



Synthetics Developments @ Fitch

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Credit Products

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FitchCDx.com

Fitch CDx *insight beyond the trade*

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Assessment: New Entities Within iBoxx CDx Indices

Fitch Ratings, the international rating agency, has updated its analytical coverage of iBoxx's two more actively traded indices: the Diversified (European) index and North America Investment Grade CDS Index.

The analytical coverage of the Diversified index has been updated to reflect the new 'on-the-run' membership list issued on 4 March 2004; transactions based on the new membership list close on 22 March 2004, and will have a maturity date of 22 June 2009.

[Click here for press release](#)

Default Correlation Impacts Portfolio Credit Risk

Two portfolios that appear to be equally diverse may actually experience vastly different default performance. Fitch examines the issue of portfolio diversification and empirically derives industry and regional correlations, and its implications for analysis of Nth to Default and CDO structures.

[Click Here to View the Report](#)

CDS Market Data: Industry Movers

Fitch Industry	Weekly Spread Change (bps)	% Change	# Assets
Tightening			
Sovereign	(7)	(2.7) %	13
Paper & Forest Products	(4)	(3.0) %	6
Building & Materials	(2)	(2.5) %	11
Widening			
Computers & Electronics	8	9.5 %	10

TOP20 Reference Entities*

[Top 100 Reference Entities >>](#)

[Reference Entity Headlines >>](#)

- FORD MOTOR CO BBB+
- GENERAL MOTORS ... BBB+
- HEWLETT-PACKARD... A
- DUKE ENERGY COR... BBB+
- ALTRIA GROUP IN... BBB
- TEXTRON INC A-
- DAIMLERCHRYSLER... BBB+
- SEARS, ROEBUCK ... BBB+
- ROLLS ROYCE PLC
- BOEING CO A+
- VERIZON COMMUNI... A+
- CARNIVAL CORP A-
- GENERAL ELECTRI...
- COMPAGNIE DE SA... A
- DOW CHEMICAL CO... A-
- STMICROELECTRON...
- MBIA INSURANCE ...
- MOTOROLA INC BBB
- BRITISH AMERICA... A-
- CATERPILLAR INC A+

* Represents a monthly measure of the most actively referenced names derived from Fitch's proprietary 'Synthetic Index' of rated synthetic CDOs. For a complete list of Fitch's Top 100 Reference Entities, see Reference Entities under Market Watch.

FitchCDx.com — Dynamic Content

- Weekly industry “top movers”
- Top reference entities
- Top credit events
- Frequent market commentary and research
- CDx analytical data

FitchCDx.com Coming Attractions

- Fitch global CDx survey (2003 update)
- Finer detail and analytical tools for top reference entities
- Independent studies
- More market analytics/research
- Fitch CDO S.M.A.R.T. links

