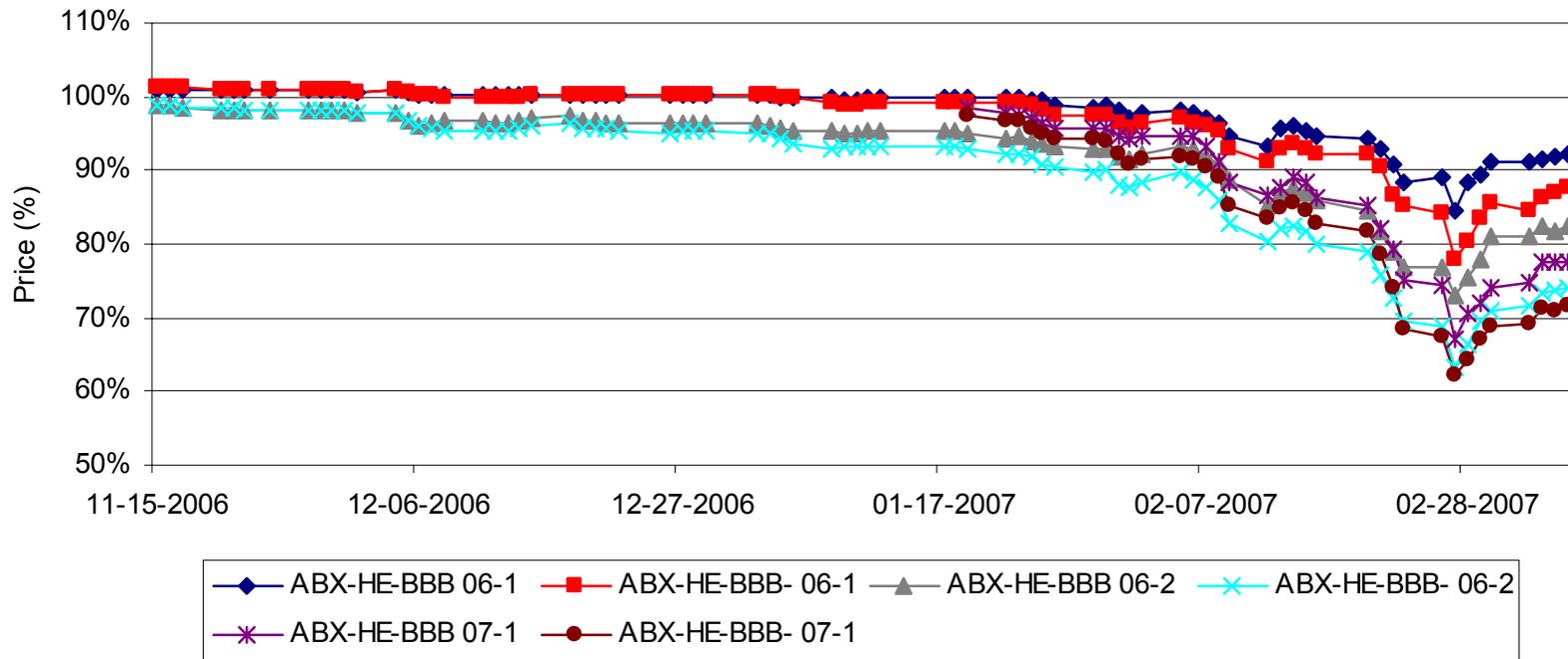
ABX.HE Delinquencies of 60 Days or More
As of January 2007





ABX.HE 06-02 and 07-01 Relative Price Declines

ABX-HE-BBB and BBB- Price History
As of March 8, 2007





TABX.HE Index – Tranching the ABX.HE

- > TABX.HE Asset Portfolio Highlights
 - Available on both BBB and BBB- ABX tranches
 - Portfolios reference 40 bonds from two ABX.HE indices
 - Assets are all subprime RMBS
 - Assets are homogenous by risk profile (initial ratings)
 - Assets are originated in a one year time frame

