# Demystifying CLOs

## They emerged as a solid asset class that revitalized the U.S. economy after the GFC.

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# Speakers



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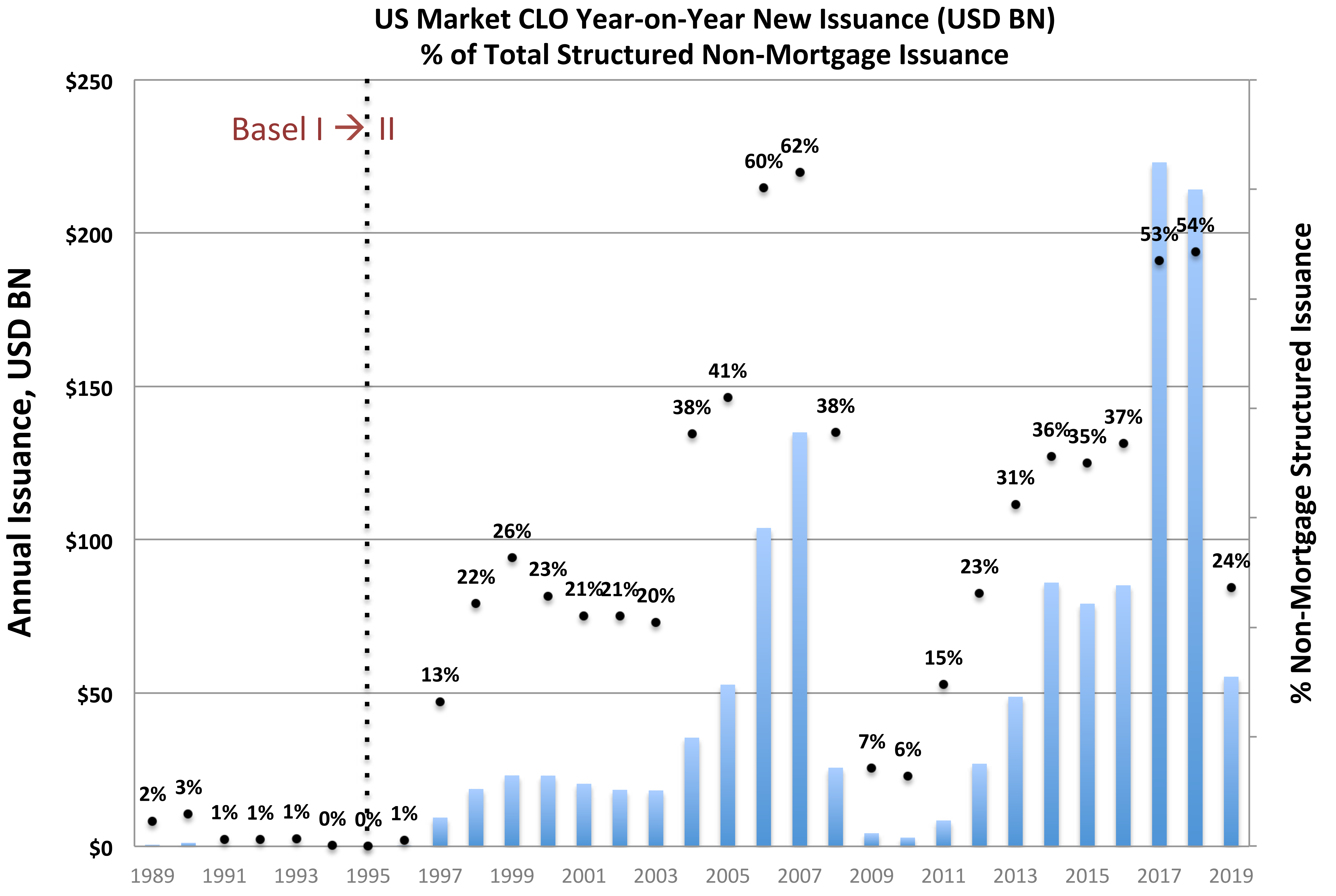
# Demystifying Collateralized Loan Obligations

- *The CLO Emergence Story*
- *Can just one letter difference explain the difference in outcomes?*
  - *Yes…and no*
  - *But for the whole story, we need to talk about family resemblances between structured credits*
- *The CLO, in snapshots*
- *CDOs are not the same*
- *So, are CLOs headed for a CDO-style crisis?*
- *CLO Due Diligence Takeaways*
- *Audience Questions*