FitchRatings

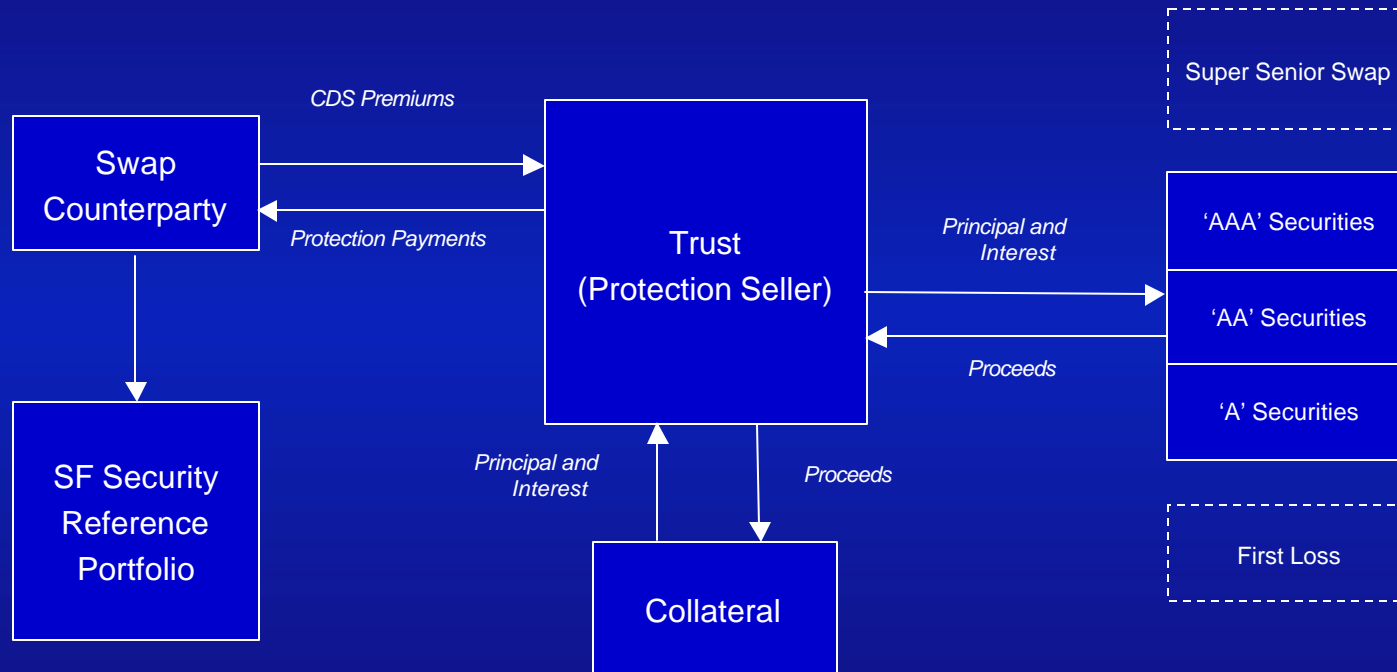
Synthetic Structured Finance CDOs

Background

➤ Key Growth Drivers

- High level of investment grade corporate defaults experienced in 2001 and 2002
- Continuing tight spreads environment
- Stability of ABS asset class
- Greater abundance of highly rated reference entities
- Greater acceptance of CDOs

Structure



SF – Structured finance. CDO – Collateralized debt obligation. CDS – Credit default swap.

Portfolio Characteristics

➤ SF Security Asset Types

- CMBS
- RMBS
- Consumer ABS
- Commercial ABS
- REITs
- CDOs

Portfolio Characteristics

- Typically reference portfolios of
 - 60-80 senior SF security tranches
 - Usually rated 'A' or above
 - High percentage (usually 75% or more) rated 'AAA'
- Reference a specific tranche and these must consider
 - Position in the underlying transactions capital structure
 - Prioritization of interest and principal cash flows
 - Allocation of losses
 - SF security asset type

