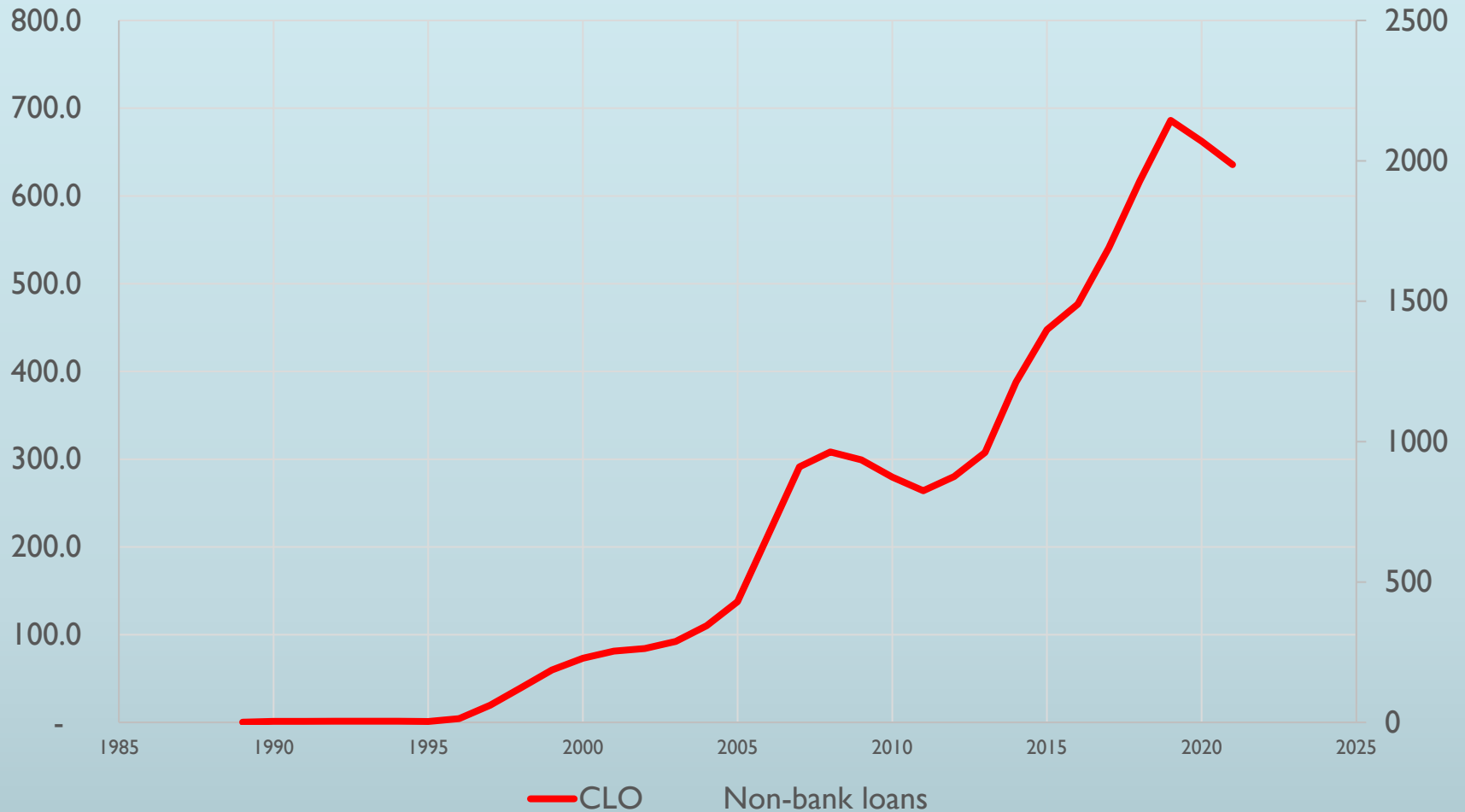


Asset-backed securitization

