Credit Risk Transfer: Implications for Financial Efficiency and Stability

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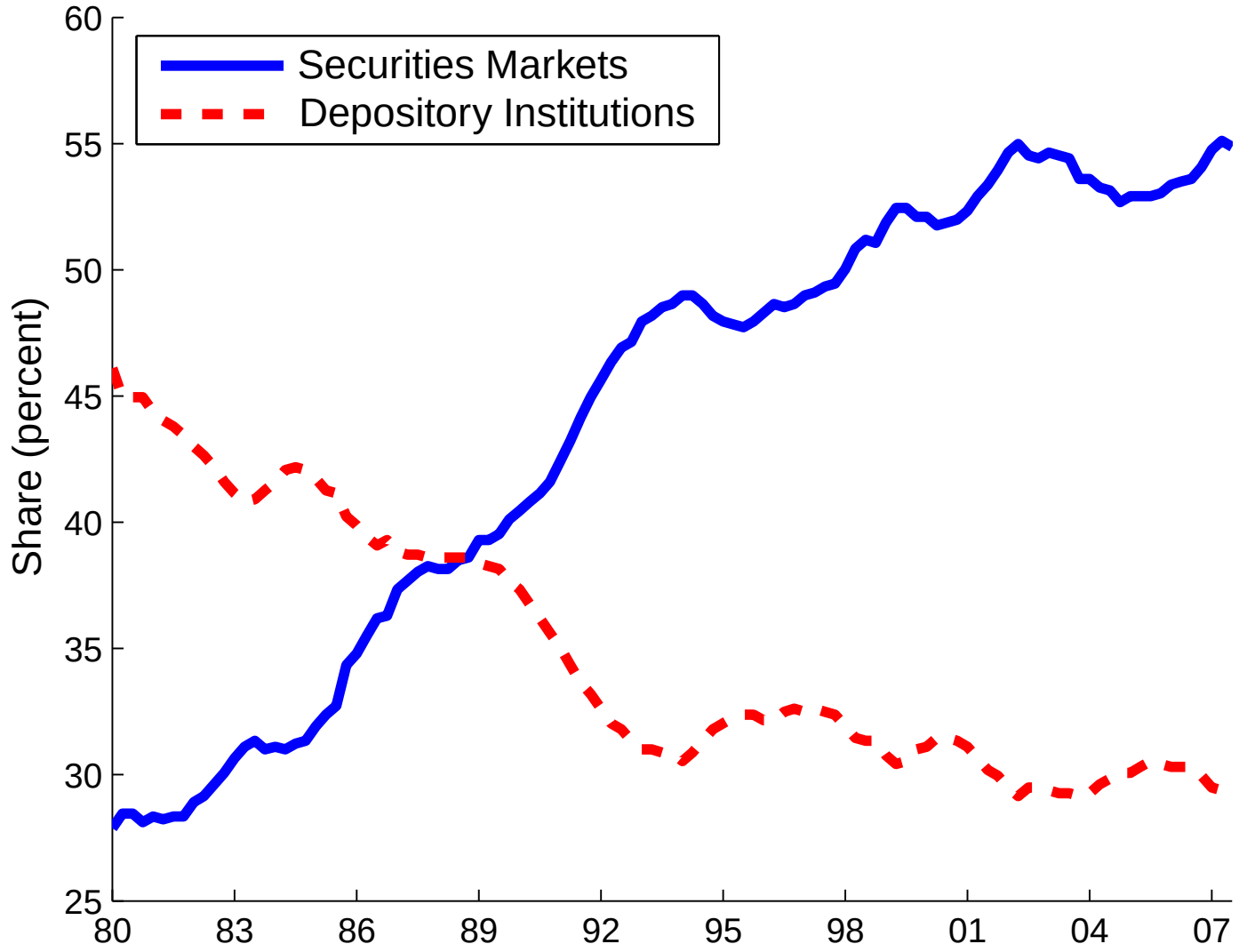
Outline

- What is credit risk transfer all about?
- How is it changing financial markets?
- Implications for financial efficiency and stability?

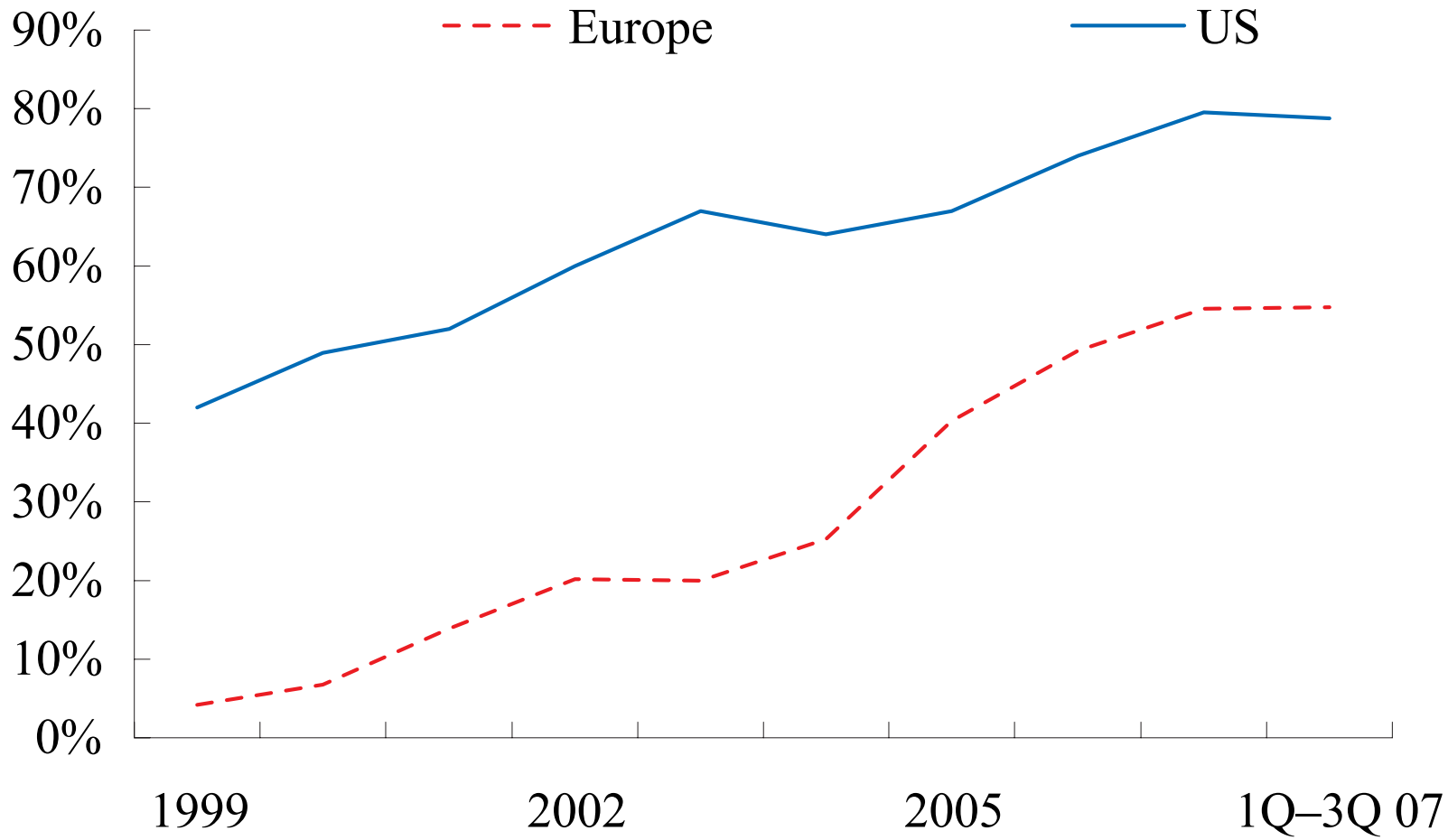
Key Forms of Credit Risk Transfer

- Disintermediation.
- Loan sales and syndication.
- Default swap protection (CDS).
- Asset-backed commercial paper (ABCP) conduits.
- Collateralized debt obligations (CDOs).
- Credit derivative product companies (CDPCs).
- Structured investment vehicles (SIVs) and SIV-Lites.
- Other specialty finance companies.

Figure 1: Share of Private Nonfinancial Debt Outstanding. Source: Morgan Stanley from Federal Reserve Flow of Funds Data.