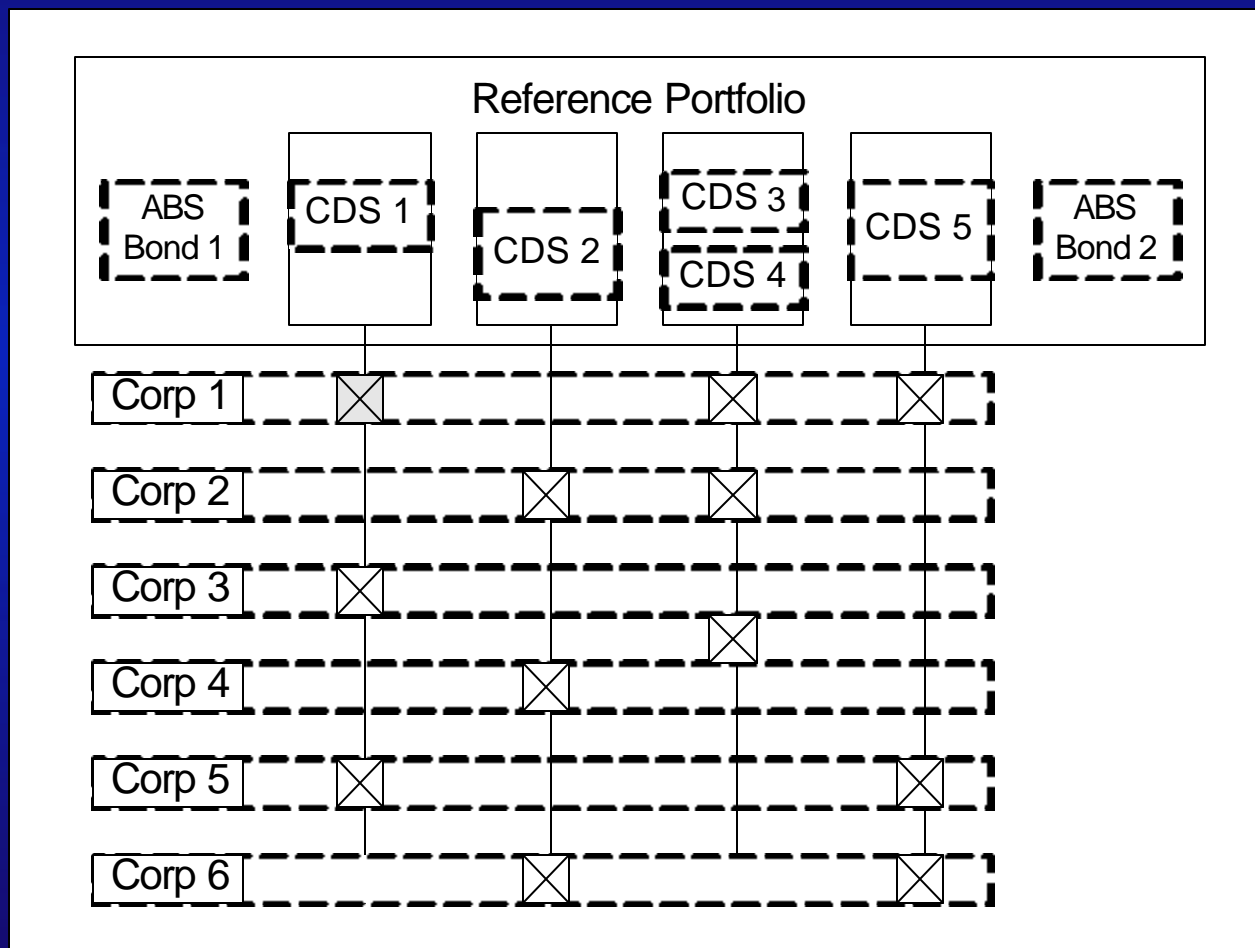
Credit Events

- Bankruptcy
- Failure to pay (FTP)
 - FTP interest
 - FTP principal
- Write down or allocation of losses prior to SF security maturity date
- Restructuring
- Ratings downgrade

Credit Events

- Credit event (CE) language should result in exact alignment with actual economic losses experienced on the widely SF securities
- Fitch examines CE language to determine possibility of triggering soft CEs.

CDO² Structure



CDO Squared — Correlation

➤ 3 Key Findings from Fitch Study

1. “Correlation between CDO tranches in a CDO Squared transaction is generally significantly higher than correlation between stand alone corporates in a typical CDO”
2. “The correlation between the underlying corporate reference entities is a key driver of default correlation between CDO tranches”
3. Recovery Rates are a function of CDO tranche thickness

CDO Correlation – Number of Corporates

Number of Corporates	20	40	60	80	100
CDO Default Correlation	4.6%	13%	15.3%	22.3%	28%

Assumptions:

Pairs of BBB rated CDO tranches, No overlap; asset correlation 15%

CDO Correlation — Overlap

Overlap	0%	10%	20%	30%	40%
CDO Default Correlation	28%	32%	36%	40%	44%

Assumptions:

Pairs of BBB rated CDO tranches, 100 underlying corporates; asset correlation 15%

CDO Correlation Vs. Asset Correlation Between Corporates

Underlying Corporate Correlation Assumptions							
Intra Industry	30%	30%	30%	30%	30%	30%	30%
Inter Industry	0%	5%	10%	15%	20%	25%	30%
Credit Enhancement at Master CDO level							
AAA	24%	40%	48%	65%	84%	92%	96%
A	9.5%	14%	16%	20%	32%	34%	40%

- High CE for the master CDO
- CE very sensitive to the level of 'inter' industry correlation between the underlying corporates

CDO Correlation — Industry And Regional Diversity Within The Underlyings

- Asset Correlation is higher within industries and within regions compared to between regions and industries
- Portfolios concentrated in particular regions/industries should be less correlated

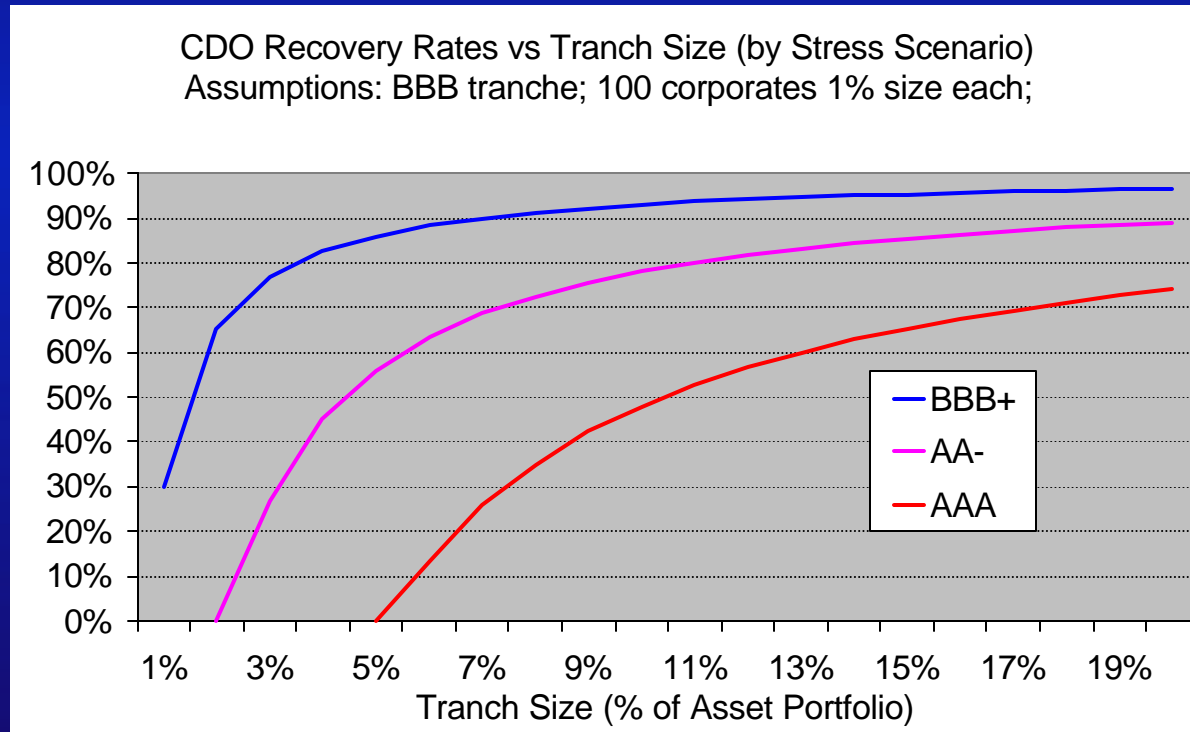
Asset Correlation WITHIN Portfolio	15%	20%	25%	30%
CDO Default Correlation	28%	15.5%	10.2%	6.6%