# CLOs led the structured market recovery in 2011

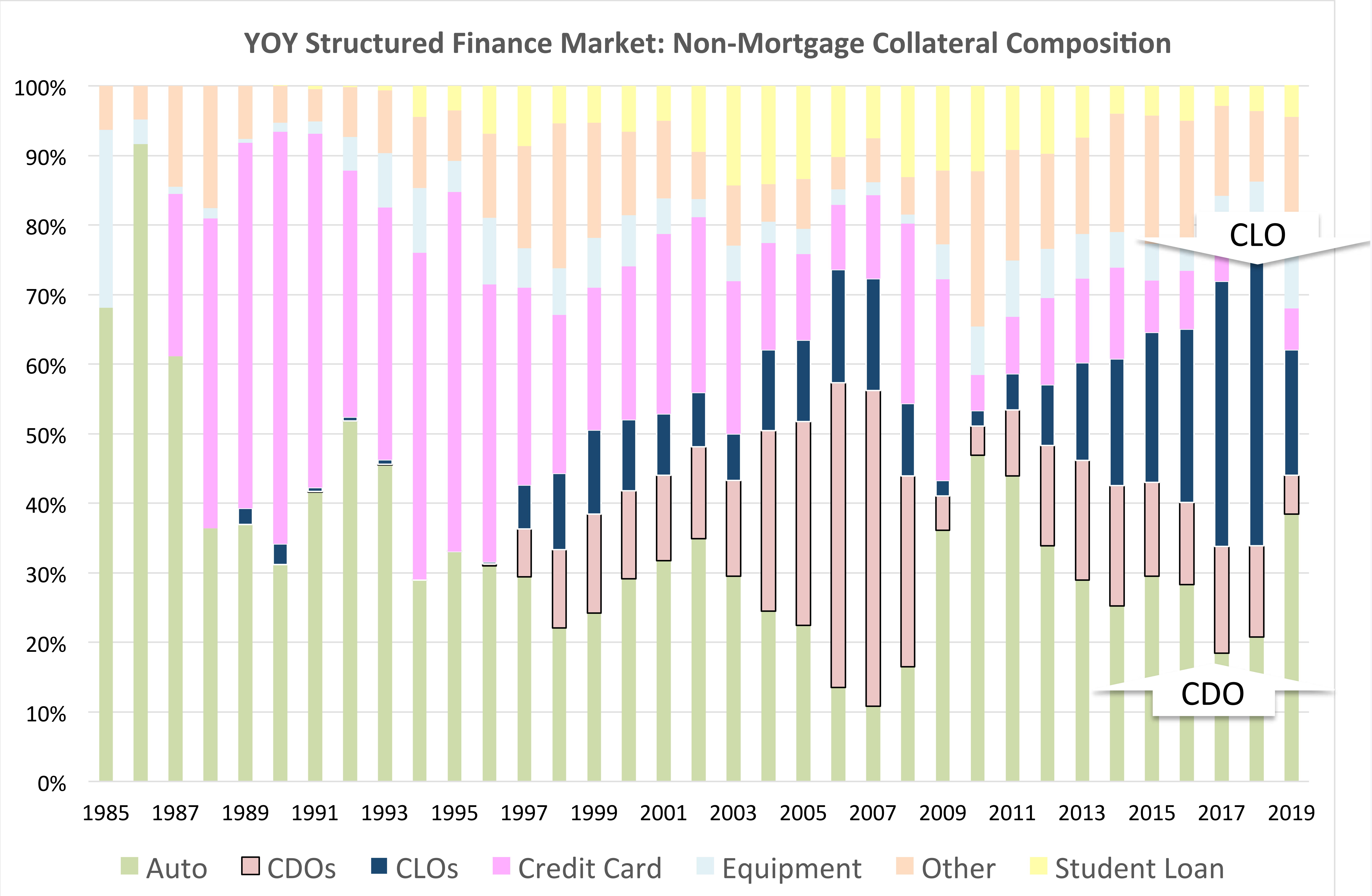





Sources: https://www.sifma.org/resources/research/us-abs-issuance-and-outstanding/
https://www.naic.org/capital_markets_archive/primer_180821.pdf

CreditSpectrumCorp

# CLOs emerged as a solid asset class




Source: https://www.sifma.org/resources/research/us-abs-issuance-and-outstanding/