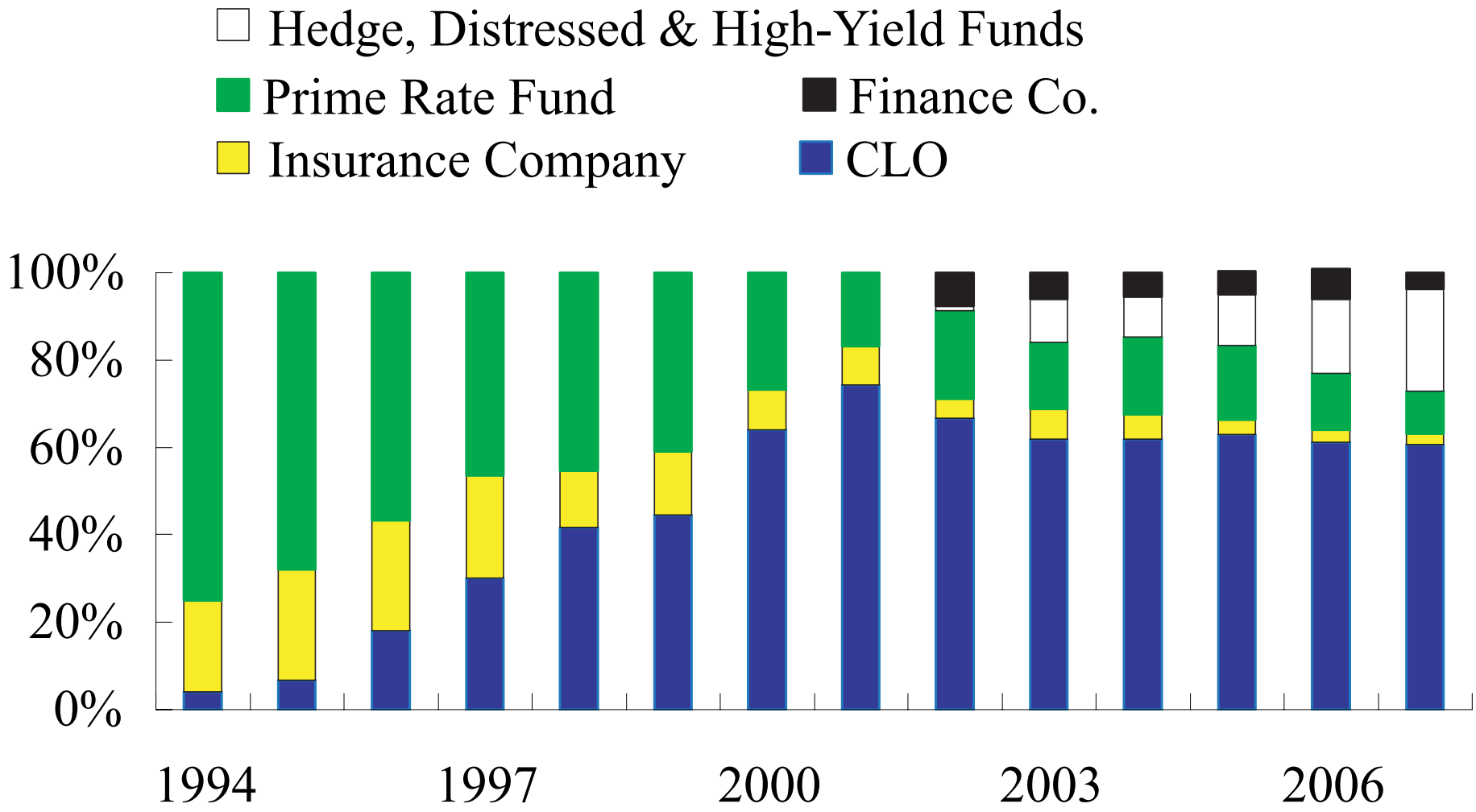


Institutional Investor Share of Primary Leveraged Loan Market



Source: Citibank

US Leveraged Loan Buyers



Source: Citibank

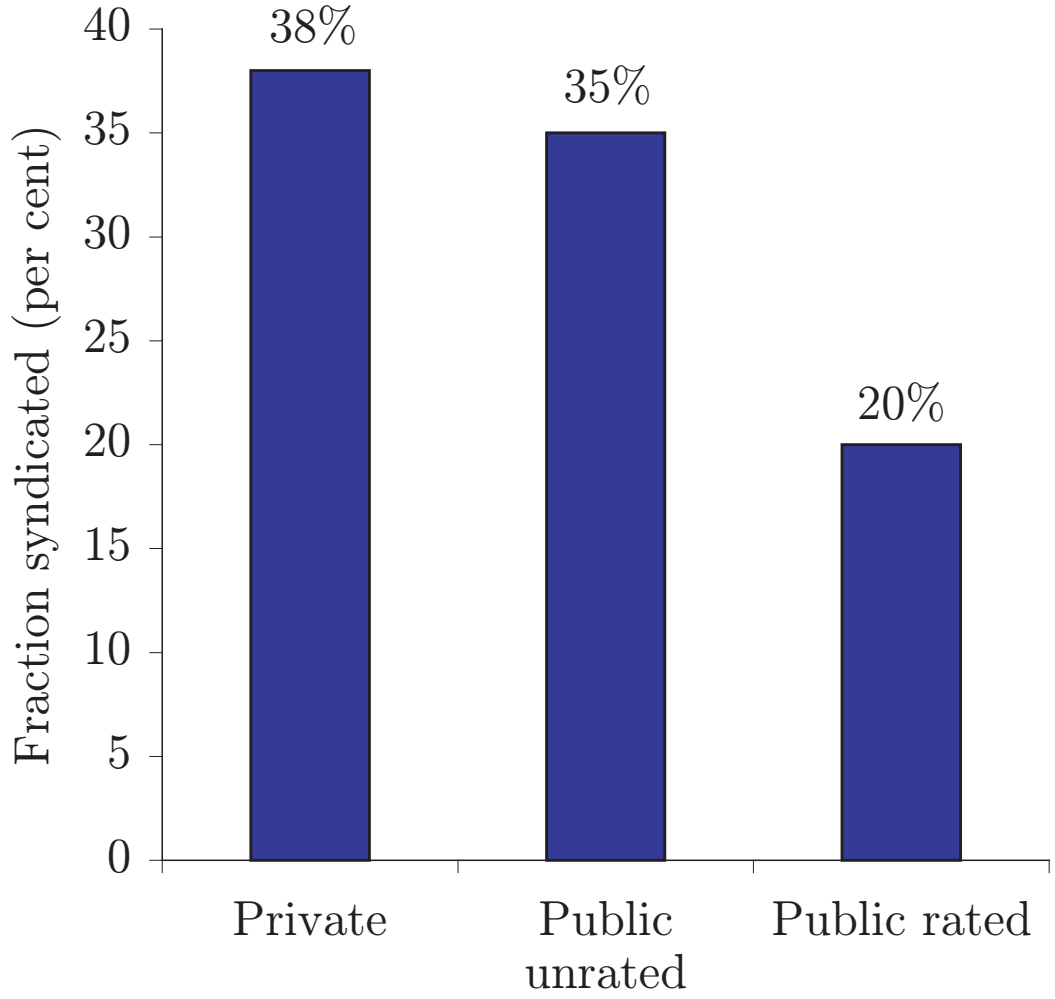


Figure 2: Estimates by Sufi (2007) of syndicated loan retention by lead arranger.

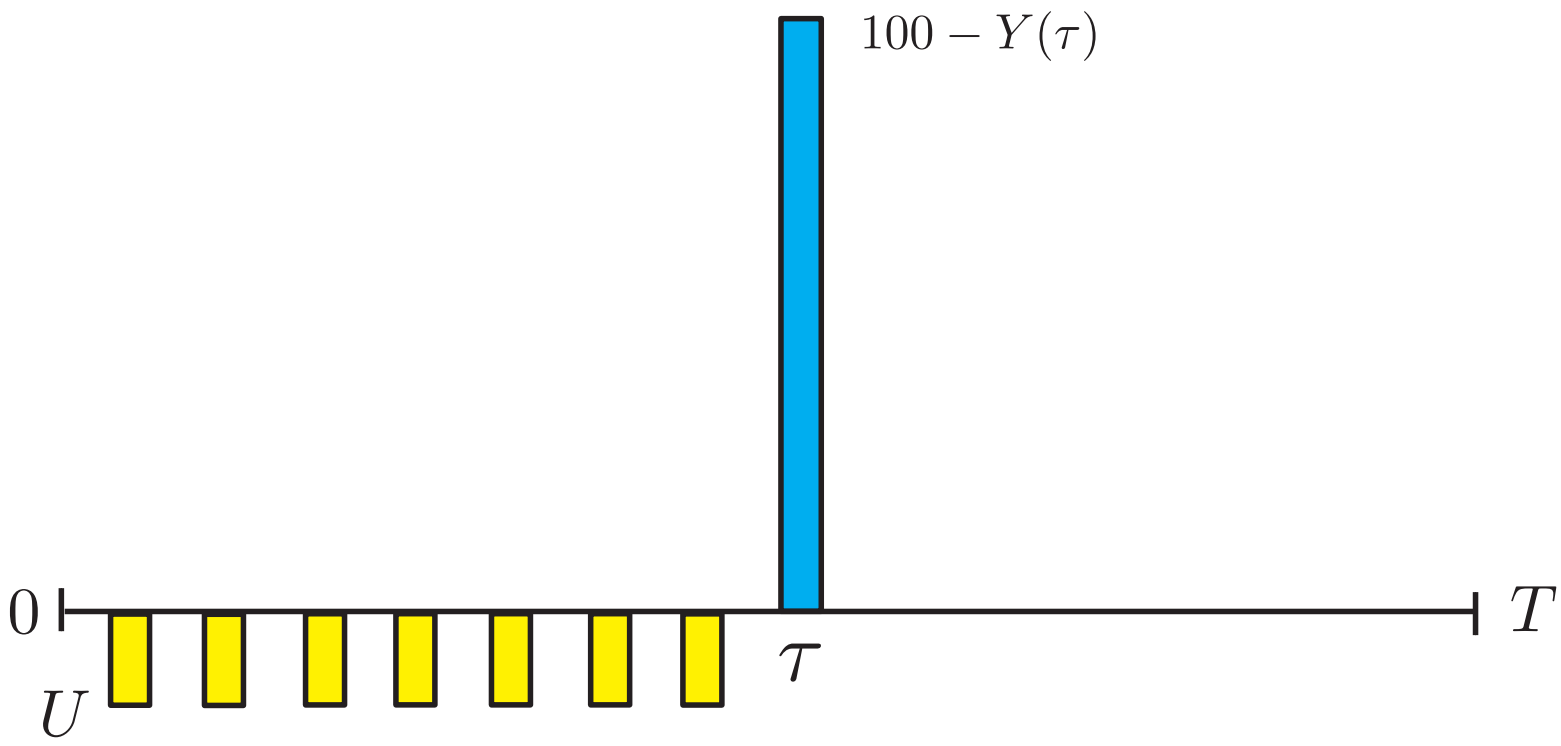
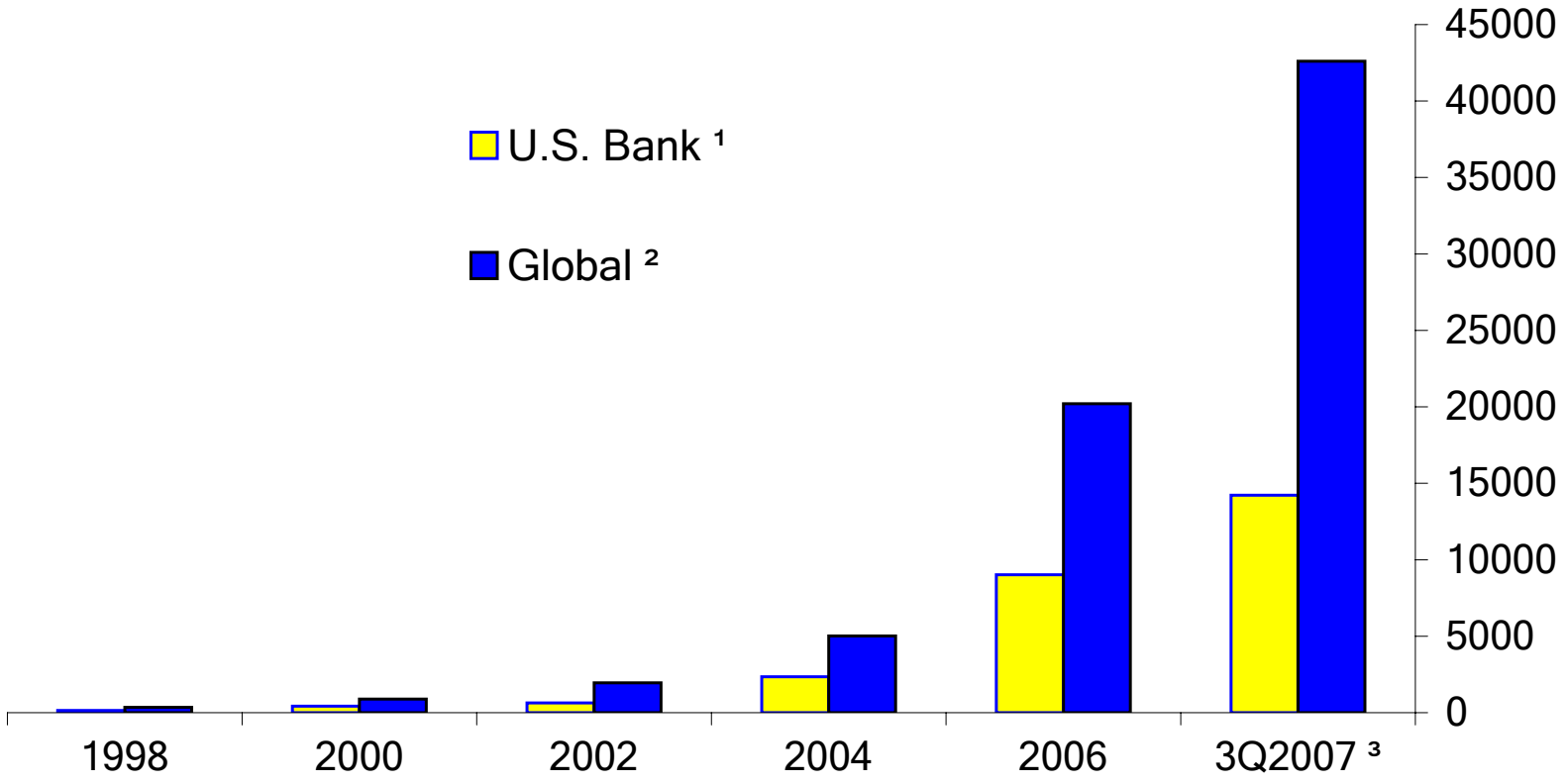