Assumptions:

- 15% Asset Correlation between asset from different portfolios
- Pairs of BBB rated CDO tranches, No overlap; 100 names per portfolio

CDO Recovery Rates

- Recovery Rates increase significantly as the tranche size increases



FitchRatings

Credit Events and the Valuation Process -2003 Update-

Summary Study Findings 2003

- Record volume of CEs called in 2003.
- Higher concentration of CEs in a smaller number of reference entities.
- Restructuring accounted for 24.0% of CEs
- Parmalat exposure is the single largest to date.

Summary Study Findings 2003

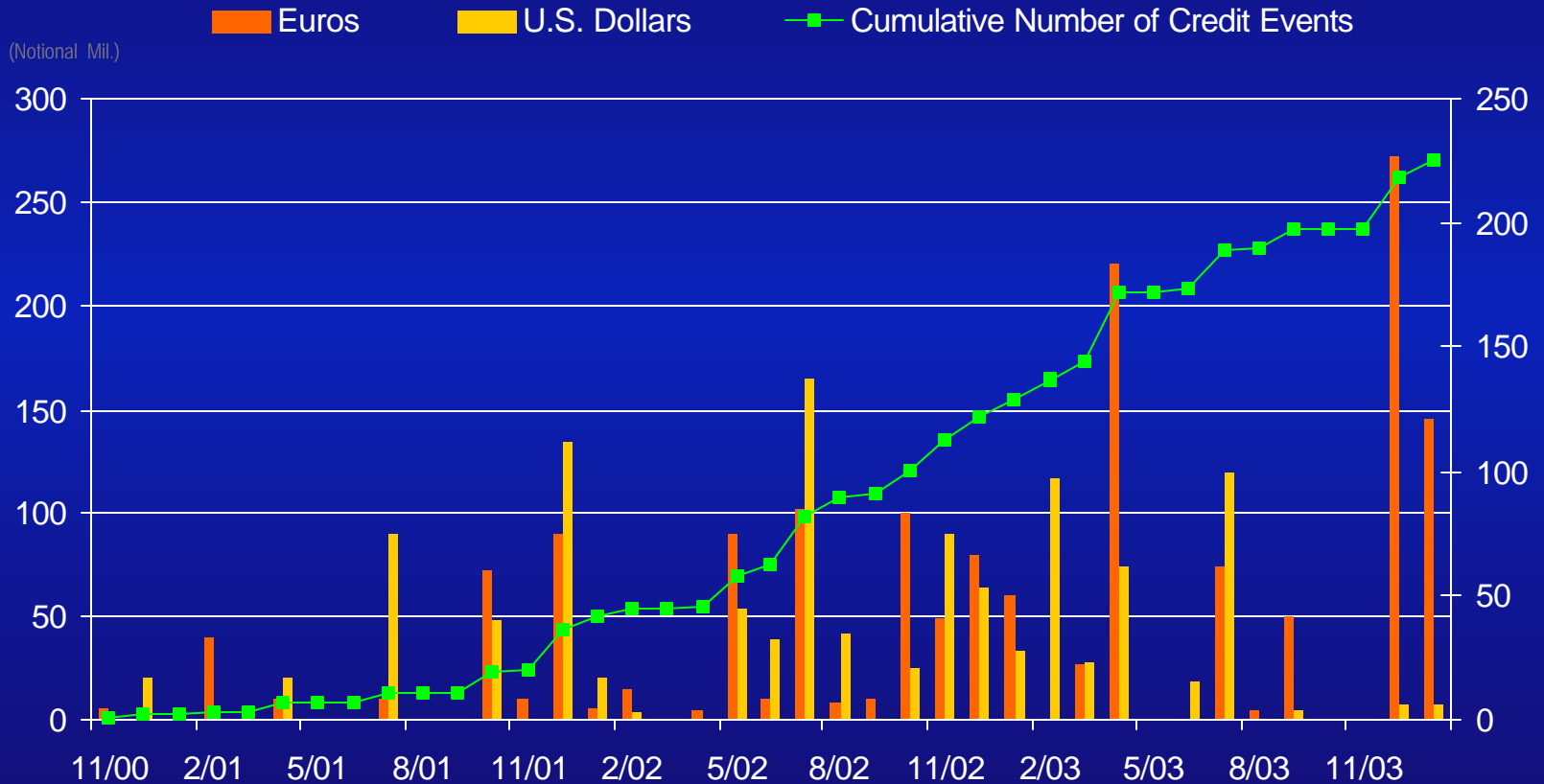
- The greater the number of bids, the higher the recoveries
- Length of the valuation process impacts recoveries
- Below average recoveries for CDOs with a limited number of bidders which also included the calculation agent.
- Inconsistency in the documentation for the valuation process