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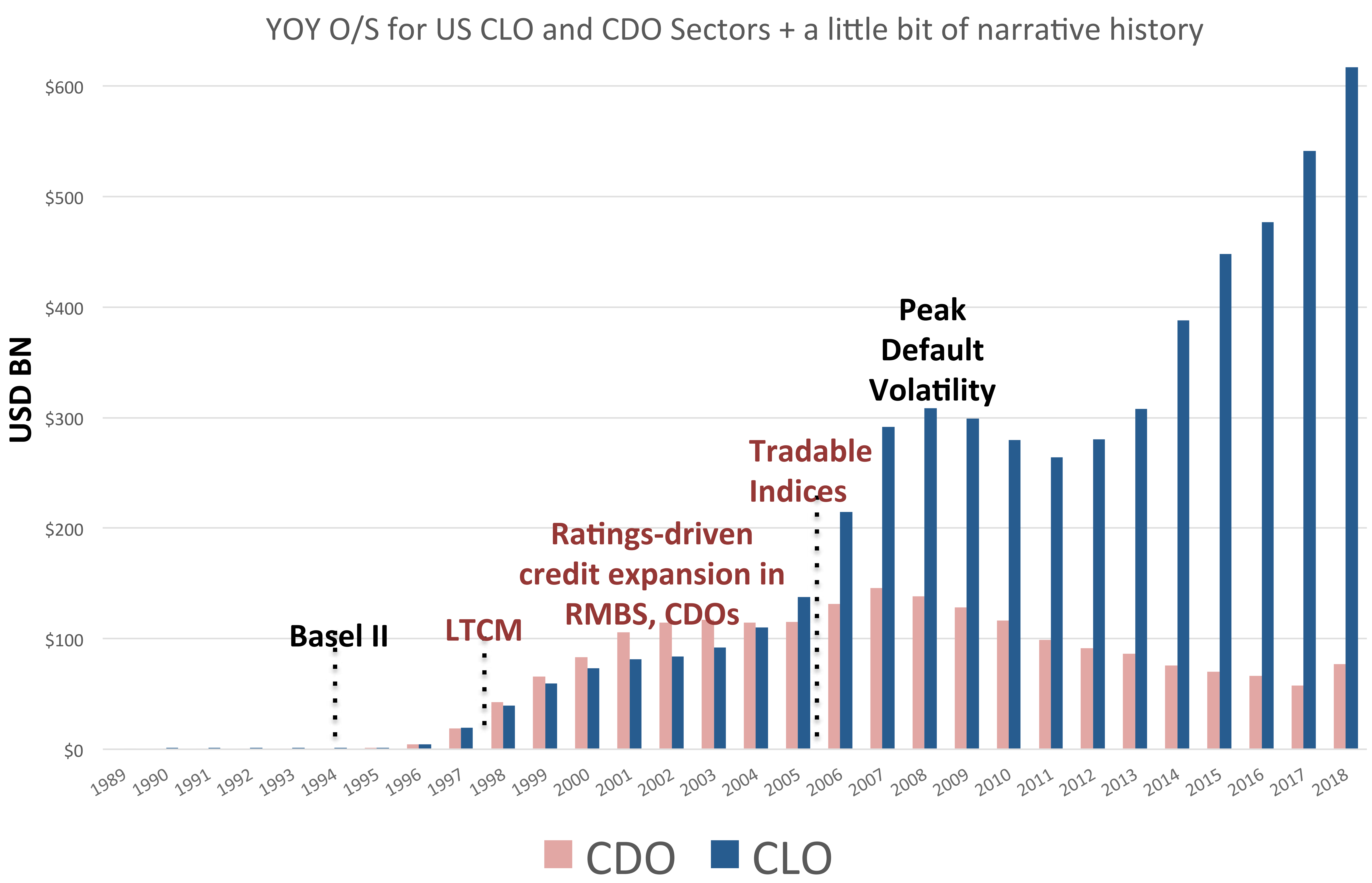
# CLOs were winners, CDOs were losers




Source: https://www.sifma.org/resources/research/us-abs-issuance-and-outstanding/

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# Can just one little letter explain these outcomes?

Yes…and no.

CLOs are backed by loans. CDOs are backed by bonds.
Their performance differences were documented long ago:

Said W. Braddock Hickman, ***Corporate Bond Quality and Investor Experience***,
Princeton University Press, 1958; covers 1900 – 1944:-

"On average, and over long periods, the life-span yields realized on high grade bonds were below those on low-grade bonds, with the result that investors, in the aggregate, obtained better returns on the low grades."

| | Bonds | Loans |
|---|---|---|
| Rating | >> | << |
| Yield | << | >> |
| Risk-adjusted Yield | - | > |

# Understanding the difference between bonds and loans is key



But for the whole story, consider also the family resemblances between structured credits.

Fundamental credit analysis is to an extent right-brained.
Structured credit is a "whole brain" exercise.

| FUNDAMENTAL CREDIT | ✔ STRUCTURED CREDIT |
|---|---|
| **The cardinal risk you're taking**: The firm's future earnings capability will not match today or the recent past. | **The cardinal risk you're taking**: Collateral value doesn't support your claims and the yield is below market for the actual risk. |
| **Sources of comfort**: Deep and broad context. Age, size, source of equity, rating, and your experience with the firm, industry, information set, all contribute. | **Sources of comfort**: Documentation, due diligence, structuring and analysis—deal specific information to motivate a quantitatively based decision. |

# Structured credit risk is layered. The names can conceal more than they reveal. You need to probe:



## Right Brain: Judgments

1.Cui bono?