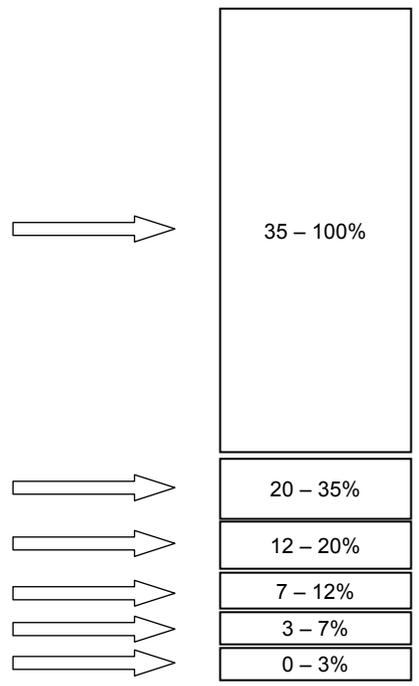


TABX.HE Index

TABX.HE.BBB Reference Obligations

ABX.HE.BBB 06-2 Portfolio	ABX.HE.BBB 07-1 Portfolio
'BBB' RMBS 1	'BBB' RMBS 1
'BBB' RMBS 2	'BBB' RMBS 2
'BBB' RMBS 3	'BBB' RMBS 3
'BBB' RMBS 4	'BBB' RMBS 4
'BBB' RMBS 5	'BBB' RMBS 5
'BBB' RMBS 6	'BBB' RMBS 6
'BBB' RMBS 7	'BBB' RMBS 7
'BBB' RMBS 8	'BBB' RMBS 8
.	.
.	.
.	.
'BBB' RMBS 20	'BBB' RMBS 20

TABX.HE.BBB Tranches





Loan-Only Credit Default Swaps (LCDS)

- > ISDA released standardized LCDS confirm
- > LevX Loan CDS Index trading in the European Market
- > European form trades with restructuring and is cancelable if loan facility pays down
- > US form generally not cancelable; restructuring credit event not an option
- > Significant differences in the investment community currently exist; natural hedgers generally prefer cancelability and restructuring while most sellers of protection don't
- > Reconciliation could lead to significant use of LCDS – indices and synthetic CDOs
- > Physical settlement via assignment or participation; partial cash settlement option
- > “Relevant Secured List” of deliverable obligations maintained by third party provider (for US form)



Vanilla CDS vs. LCDS

	Vanilla CDS - US	Vanilla CDS - Europe	LCDS - US	LCDS - Europe
Quality	IG to HY	IG to HY	Focused on HY	Focused on HY
Seniority	Typically senior unsecured	Typically senior unsecured	Typically senior secured (1st lien); 2nd and 3rd lien options	Typically senior secured (1st lien); 2nd and 3rd lien options
Recovery	wide ranging, though moderate on average	wide ranging, though moderate on average	Likely high, particularly for first lien Only if no obligations at required seniority are outstanding	Likely high, particularly for first lien Yes, if reference obligation ceases to exist
Cancelability	No	No		
Credit Events	Typically Bankruptcy, FTP, and for investment grade entities, Restructuring	Typically Bankruptcy, FTP, and Restructuring	Bankruptcy and FTP	Bankruptcy, FTP, restructuring
Settlement	Typically physical, movement towards cash settlement	Typically physical, movement towards cash settlement	Physical through assignment or participation (or partial cash)	Physical through assignment or participation (or partial cash)
Deliverables	Typically senior unsecured bonds	Typically senior unsecured bonds	From "Relevant Secured List" consisting of syndicated secured loans	Typically a specific syndicated secured loan facility



Sources of Basis Risk

STRUCTURAL SOURCES OF BASIS RISK	TYPICAL INSTRUMENT AFFECTED	EFFECT ON NOMINAL SPREAD				EFFECT ON BASIS*	
		BONDS	LOANS	CDS	LCDS	CDS-Bond Spread	CDS-Loan Spread
Callability (or ability to prepay/refinance)	Some HY bonds & loans	↑	↑			↓	↓
Cancelability	European CDS				↑		↑
Covenants							
Coupon Step-Up	Some IG Bonds and Loans	↓	↓			↑	↑
Coupon Step-Down	Some leveraged loans		↑				↓
Negative Pledge, Change/Control, Financial	Principally HY bonds or LL	↓	↓			↑	↑
Lack of voting rights	LCDS				↑		↑
Restructuring (CDS)							
None	US HY/LCDS			↓	↓		↓
Full, MR, MMR	Japan, US IG, Europe			↑	↑		↑
Cheapest to Deliver	CDS and LCDS			↑	↑	↑	↑
Documentation/Trading Ease/Funding	LCDS				↓		↓
MARKET TECHNICALS		↑↓	↑↓	↑↓	↑↓	↑↓	↑↓