Credit Event Volume

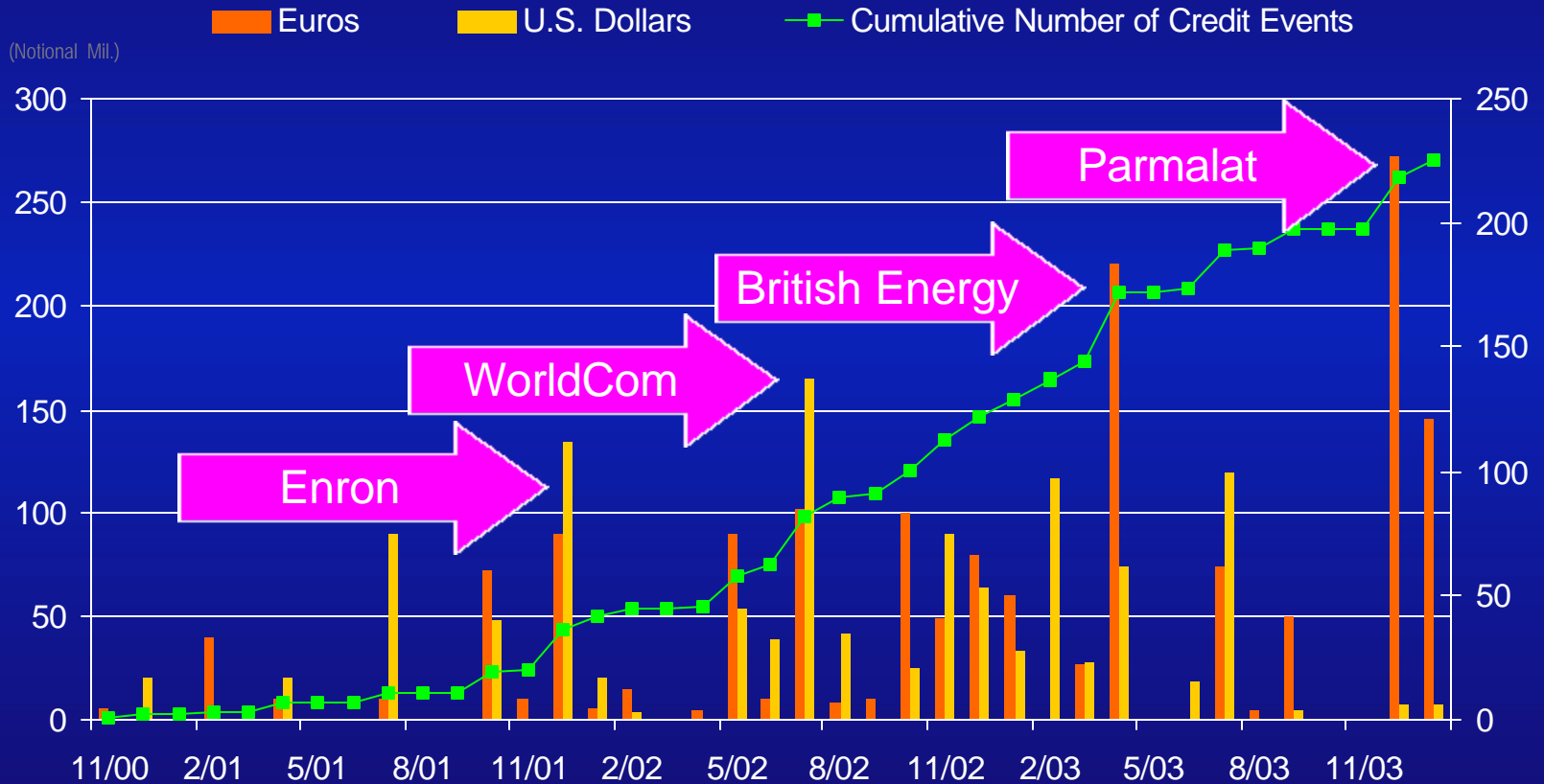
	2000	2001	2002	2003	As of 1/15/04	Total
Euros (EUR Mil.)	5.5	232.5	476.9	709.0	146.0	1,569.9
U.S. Dollars (USD Mil.)	20.0	293.5	504.8	402.8	7.5	1,228.6
No. of Credit Events	2	34	86	96	7	225
No. of Reference Entities	2	8	19	19	2	50
Fallen Angel Defaults (USD Bil.)	3.7	24.0	35.7	32.4	N.A.	95.8