8.Your tolerance for the uncertainty beyond the stated value & risk?

## Left Brain: Properties

2.Fundamental or Structured? What risk universe are you in?

3.Recourse or Non-recourse? If the deal doesn't work out, can you go back for more?

4.Derivative or cash? Are you buying cash flows or default risk?

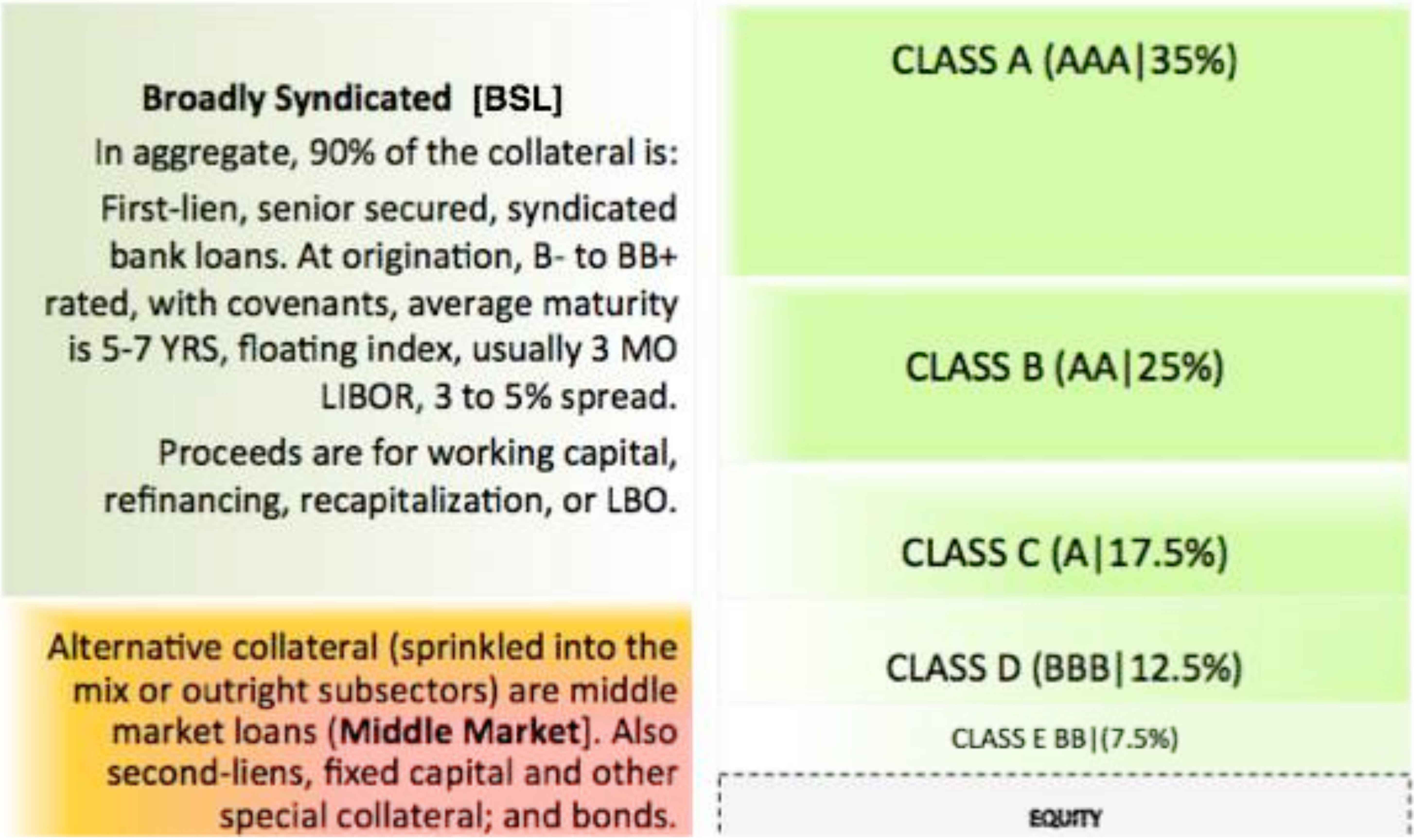
5.Passive or managed? Do you minimize beta or maximize alpha?

6.Static or phased? Are you buying operating cash flows or option decay?