* Basis = (L)CDS level - Cash Instrument Spread*

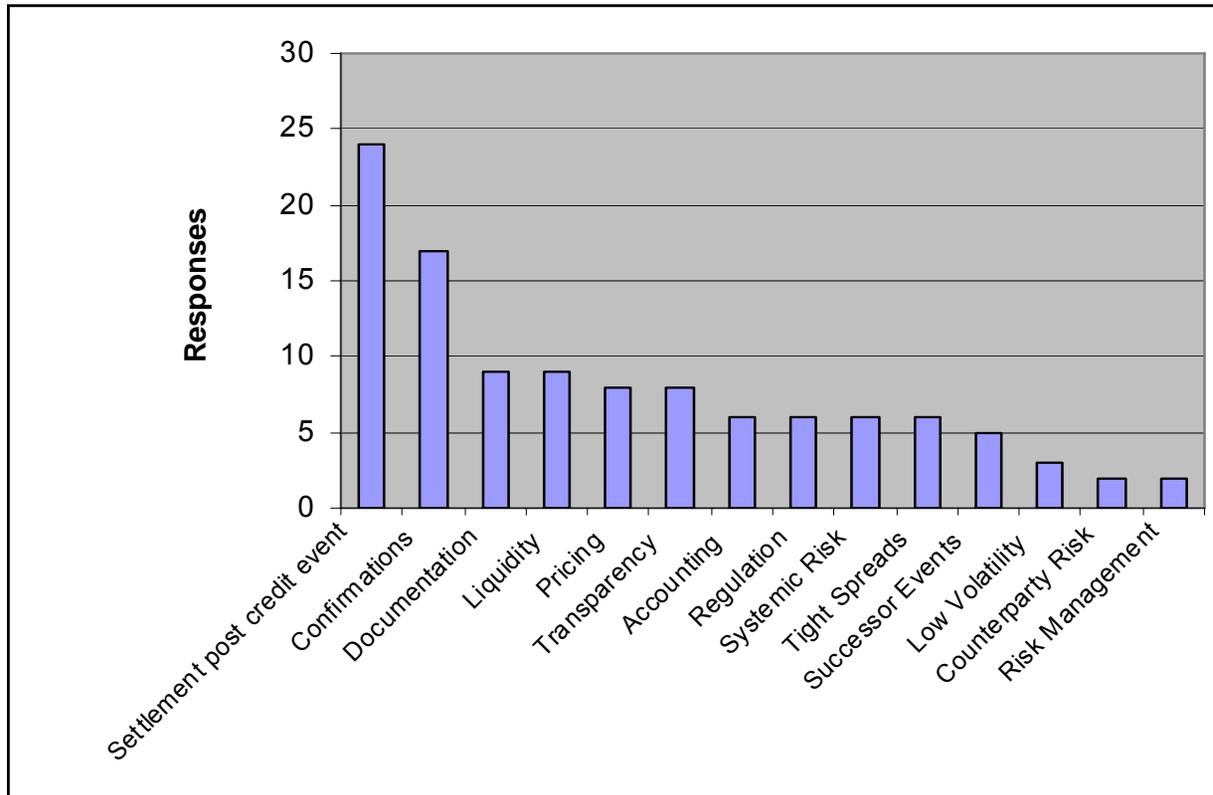


Credit Market Implications

- > Areas of concern
- > CDS and the cash market
- > The “Basis”