Figure 4: Buyer of protection pays coupons until default at τ. Recovery of $Y(\tau)$ implies a loss-given-default settlement of $100 - Y(\tau)$.

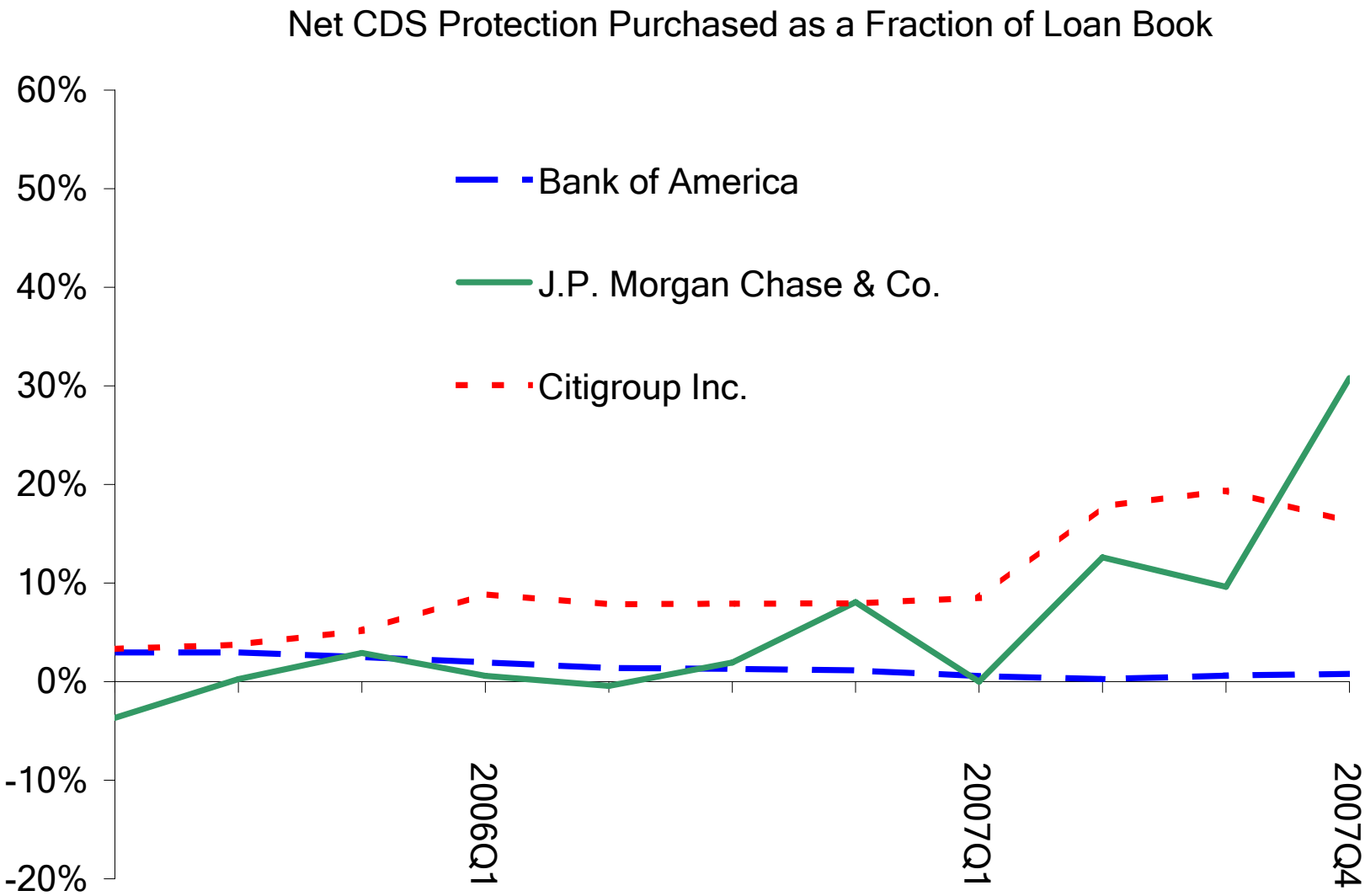
U.S. Bank Share of Credit Derivatives Volume



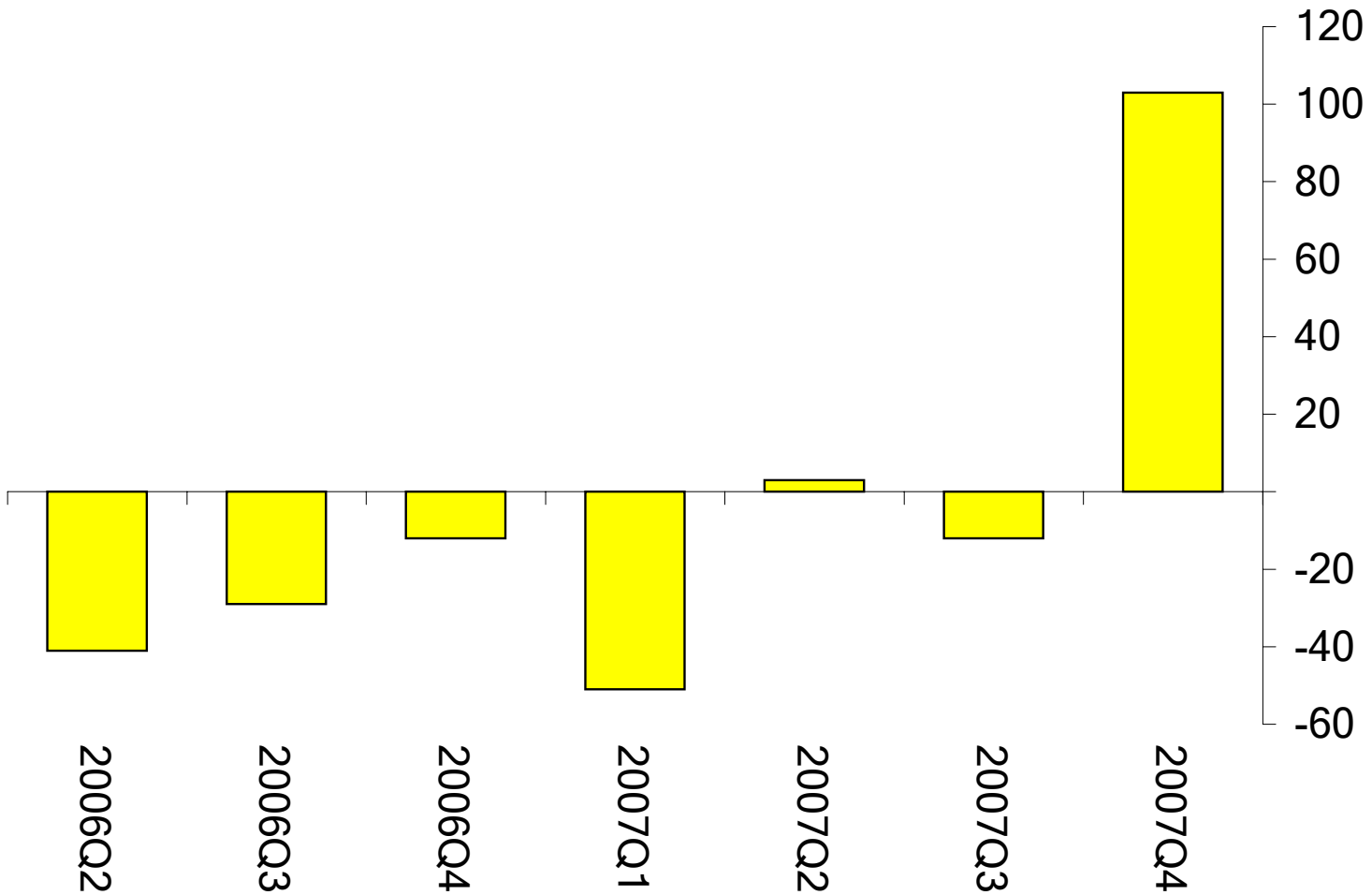
[1] U.S. Commercial banks, credit derivatives notional outstanding, billions of US dollars. Source: Office of the Comptroller of the Currency.