7.Financial or operating? These answers should pair with (5) , (6): managed has reinvestment as well amortization phases, passive should be strict amortization.

# The CLO transaction

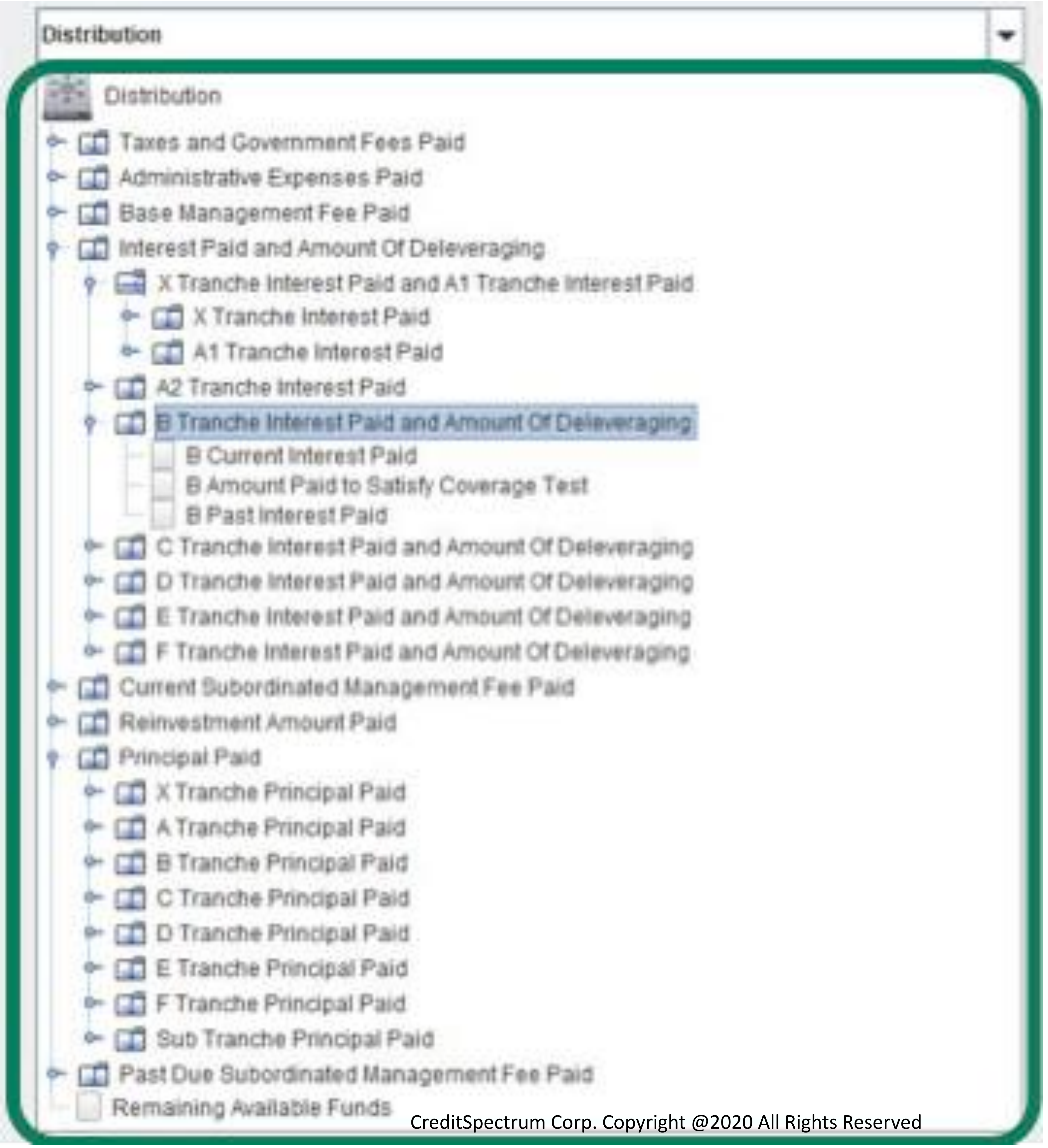
## A “typical” CLO




*Source: S&P Global Ratings’ CLO Primer September 21, 2018*

# The CLO hierarchy of claims

## A “typical” CLO waterfall




Grouped, and in order of legal claim, cash to-

- Tax, operating expenses
- Base management fee
- Interest paid; plus mandatory action if Coverage Tests are tripped
- Subordinated management fee
- Principal reinvestment or
- Amortization
- Past Due sub management fee
- Residual CF to Equity