CDX Survey – Areas of Concern



Source: Fitch Ratings Global Credit Derivatives Survey, September 2006



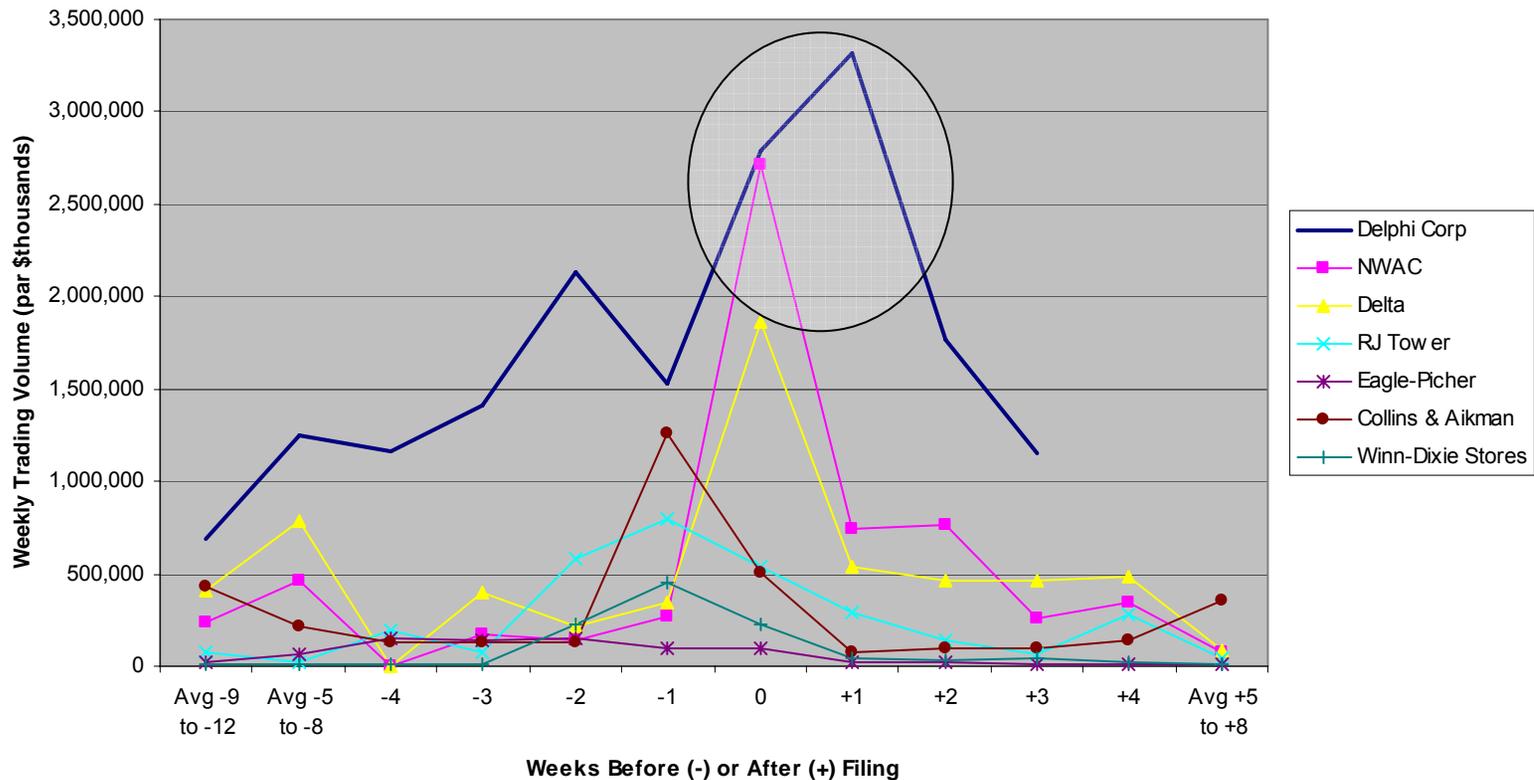
CDS Implications for Cash Credit Markets

- > Physical settlement — short squeeze (Delphi)
 - Market technicals related to the settlement of CDS can impact deliverable (cash) pricing
 - New ISDA Protocol allows for the cash settlement of not only indices, but also single-name and other structures – a positive development; Dura (small issue) was first test
- > Spin-off/LBOs/Refinancing
 - Different treatment/return profile of bond and CDS investors (“successor” language)
 - Possibility of “orphaned” CDS anytime debt is paid down
- > Impact on pricing and structure
 - Numerous investors engaging in strategies that play both markets
 - Cash market pricing can be affected by CDS action (e.g., settlement, basis trades)
 - Terms of corporate issuance can be affected by CDS (e.g., GUS/Experian, Liberty Global)
- > Moral hazard risk -- investors with cash and CDS positions