[2] Global credit derivatives notional outstanding, billions of US dollars.
Source: British Bankers Association.

[3]Third quarter of 2007 data for the U.S. is from the Federal Reserve Bank of Chicago. Third quarter of 2007 global data is provided by the Bank for International Settlements.


Net CDS Protection Purchased as a Fraction of Loan Book
60%
50%
40%
30%
20%
10%
0%
-10%
-20%
Bank of America
J.P. Morgan Chase & Co.
Citigroup Inc.
2006Q1
2007Q1
2007Q4

J.P. Morgan Chase & Co.'s Dealer Net Notional Protection Purchased (Billions of Dollars)



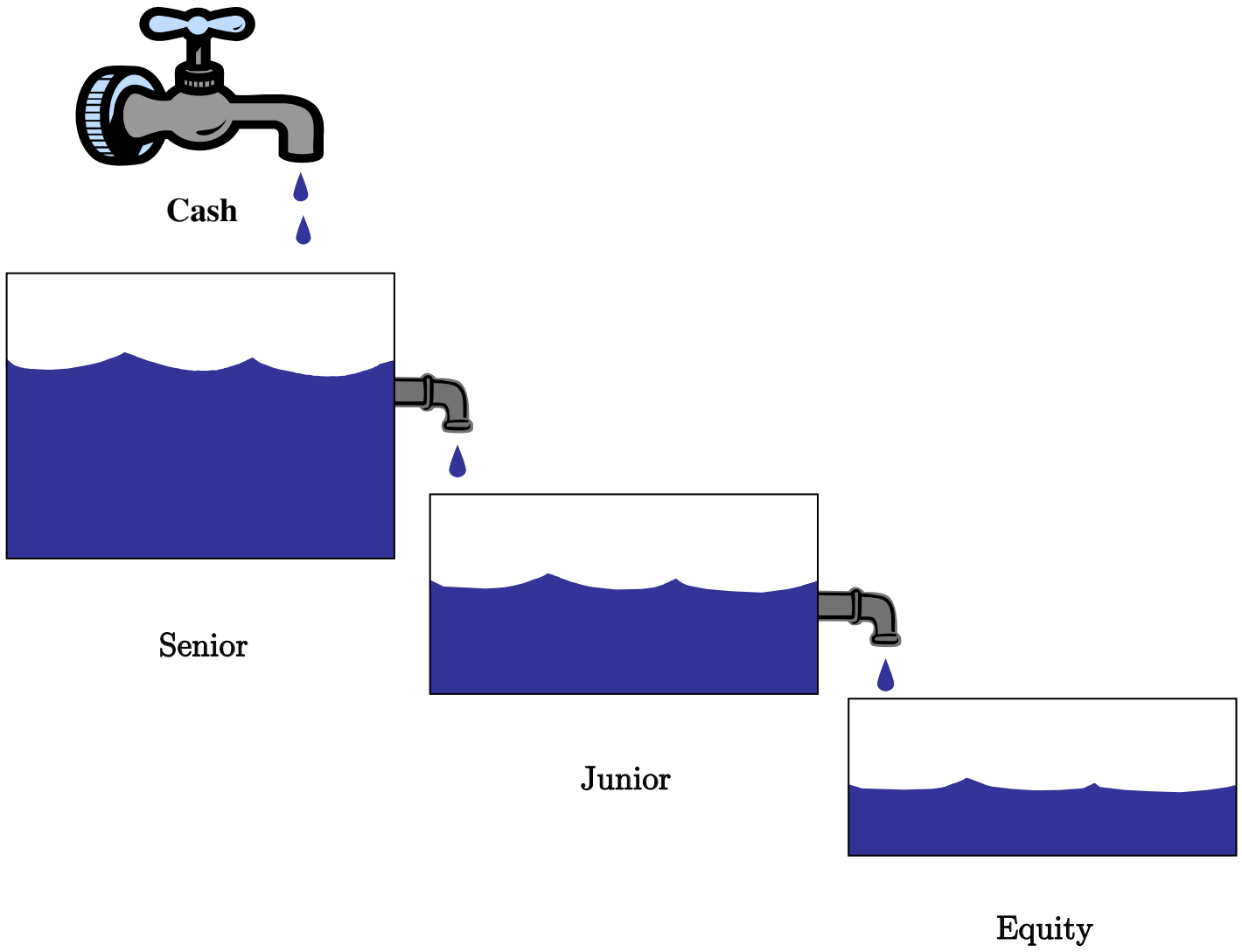


Figure 5: “Waterfall” of a collateralized debt obligation.

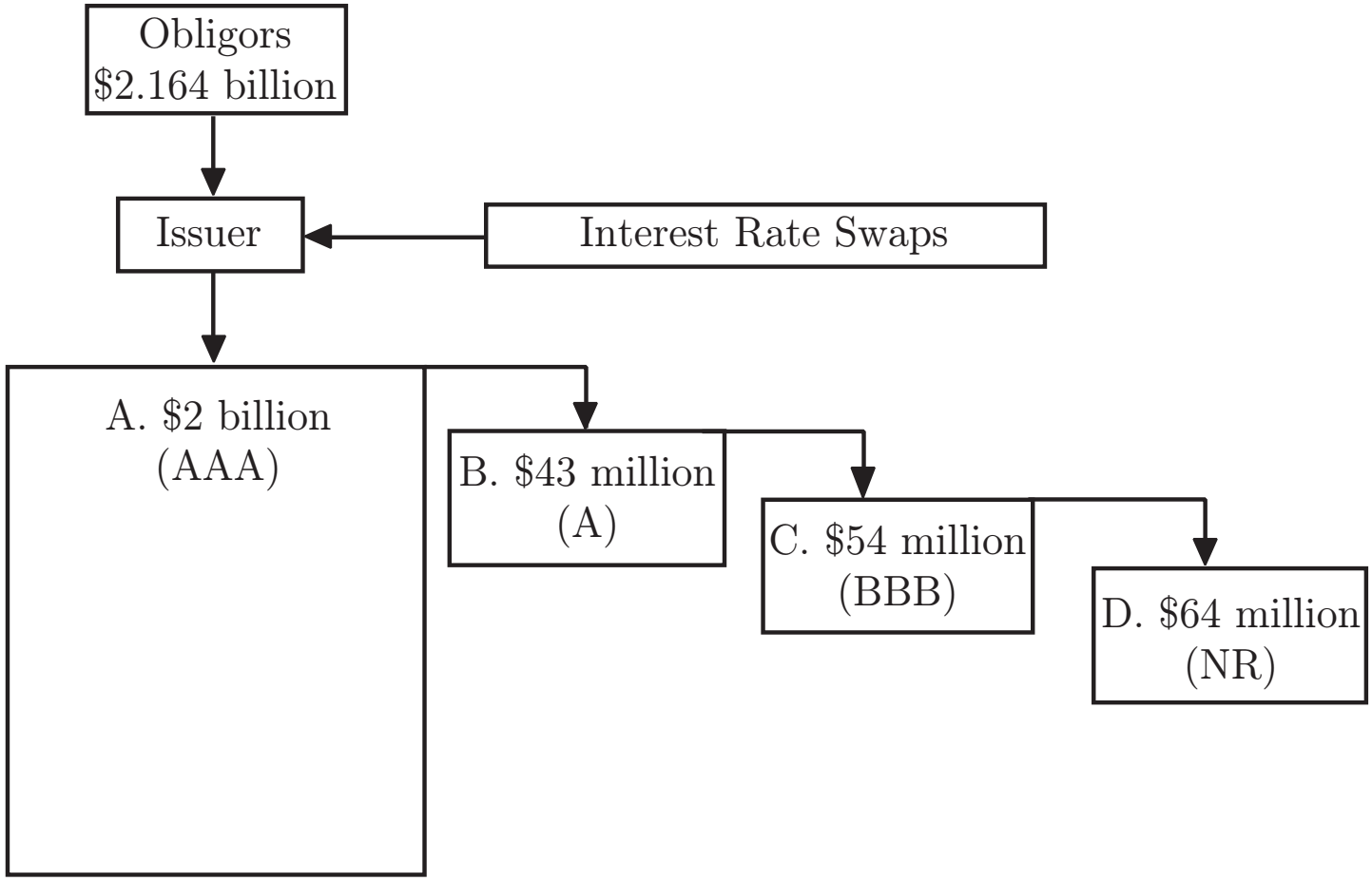


Figure 6: NationsBank 1997-1 CLO tranches (Source: Fitch)