# CLO credit protections



## "Typical" security structure dynamics

| | CHARACTERISTIC PROTECTIONS | NOTES: |
|---|---|---|
| ✔ | XS | Collateral is speculative (low) grade |
| ✔ | Portfolio Diversification | Industry Sector/Obligor |
| X | Credit Reserving | (may have Liquidity Reserves) |
| ✔ | Subordination | Sum of tranches below yours |
| ✔ | IC Tests | Tranches below yours can be expensive! |
| ✔ | Over-Collateralization | Tranche deemed value is $0 |
| ✔ | OC Tests | Principal margin is subject to changes in value and price |
| ✔ | Active Management | BUT: manager skill, Incentives are crucially Important |

***People are talking about*—**

Leveraged loan downgrades are pushing down CLO valuations. The cliff below B- has structural significance.

***Consequences*—**

A pool has (10) loans, each $10. If Loan #J is downgraded to CCC/Caa and trades at $0.70. it breaches the 7.5% trigger. A par value haircut of 2.5% is applied.

Keeping #J on the books may adversely impact future O/C tests. Interest can be diverted from equity and possibly rated junior tranches.

Selling #J will be difficult, since loans purchased below $80 (or $85, depending on the rating) will be carried at market.

# CLO Triggers



1. **Interest diversion**—measures the adequacy of collateral to support each tranche of notes. If tripped, interest to subordinated tranches notes may be diverted to buy new collateral or turbo the junior notes
2. **Overcollateralization**—measures the adequacy of collateral to support each class of notes (ratio of principal collateral value/principal liabilities outstanding). OC is higher for senior tranches. If tripped, P&I cash flows are diverted from juniors to raise the O/C for seniors
3. **Interest Coverage**—measures the sufficiency of interest income to cover scheduled interest payments. If tripped, P&I cash flows similarly diverted to meet interest coverage tests
4. **Collateral Quality**—applied to ensure collateral stays within quality guidelines. If tripped, CLO manager can only trade to restore compliance.
5. **Par Preservation**—increases leverage, extends equity maturity, restores O/C with spread otherwise due to equity.
6. (**Turbo Trigger**—not standard in CLOs, delevers the structure, reduces subordination and lowers the funding cost.
7. **EOD**—reinvestment period ends and cash flows applied sequentially to retire notes.

# Then…what are CDOs?



In its heyday, the CDO was **a portfolio insurance vehicle**. What is portfolio insurance?

"A hedging strategy used to limit losses in a declining asset market rather than sell them off."

| | |
|---|---|
| **1987** | *Bulge Bracket Firm* Strategy: go long equity and short it with an index derivative, to offset downturns with compensatory gains on short stock index futures/ options. Attractive during stock market comeback. Crash triggered by proposed interest and tax policy changes, leading to less demand and some margin calls. |
| **1997** | *Long Term Capital Management* Strategy: generate arbitrage income with a hedged book of bonds and currencies. Attractive while price mirrored historical volatility. Crash triggered by Russian and Asian financial crises, leading to serial deleveraging and severe liquidity shortages. The Street vowed never again. |
| **2007** | *Cash/Synthetic CDOs, RMBS CDO* Strategy: (1) matched books of mortgages/ corporate bond backed securities through synthetic replication. Price used same models as in 97, hedge based on rating-implied defaults. (2) systematic selling of under-collateralized mortgages based on rating-implied defaults. Crash triggered by fears about subprime RMBS in ABCP conduits. |

# *A man's got to know his limitations* was true before ***Magnum Force***. It dates back to Greek mythology.

| | Collateral | Hedge Instrument | Risk Variable | Economic Rationale | Black Swan Eggs |
|---|---|---|---|---|---|
| **1987** | Equities | Index Futures, Options | Price Volatility | Arbitrage Income | Basis risk, underestimation of variance |
| **1997** | Bonds, FX, Futures, Options or Swaps | Exchange-traded or OTC derivatives (Swaps) | Price Volatility | Arbitrage Income | Basis risk, underestimation of variance |
| **2007** | Bonds, including corporate and RMBS (mainly) used to make **CDOs** | **Swaps** | Default Probability and Recovery | Default insurance for Basel II; **Arbitrage income** | Use of rating as the default measure: too generous for bonds, and **static** |
| **2007** | Loans used to make **CLOs** | - | Default Probability and Recovery | **Working capital** | Use of rating as the default measure: too stringent for loans, and **static** |