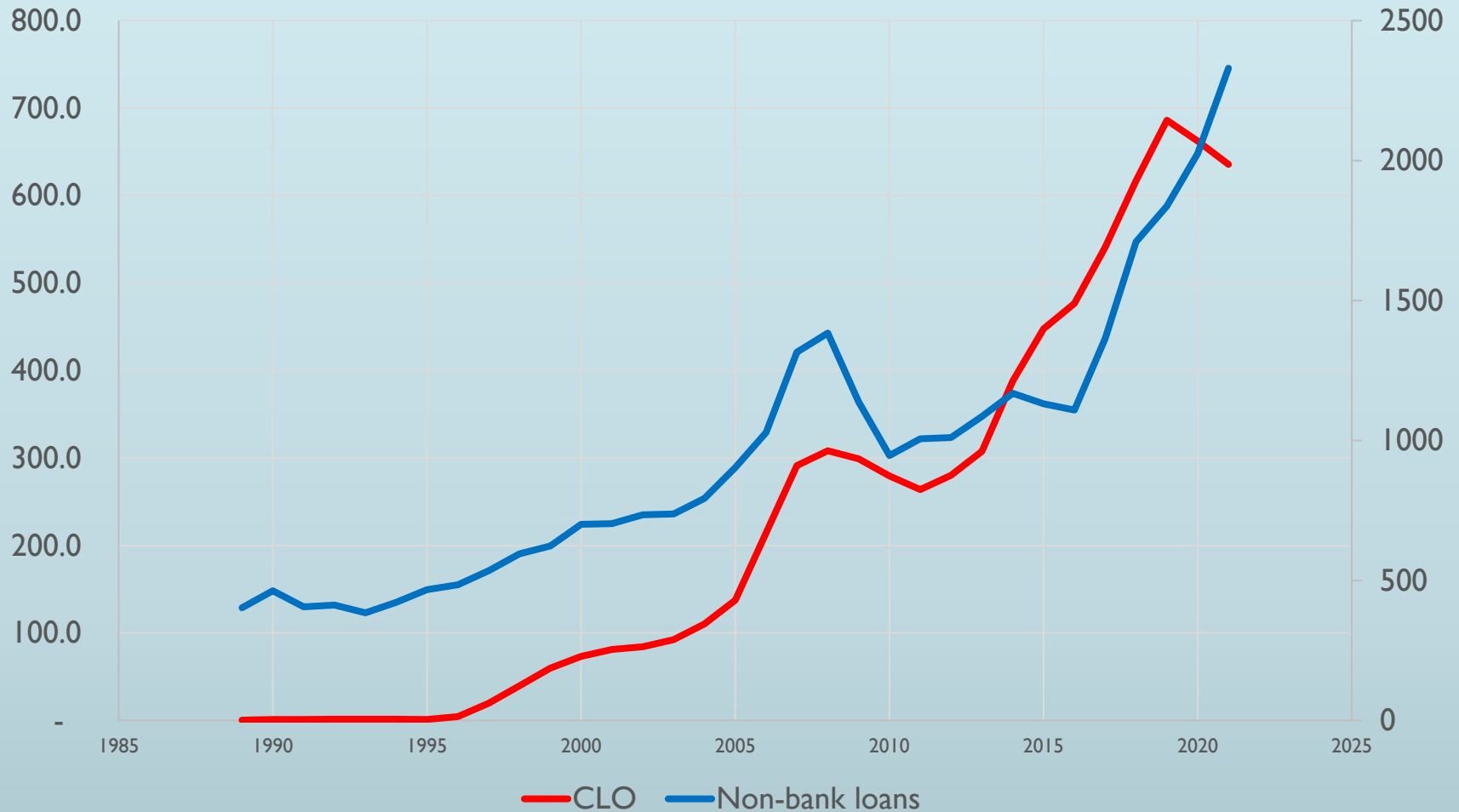
Fixed income

Securitization has mushroomed