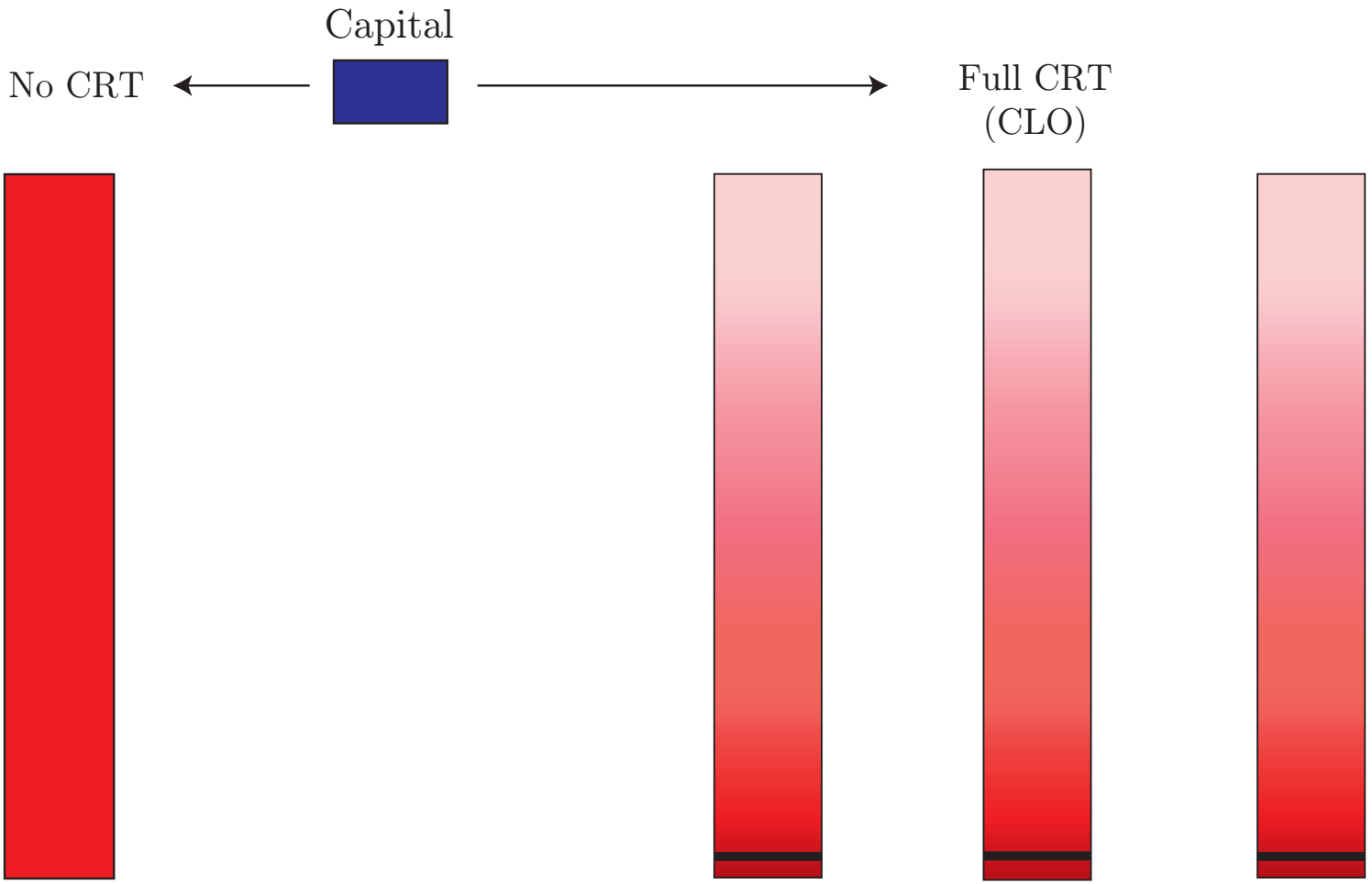
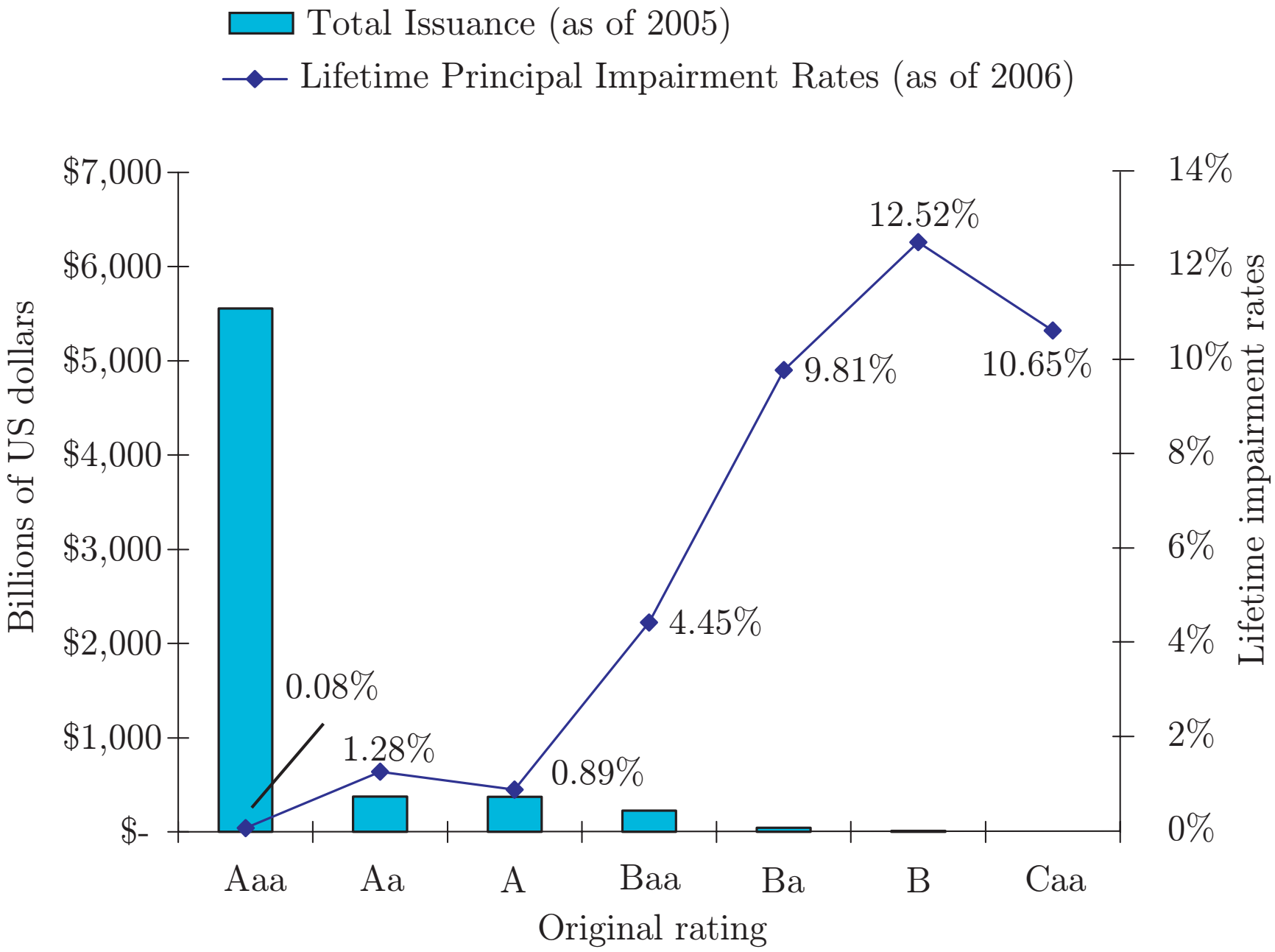


Figure 7: Retention of toxic waste at low leverage.


Total Issuance (as of 2005)
Lifetime Principal Impairment Rates (as of 2006)
Billions of US dollars
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$-
14%
12%
10%
8%
6%
4%
2%
0%
Lifetime impairment rates
0.08%
1.28%
0.89%
4.45%
9.81%
12.52%
10.65%
Aaa
Aa
A
Baa
Ba
B
Caa
Original rating