# Are CLOs headed for a CDO-style crisis?



# CLOs have better structural and credit integrity than CDOs



| Risk Dimension | CLOs | ABS | CDO, ABS CDO, SIV |
|---|---|---|---|
| Collateral Function | **Operating** | **Financial** | Operating or Financial |
| Credit Structure | **-------Cash--------** | | Cash or Synthetic |
| Obligor Diversification | Medium | **High** | Medium (optical) |
| Company, Industrial Diversification | **High** | Low | Medium |
| Lifecycle Exposure | Warehousing<br>**Reinvestment**<br>**Amortization** | **Amortization (Static)** | Warehousing<br>Reinvestment<br>**Amortization** |
| Model Risk | **Low** | Medium | **High** |
| Control Structure | **---------Mimics the Risk-----------** | | Optical |
| Management | **Active** | **Passive** | Active or Passive |
| **Defensive Features** | **8** | **6** | **0** |

# CLO defenses have strengthened over time

Static credit arbitrage vehicles, similar to ABS.
Ratings bootstrapped from lender scoring methods.
Re-pricing on a limited basis gained traction.

Compliant with the Volcker Rule and other new regulations. Further reduced risk by eliminating high yield bonds.

**CLO 1.0** — 1990s – 2008

**CLO 2.0** — 2010

**CLO 3.0** — 2014

Higher subordination levels
Tighter collateral eligibility criteria
Shorter non-call/reinvestment periods
More flexibility on re-pricing
More transactions coming to market as "Cov-lite"

# Until now, cumulative CLO default rates have been about 1/10th the level of corporate defaults



| S&P Rating | Cumulative Default Rate | |
|---|---|---|
| | **CLO** | **Corporates** |
| AAA | 0.0% | 0.9% |
| AA | 0.1% | 1.1% |
| BBB | 0.3% | 2.1% |
| BB | 0.5% | 5.1% |
| B | 1.5% | 15.8% |

*Source: Structured Finance Association, CLO White Paper - February 2020 by Elen Callahan*

# CLO rating volatility (above) has risen in tandem with leveraged loan defaults (below)



| MARKET SECTOR | UPGRADES | | | | DOWNGRADES | | | | #SECURITIES | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1-mo upgrade rate | 12-mo upgrade rate | 12-mo average notches per upgrader | Share of rated securities on review for upgrade on Apr 30, 2020 | 1-mo downgrade rate | 12-mo downgrade rate | 12-mo average notches per downgrader | Share of rated securities on review for downgrade on Apr 30, 2020 | Rated securities outstanding on Apr 01, 2020 | Rated securities outstanding on May 01, 2019 |
| Global Structured Finance | 0.04% | 9.78% | 1.9 | 0.0% | 0.9% | 1.9% | 1.9 | 6.5% | 28,161 | 27,194 |
| US ABS | 0.09% | 10.43% | 2.5 | 0.0% | 1.4% | 2.0% | 1.8 | 3.8% | 3,214 | 3,280 |
| US RMBS | 0.01% | 15.22% | 2.0 | 0.0% | 0.9% | 2.1% | 2.1 | 4.4% | 10,028 | 9,640 |
| US CMBS | 0.00% | 3.24% | 2.3 | 0.0% | 0.1% | 2.5% | 2.2 | 5.7% | 3,330 | 3,329 |
| Global CDOs ex CLOs | 0.00% | 17.57% | 1.3 | 0.0% | 0.0% | 0.0% | - | 0.0% | 640 | 592 |
| Global CLOs | 0.00% | 2.92% | 1.2 | 0.0% | 0.0% | 0.5% | 1.5 | 14.5% | 6,797 | 6,157 |
| EMEA ABS, CMBS, & RMBS | 0.23% | 11.57% | 1.9 | 0.0% | 2.7% | 3.2% | 1.7 | 1.3% | 2,624 | 2,636 |
| Asia-Pacific ABS, CMBS, & RMBS | 0.07% | 10.38% | 1.5 | 0.0% | 0.0% | 0.0% | - | 3.2% | 1,404 | 1,377 |
| Latin America ABS, CMBS, & RMBS | 0.00% | 5.62% | 2.0 | 0.0% | 41.0% | 30.3% | 1.4 | 0.0% | 122 | 178 |

Source: *Moody's Investors Service Data Report, April 2020, Structured Rating Transitions 20May20.xlsx*

| Date | Jun-19 | Jul-19 | Aug-19 | Sep-19 | Oct-19 | Nov-19 | Dec-19 | Jan-20 | Feb-20 | Mar-20 | Apr-20 | May-20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Obligors | 3 | 4 | 1 | 2 | 10 | 4 | 3 | 6 | 4 | 4 | 15 | 11 |
| Par Value ($MM) | $4,084 | $1,898 | $526 | $633 | $5,454 | $2,805 | $956 | $5,368 | $650 | $2,380 | $9,155 | $14,196 |