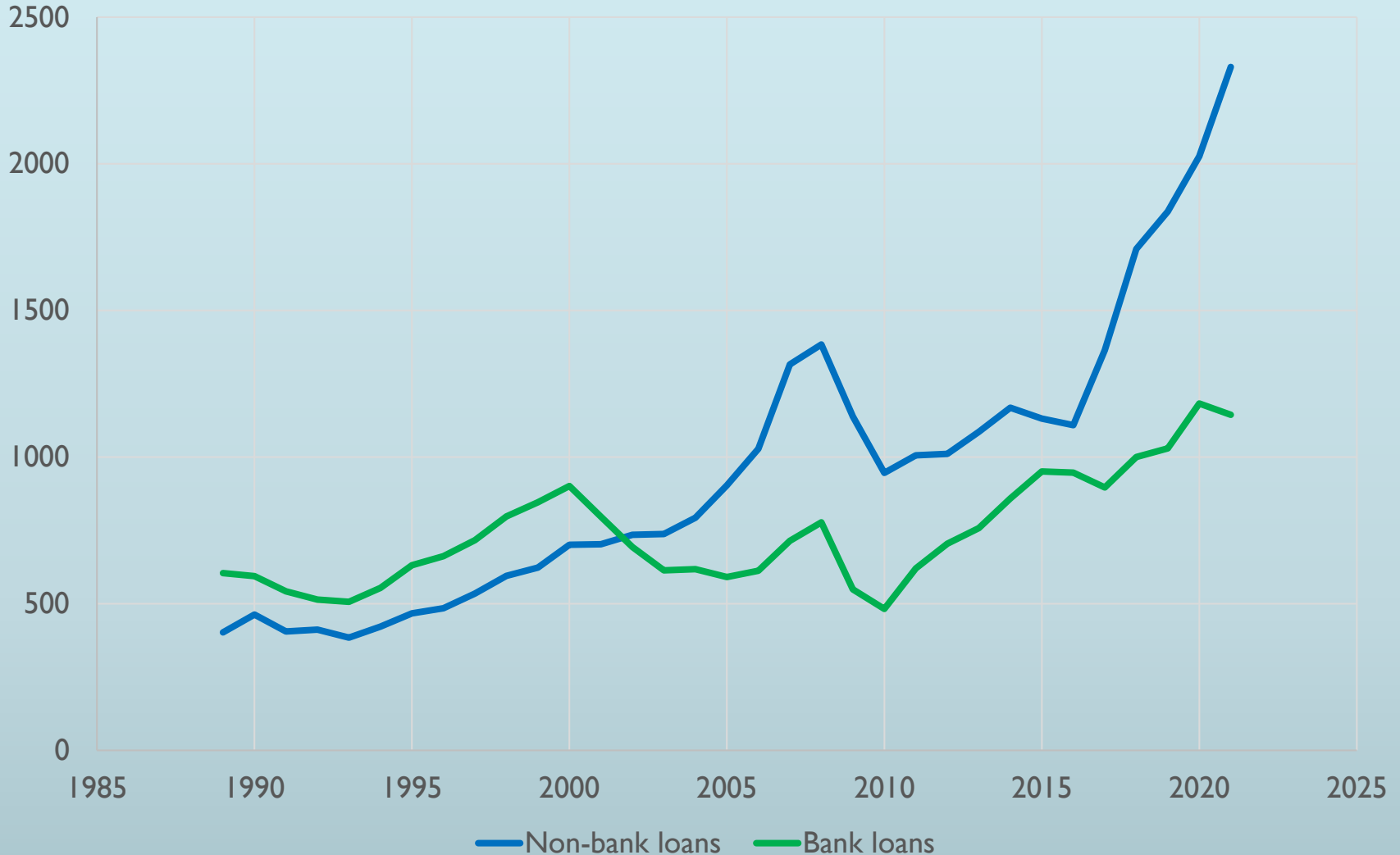
Notes: \$bn, total outstanding, all data from SIFMA