Cash Market Technicals & Credit Derivatives Settlement Bond Trading Volume in Relation to a Bankruptcy Filing

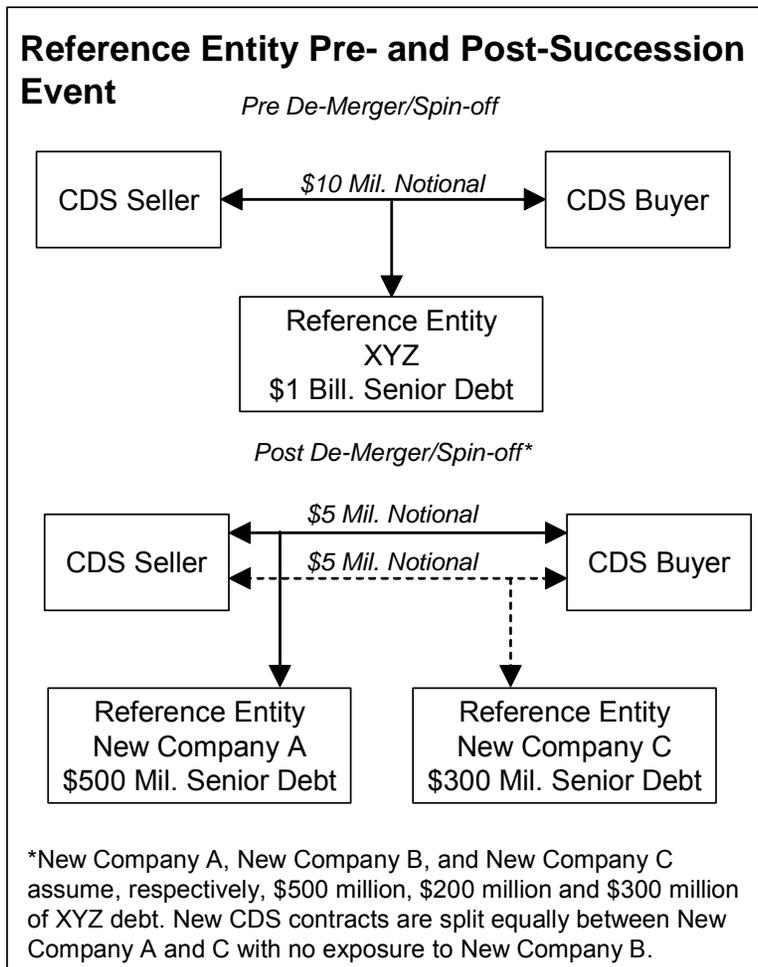
Weekly Bond Trading Volume of Bankrupt Companies 2005



Source: Fitch, MarketAxess



Spin-off/De-Merger Succession Event





Basis

- > The “Basis” between CDS and Cash Instruments is an important concept
- > “Comparable” CDS and Cash positions can deviate significantly
- > Technical market factors can play a huge roll
- > Demand for synthetic structured products can compress basis
- > Ability to readily short credit through CDS make structure the vehicle of choice
- > Hedge funds play a huge role in market – approximately 50% of trading
- > ABX and CDX show how abruptly derivatives can react to market developments



Evaluating Market Risk



Living in a Mark-to-Market World

- > Synthetic CDO are complex deals
- > Credit risk often secondary to market risks
- > In addition to credit risk investors need to understand
 - Accuracy of valuations
 - How this varies in different market conditions
 - Market risk exposures, e.g. sensitivity to credit spreads or correlation
- > To do this investors need a tool that:
 - Is independent
 - Uses standardized analytics
 - Has good quality data