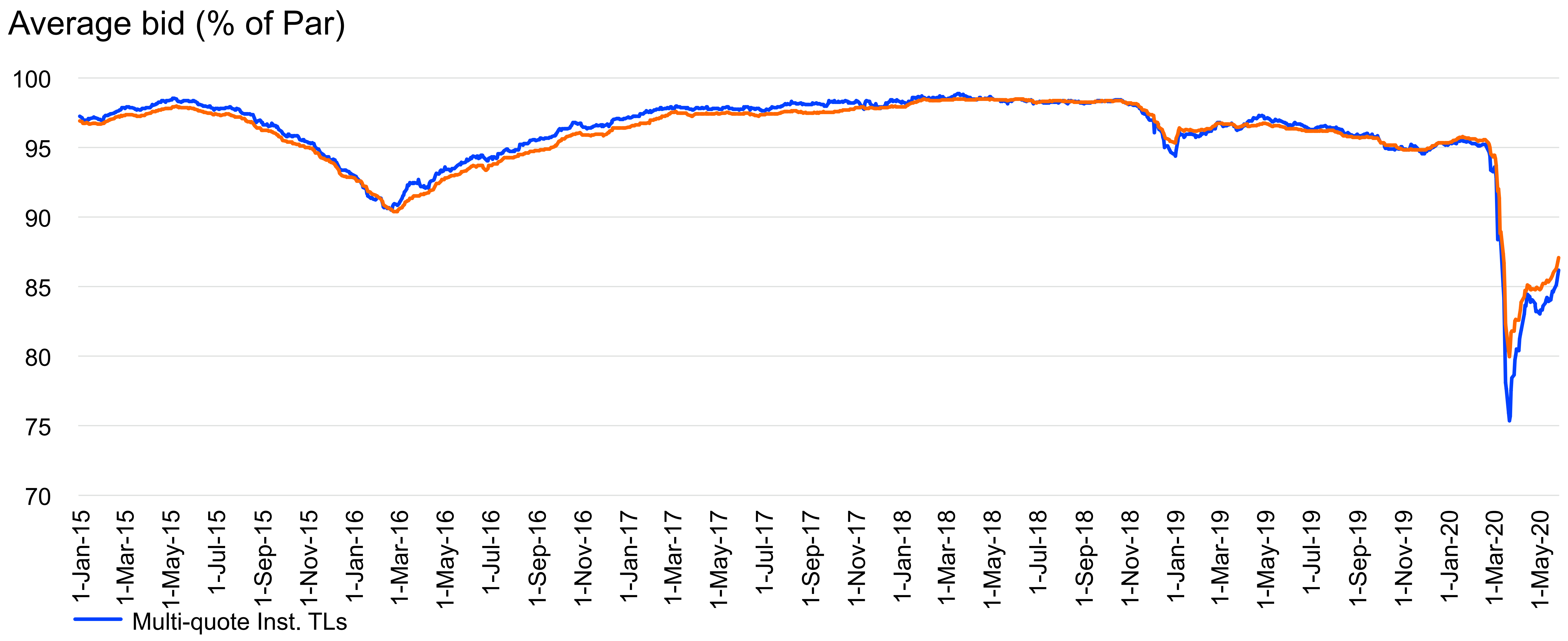
Source: *Refinitiv - U.S. Market Leveraged Loan Presentation, May 2020*

# Rebounds since mid-March suggest expected future default levels have been factored into prices



Yields are at historical averages—default risk much higher—credit availability much lower.

https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/leveraged-loan-news/fridson-on-finance-hot-high-yield-bond-market-hints-at-return-to-normal-despite-current-risk




Source: *Refinitiv - U.S. Market Leveraged Loan Presentation, May 2020*

# Investing in CLOs: Due Diligence Takeaways



## Know the Risk/Value Properties of CLOs—

1. The loans are high-grade, but yield historically has compensated for the risk. Does it now?
2. Do you know the collateral composition: BSLs, MM, specialty loans, CDOs (stay away)
3. Is there any synthetic collateral in the transaction (better to stay away)
4. CLOs are about more than collateral—does the manager know about the structure?
5. You are only entitled to distributions at your point in the waterfall—how does it work?
6. Are the triggers "standard" or a little different? How do they work? Do they protect you?
7. Probe transaction performance under stressed scenarios—how protected are you?
8. How long is the reinvestment period? Who makes the trading decisions? Executes them? How good is the manager? What makes you think so? How much is your decision based on her/him?

## Judgments behind your investment decision—

1. Cui bono? Listen to the pitch—try to work out who else is in the deal. Biggest mistake is to ignore details that don't fit the "efficient market" hypothesis!
2. What is your tolerance for the uncertainty beyond the stated value and risk?

# Q & A

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