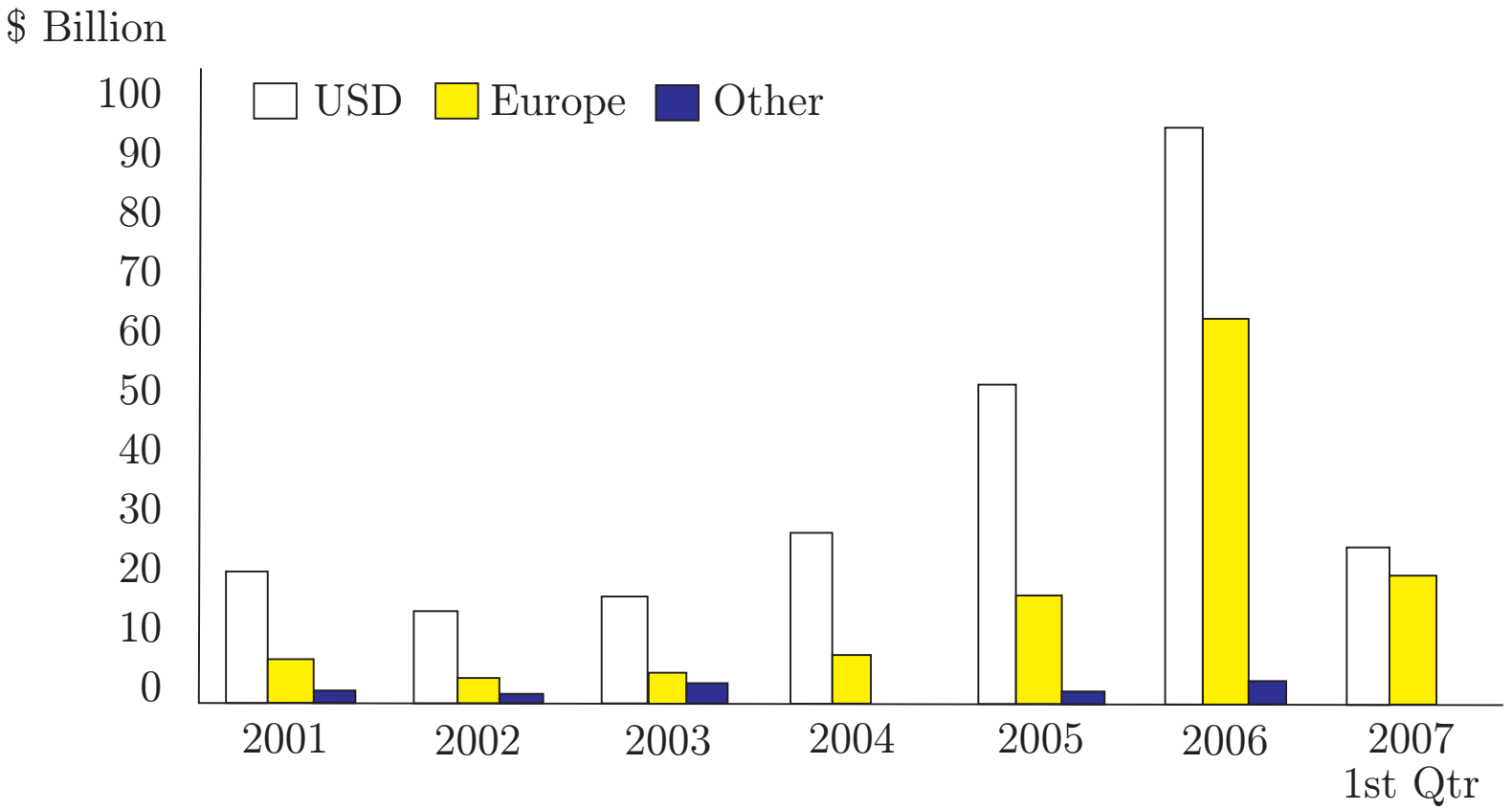
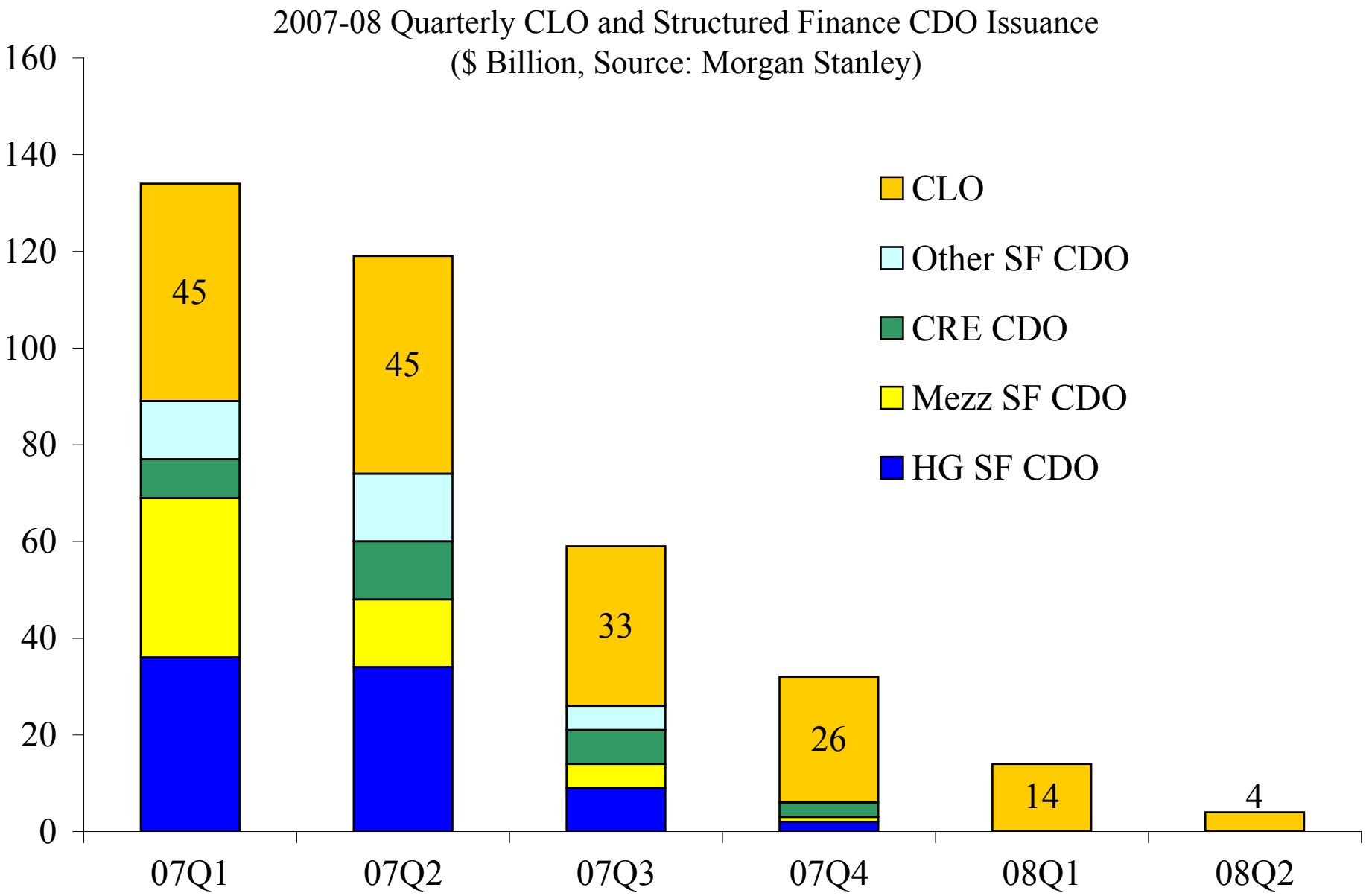


Figure 9: Issuance of CLOs by year and region. Source: Morgan Stanley.


2007-08 Quarterly CLO and Structured Finance CDO Issuance
($ Billion, Source: Morgan Stanley)
160
140
120
100
80
60
40
20
0
07Q1
07Q2
07Q3
07Q4
08Q1
08Q2
45
45
33
26
14
4
CLO
Other SF CDO
CRE CDO
Mezz SF CDO
HG SF CDO

Benefits of credit risk transfer

1. Releases lender's capital for new credit intermediation, improving the efficiency of credit markets.
2. Provides diversification to lenders.
3. Distributes risk to investors that are less critical to the provision of liquidity to the financial system.
4. Provides an improved menu and supply of assets and hedging opportunities to asset managers.

Direct costs of credit risk transfer

1. The lemon's premium that the investor charges because of the lender's inside information regarding the borrower's credit risk.
2. Moral hazard: inefficient control by the lender of borrowers' default risks.
3. Decoupling of control rights (Black and Hu, *U. Penn. Law Review*, 2008).
4. Legal, marketing, and other arrangement costs.