N.A. – Not Available

Credit Events



Credit Events



Most Common Reference Entities

Reference	No. of CEs	Notional Amts (EUR Mil.)	Notional Amts (USD Mil.)	Ave. Recoveries (%)
British Energy	29	253.4	55.0	60.6
Parmalat	27	397.6	15.0	N.A.
WorldCom	25	106.0	203.5	13.5
Mirant	18	74.3	165.7	41.0
Enron	17	105.0	135.1	14.3

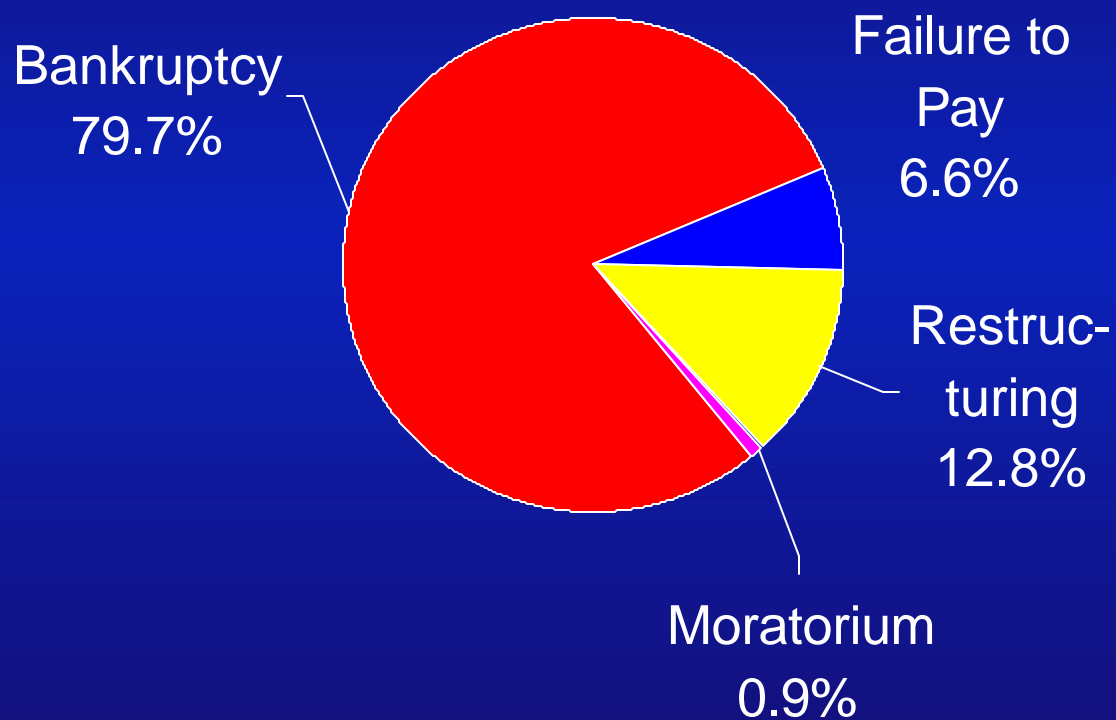
CEs – Credit events N.A. – Not Available

Reference Entities (2003-YTD 2004)

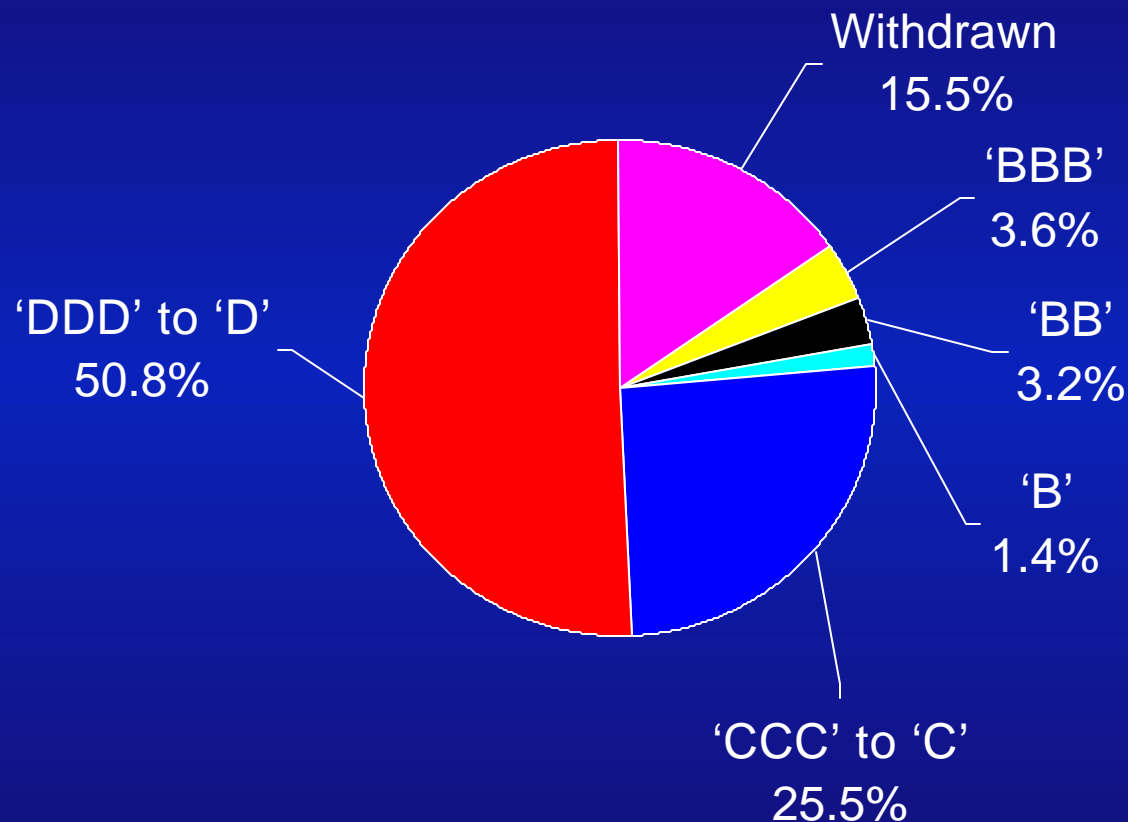
Reference	No. of CEs	Notional Amts (EUR Mil.)	Notional Amts (USD Mil.)
Amerco	3	20.0	-
British Energy	29	253.4	55.0
Equistar	1	-	10.0
Focal Comm.	4	-	52.0
Herfina	1	21.0	-
Mirant	18	74.3	165.7
NorthWestern	1	-	5.0
Parmalat	27	397.6	15.0
Petroleum Geo- Services	1	5.0	-
Southern Energy	1	-	10.0
Trenwick America	1	-	18.3