Synthetic CDO Market Risk Sensitivities

Reference Entry Sensitivities

DV01

Deltas

Default exposure

Tranche Sensitivities

S.DV01

Corr 01

Theta

Correlation steepening

IR01

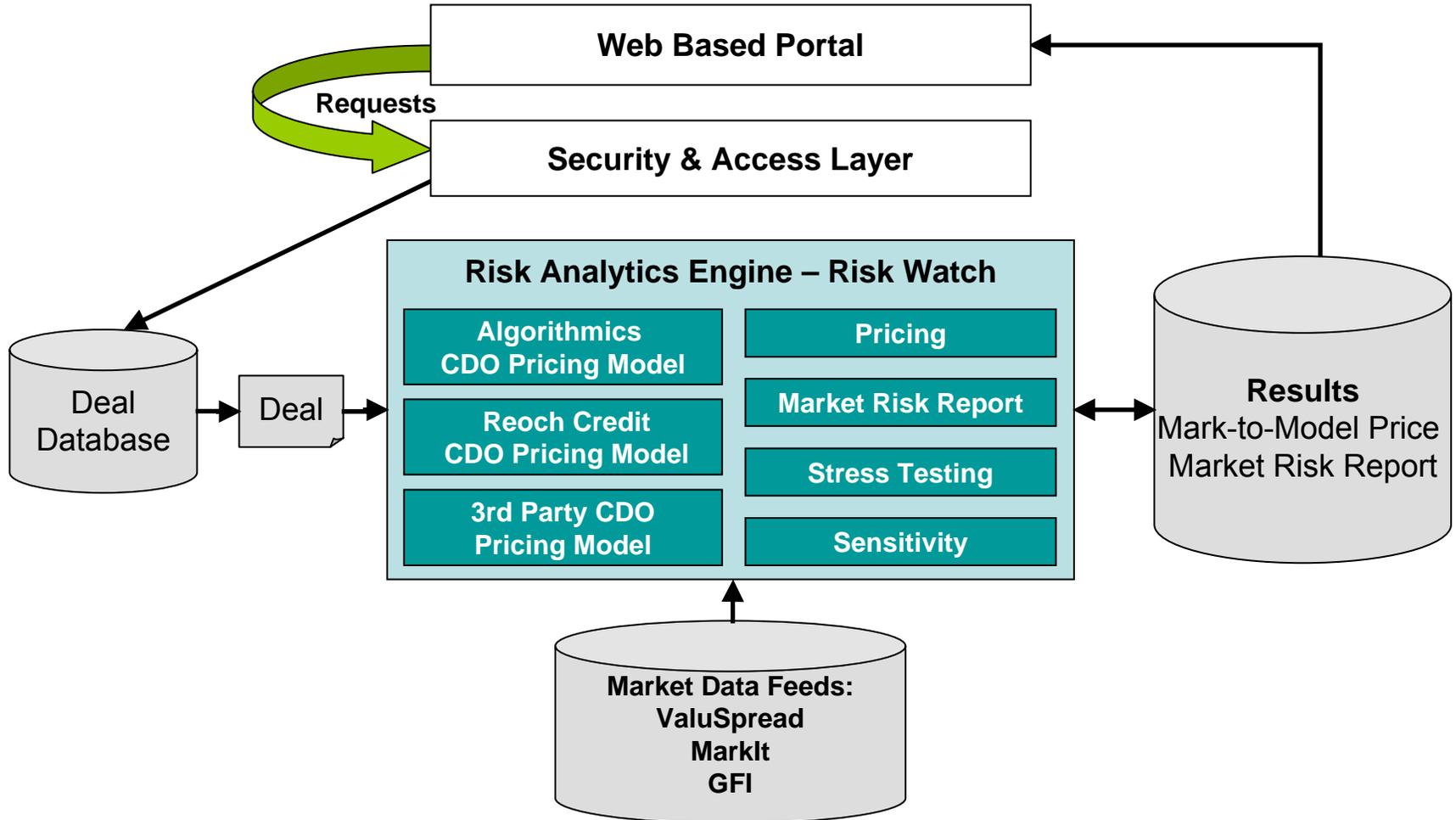


Risk Analytics Platform for Credit Derivatives (Fitch's RAP CD)

- > Market risk sensitivities and stress test results
- > Independent modelled price
- > Independent market data
- > Independent, market standard, well tested analytics & pricing methodologies
- > Portfolio-wide analysis
- > Market risk analysts available
- > Hosted service so few internal infrastructure needs



Fitch RAP CD





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