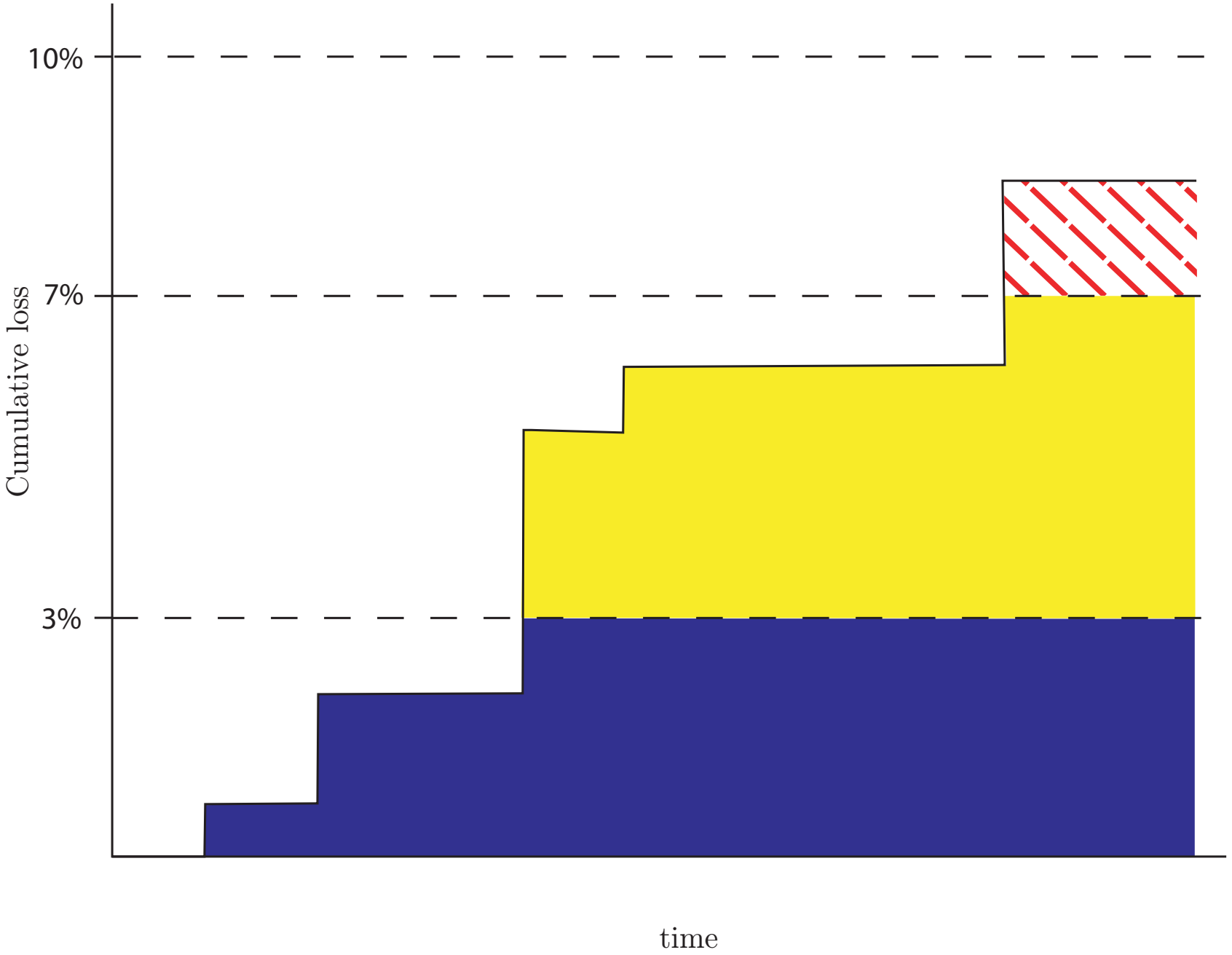
Systemic Risks of Credit Risk Transfer

1. Credit squeeze: Hoarding of credit.
2. Interference with central-bank monetary policy.
3. Bank runs (Northern Rock, Florida Pool, Bear Stearns).
4. Too-big-to-fail adverse incentives.
5. Spillover to other credit markets (e.g. muni bonds).
6. Lost credibility of CRT products.

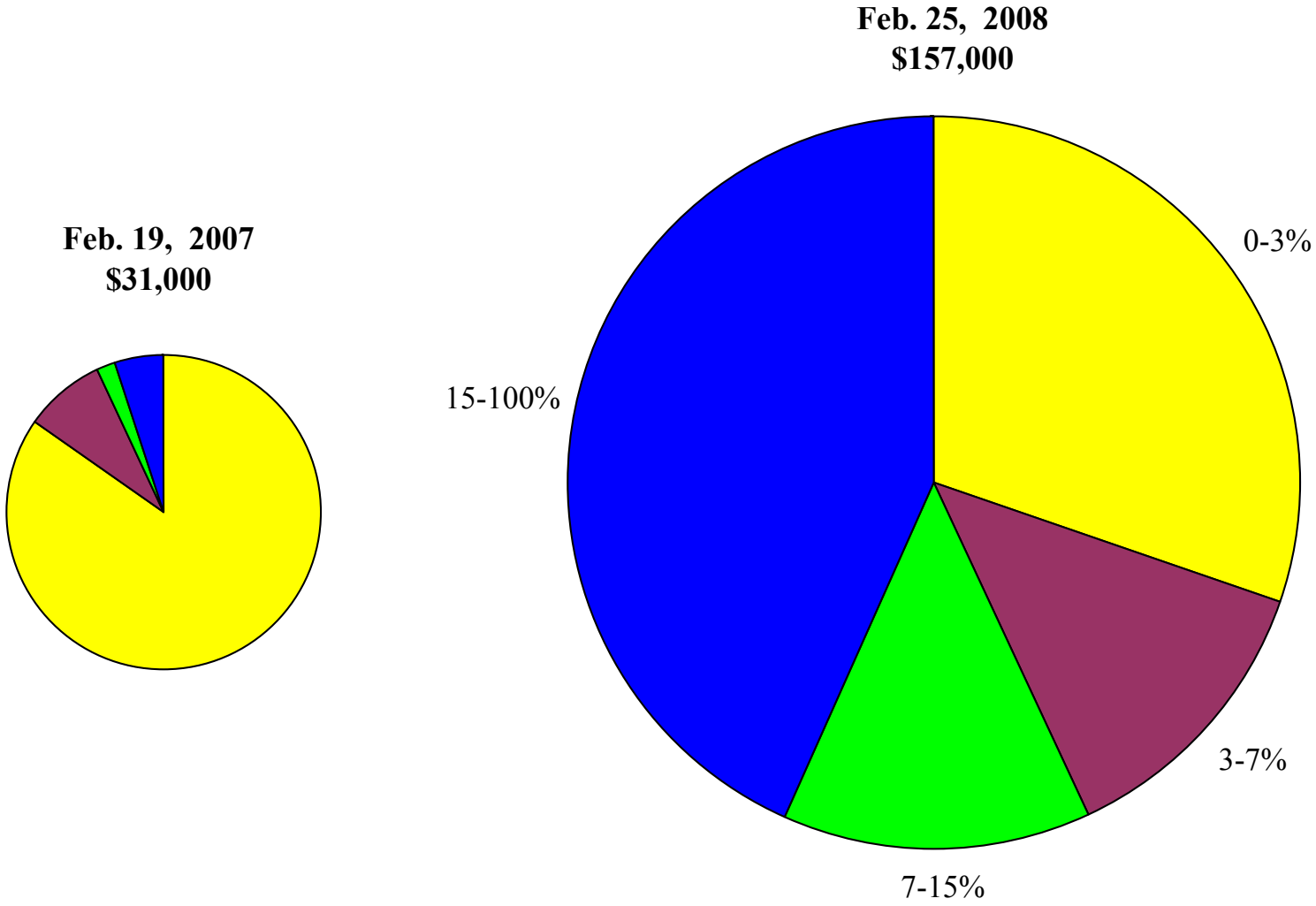
Key Concerns Going Forward

1. Even specialists in CDOs are ill equipped to measure the risks and fair valuation of tranches that are sensitive to default correlation.

2. Credit risk transfer has reduced the degree to which credit is intermediated by banks, relative to hedge funds, credit derivative product companies, and specialty finance companies. This reduces the ability of banks to be sources of liquidity in systemic crises.


10%
7%
3%
Cumulative loss
time

Default Insurance on $10 Million Investment Grade Corporate Debt Portfolio
Annual Premiums on 5-Year Coverage



Source: CDX.NA.IG.5yr Tranche Pricing, Morgan Stanley

Default Insurance on $10 Million Investment Grade Corporate Debt Portfolio
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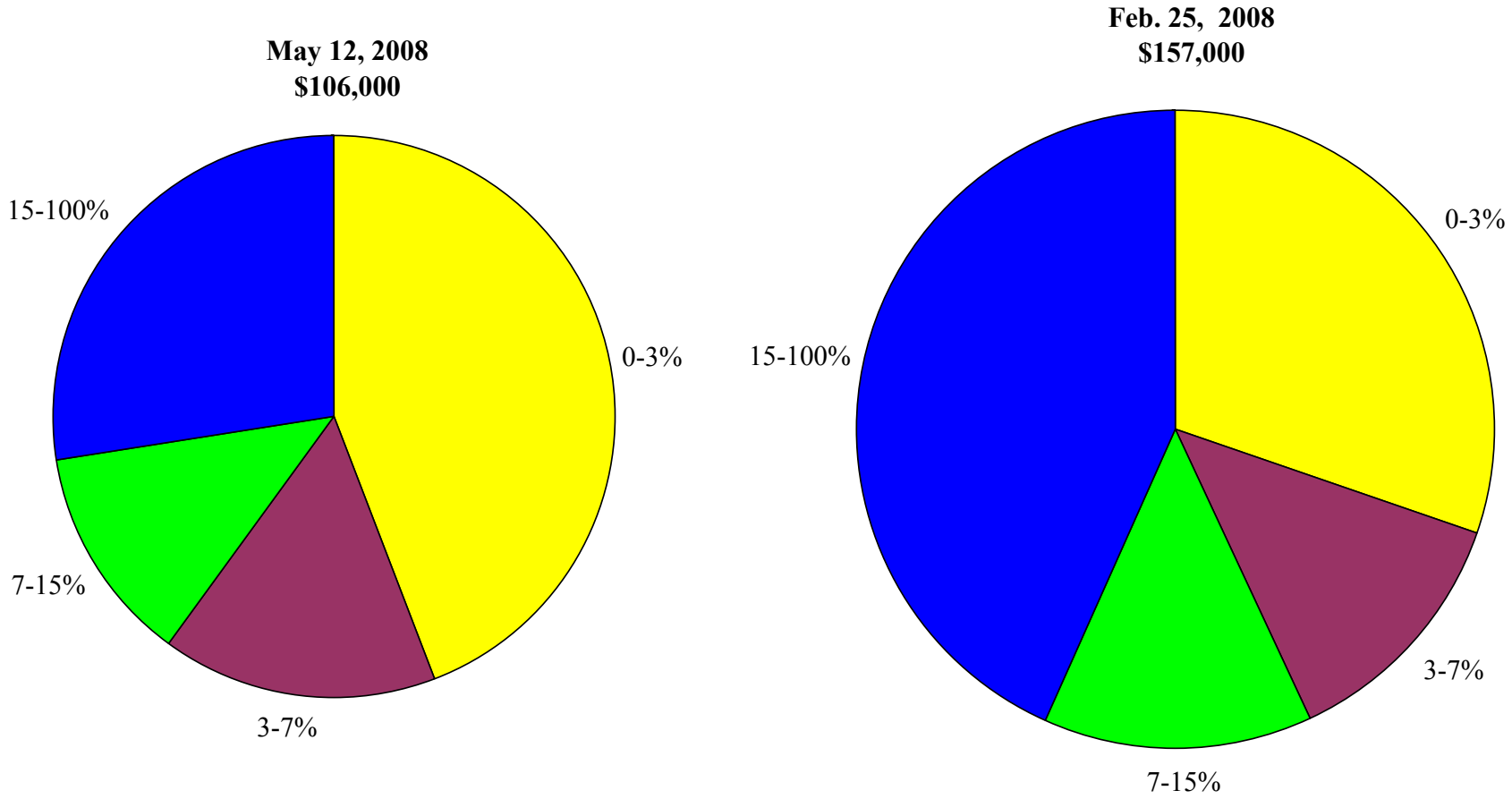


Source: CDX.NA.IG.5yr Tranche Pricing, Morgan Stanley

Table 1: **CDX NA IG 5-year Series 7 tranche premia, Feb. 19, 2007.**

(Source: Morgan Stanley.)