CEs – Credit events N.A. – Not Available

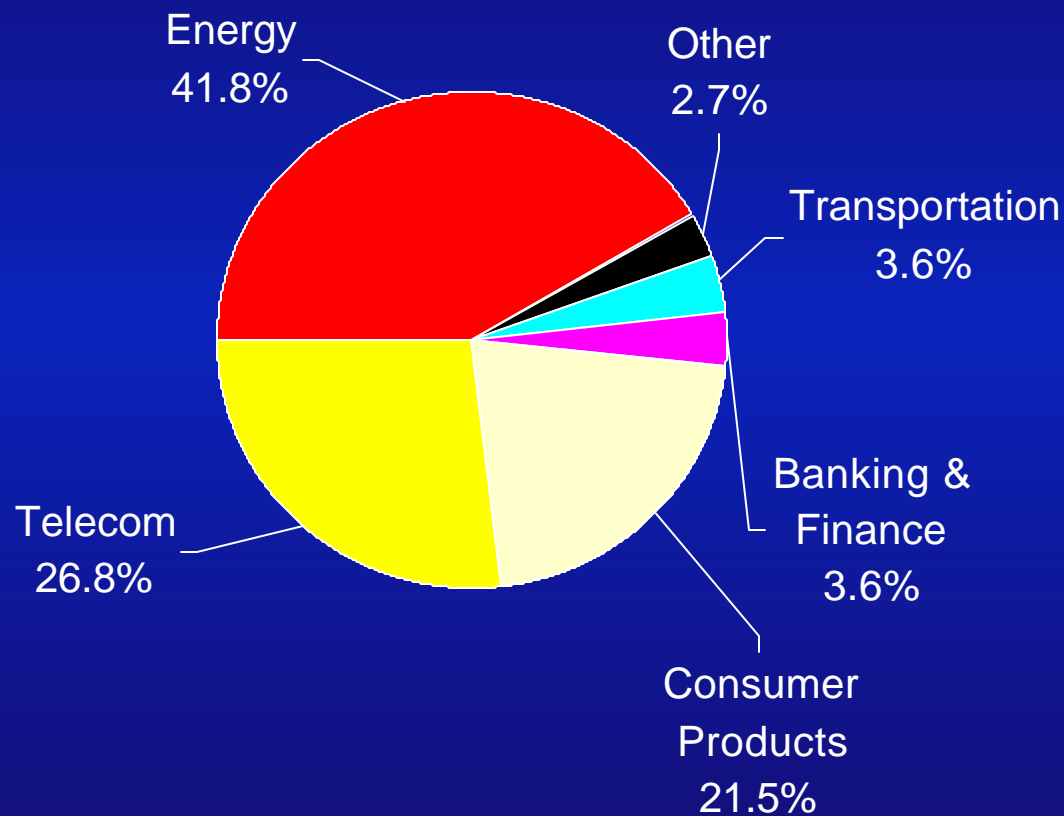
Credit Event Types



Credit Events by Rating



Credit Event Industry Distribution



Fitch Ratings

Fitch's Global Synthetic Index

Global Synthetic Index

What is it?

- The Index represents the Weighted Average Rating (WAR) of all reference entities in Fitch-rated static, synthetic CDOs.
- The Index is updated monthly with the largest cross-holdings reported on FitchCDx.com
- A full report is published quarterly highlighting recent trends in the analysis, including:
 - Performance by vintage
 - Individual deal performance vs the Index

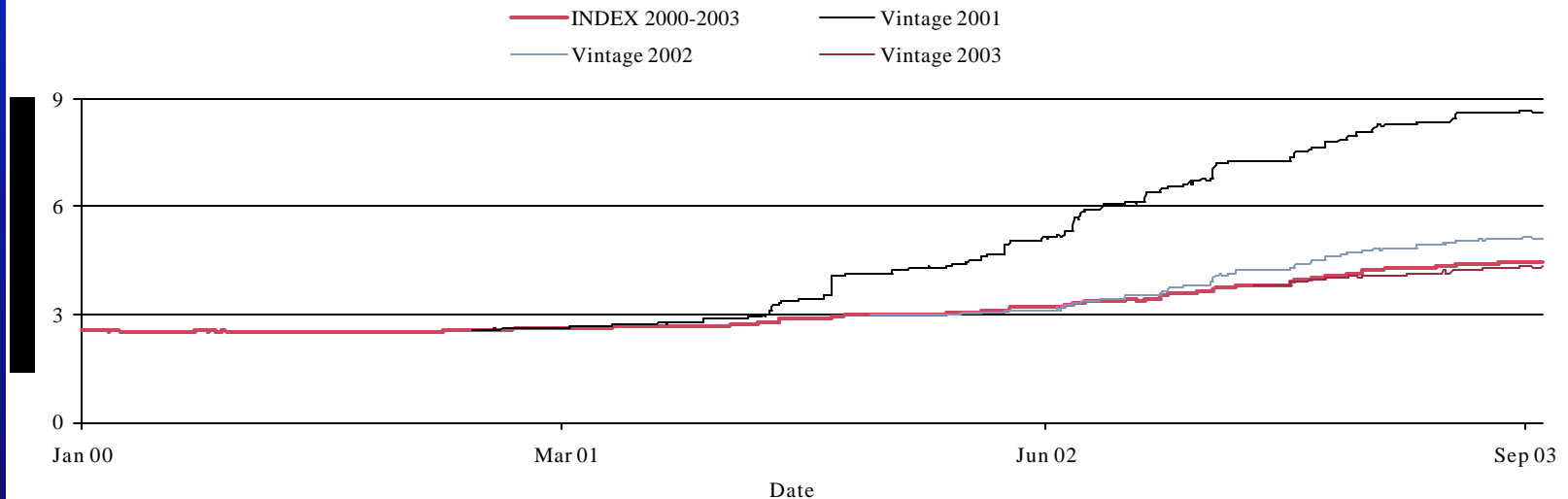
Index Composition

- Portfolios of 220 Synthetic Arbitrage CDOs that have closed since January 2000 are included in the Index:
 - 18 US CDOs
 - 202 European (including 129 underlyings of CDO²)
- The 1,121 reference entities and subsidiaries are linked to create the 953 parent companies that form the basis for Index computation
- Rating changes for each entity are tracked on a daily basis

Index Series- Aggregated CDOs by Vintage

- Vintages 2001, 2002 and 2003 are comprised of 30, 53 and 137 public and private CDOs respectively
- 2001 series underperforms the Index by increasing at a much faster rate
- 2002 series approximately coincides with Index until mid August 2002- then starts underperforming the Index but at a slower rate than 2001 series
- 2003 series tends to outperform the Index

Graph 2: CDOs by vintage Vs Index



Source: Fitch

Rating Migration by Vintage

- Highest negative rating migration occurred in 2002 where the number of “fallen angels” jumped to 78 from 46 in 2001.
- 2002 rating migration most prevalent in the 2001 vintage CDOs

Year-end	Number of Sub-IG names	Number of names affected by Credit Events	Pervasiveness of Credit Events
2000	31	0	
2001	46	2	17
2002	78	8	63
2003	104	14	116

The 10 Most Frequently Referenced Entities

Index Reference Entity	Index Weight	Fitch Current Rating	Fitch Industry	Number of Deals
HEWLETT-PACKARD CO*	0.506%	A	COMPUTERS & ELECTRONICS	129
GENERAL MOTORS CORP	0.478%	BBB+	AUTOMOBILES	125
SEARS, ROEBUCK & CO	0.455%	BBB+	RETAIL (GENERAL)	121
ALTRIA GROUP INC	0.459%	BBB	FOOD, BEVERAGE & TOBACCO	116
DAIMLERCHRYSLER AG	0.420%	BBB+	AUTOMOBILES	109
FORD MOTOR CO	0.408%	BBB+	AUTOMOBILES	109
BOEING CO	0.408%	A+	AEROSPACE & DEFENSE	107
ROLLS ROYCE PLC	0.428%	BBB	AEROSPACE & DEFENSE	107
DUKE ENERGY CORP	0.422%	BBB+	UTILITIES	106
MOTOROLA INC	0.396%	BBB	TELECOMMUNICATIONS	102

*It includes COMPAQ COMPUTER CORPORATION

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