Tranche	Up-front fee (%)	Running spread (b.p.)	Premium Allocation	"hedge" (Δ)	Base corr.
0-3%	19.25	500	84.9%	23.8	14%
3-7%	0	64	8.2%	4.6	27%
7-10%	0	12	1.2%	1.1	35%
10-15%	0	5	0.9%	0.5	46%
15-30%	0	2	1.8%	0.2	71%
30-100%	0	1	3.1%	0.1	na
CDX	0	31.0	100.0%	1.0	na

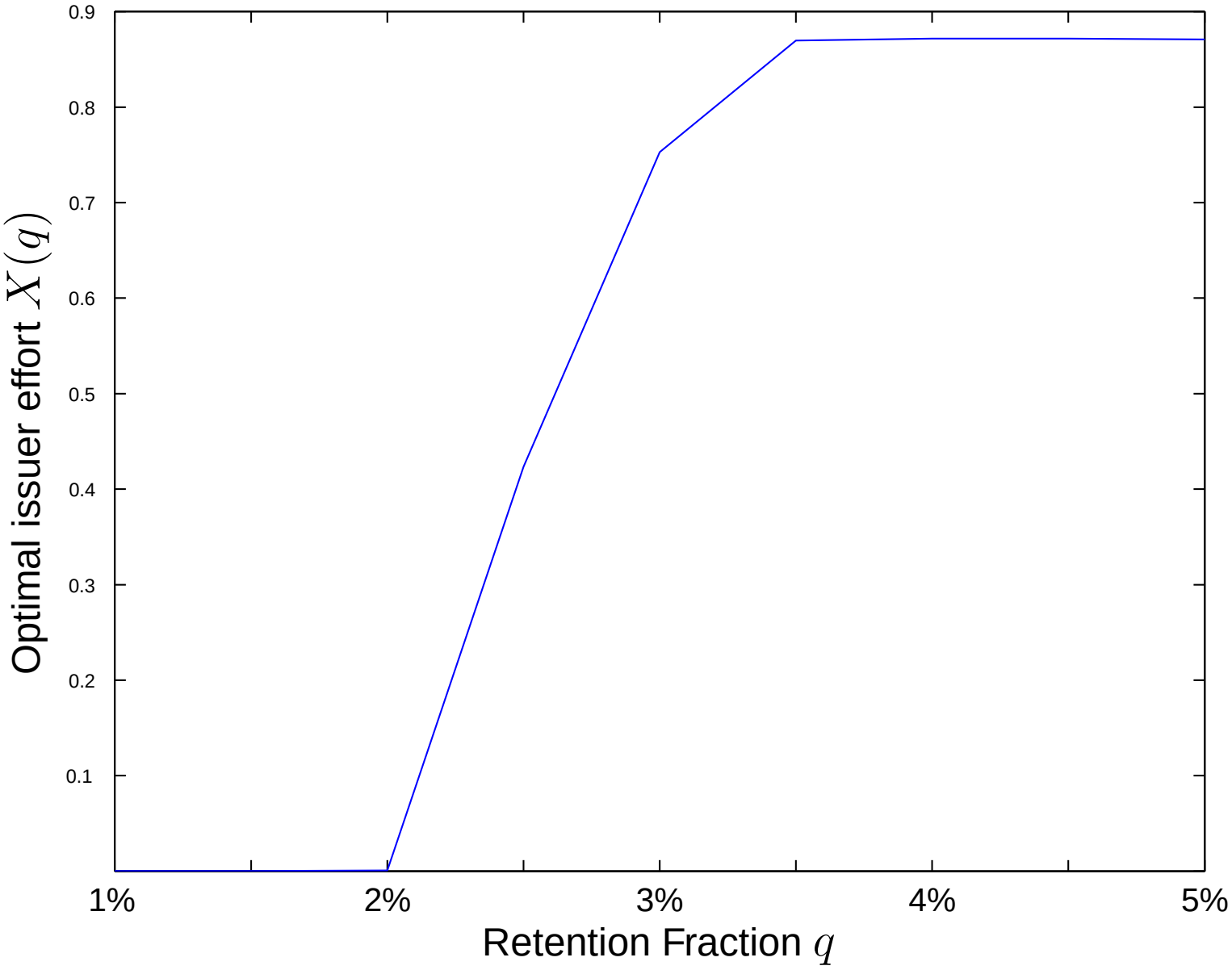
Table 2: **CDX NA IG 5-year Series 9 tranche premia, Feb. 25, 2008**.

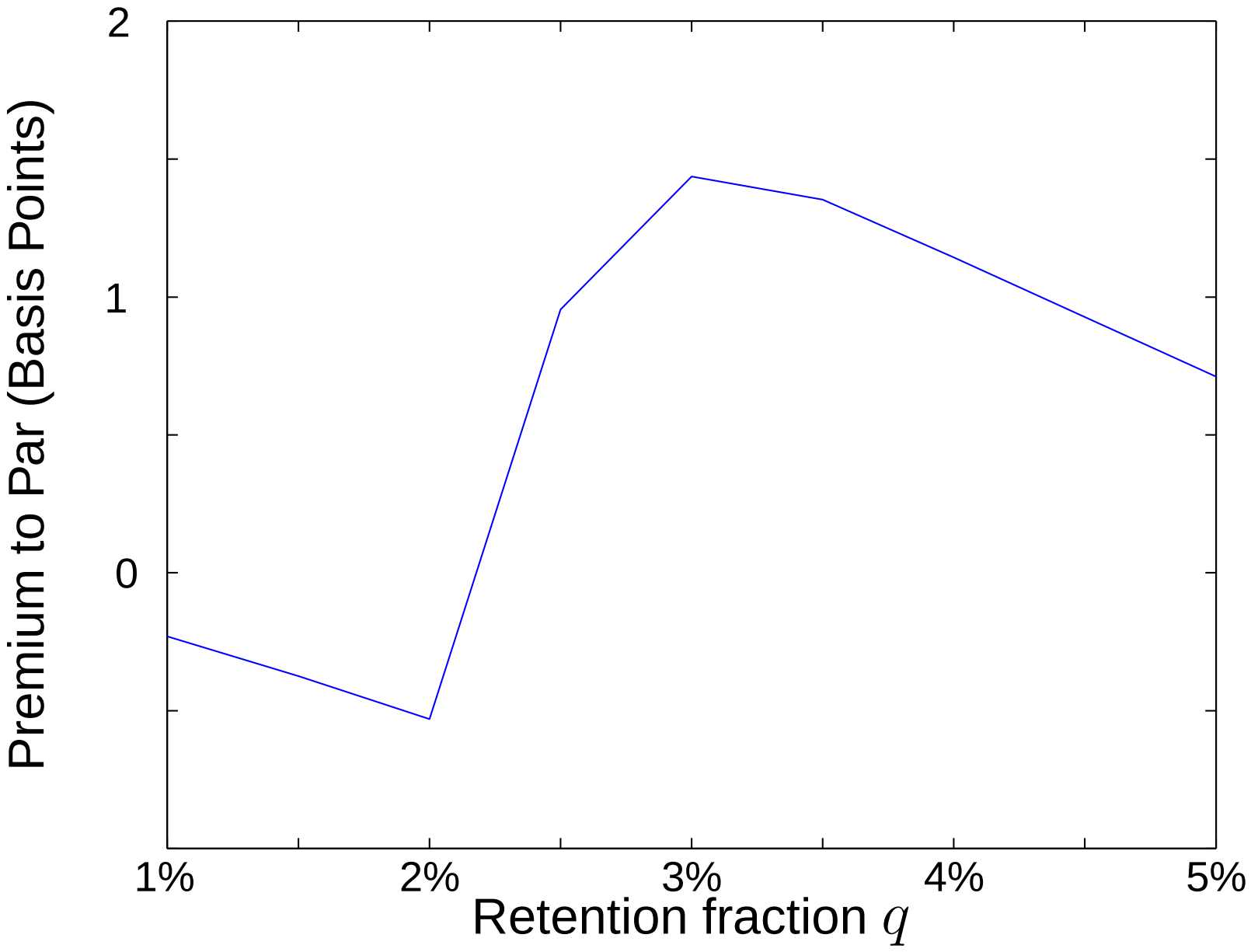
(Source: Morgan Stanley.)

Tranche	Up-front fee (%)	Running spread (b.p.)	Premium Allocation	"hedge" (Δ)	Base corr.
0-3%	54.5	500	30.2%	3.5	47%
3-7%	0	528	12.9%	2.5	71%
7-10%	0	310	6.0%	1.5	80%
10-15%	0	232	7.6%	1.2	89%
15-30%	0	123	18.5%	0.9	109%
30-100%	0	68	24.8%	0.7	na
CDX	0	157.0	100%	1.0	na

Table 3: **Assets to CDOs** (trillions of $ U.S.). Source: Bank of England, 2007, *Financial Stability Report*.

		Issuance in 2006	
Collateral type	**Outstanding Stock** (end-2006)	Total	Referenced by CDOs
Asset-backed securities	10.68	2.58	0.39
Investment-grade bonds	10.20	2.18	0.54
High-yield bonds	0.78	0.17	0.01
Leveraged loans	0.52	0.63	0.33


0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Optimal issuer effort $X(q)$
1%
2%
3%
4%
5%
Retention Fraction q


2
1
0
Premium to Par (Basis Points)
1%
2%
3%
4%
5%
Retention fraction q