Securitization has mushroomed



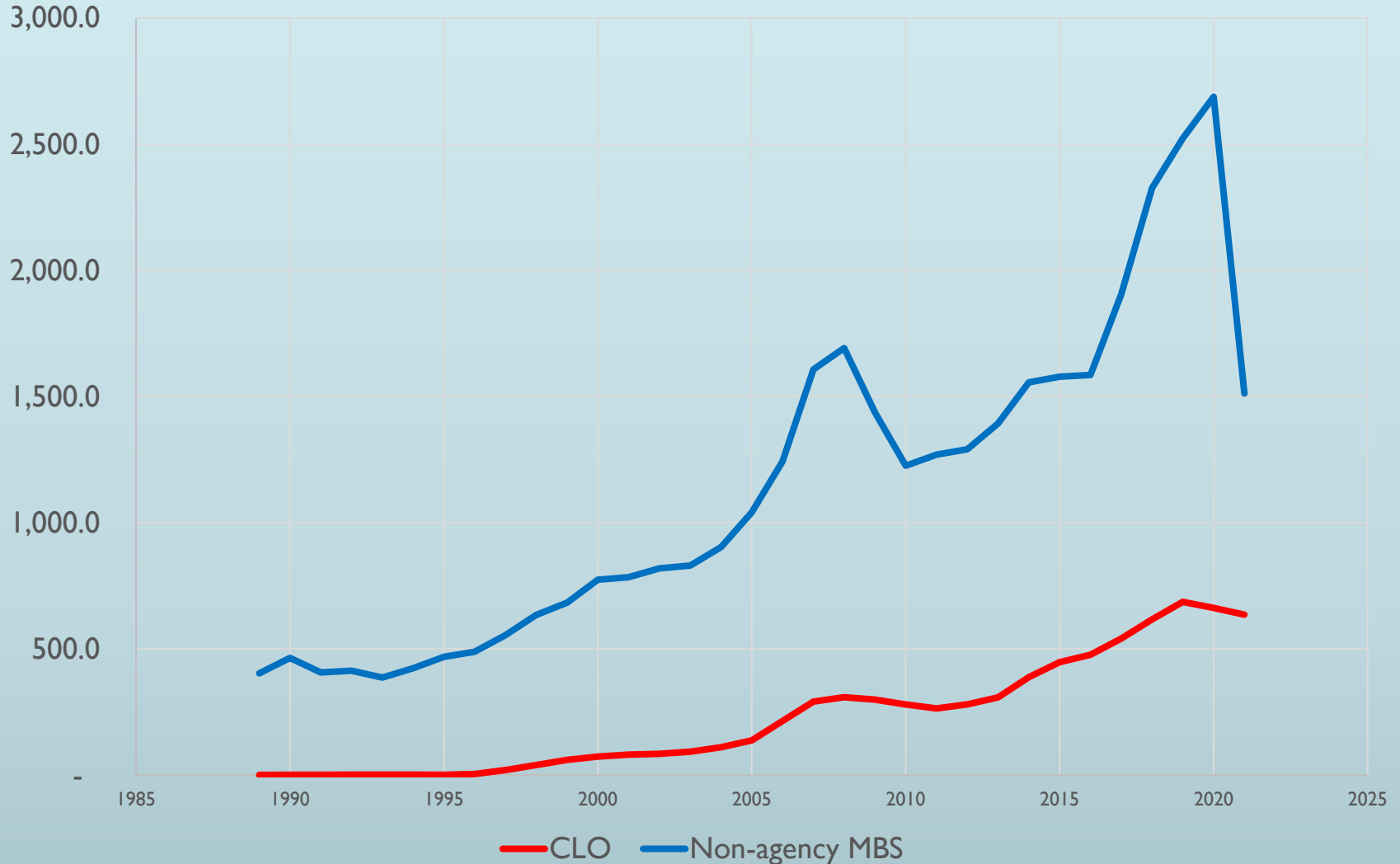
▶ Notes: \$bn, total outstanding, SIFMA, flow of funds. Loans to NCBs, excluding mortgages

Who needs banks any more?



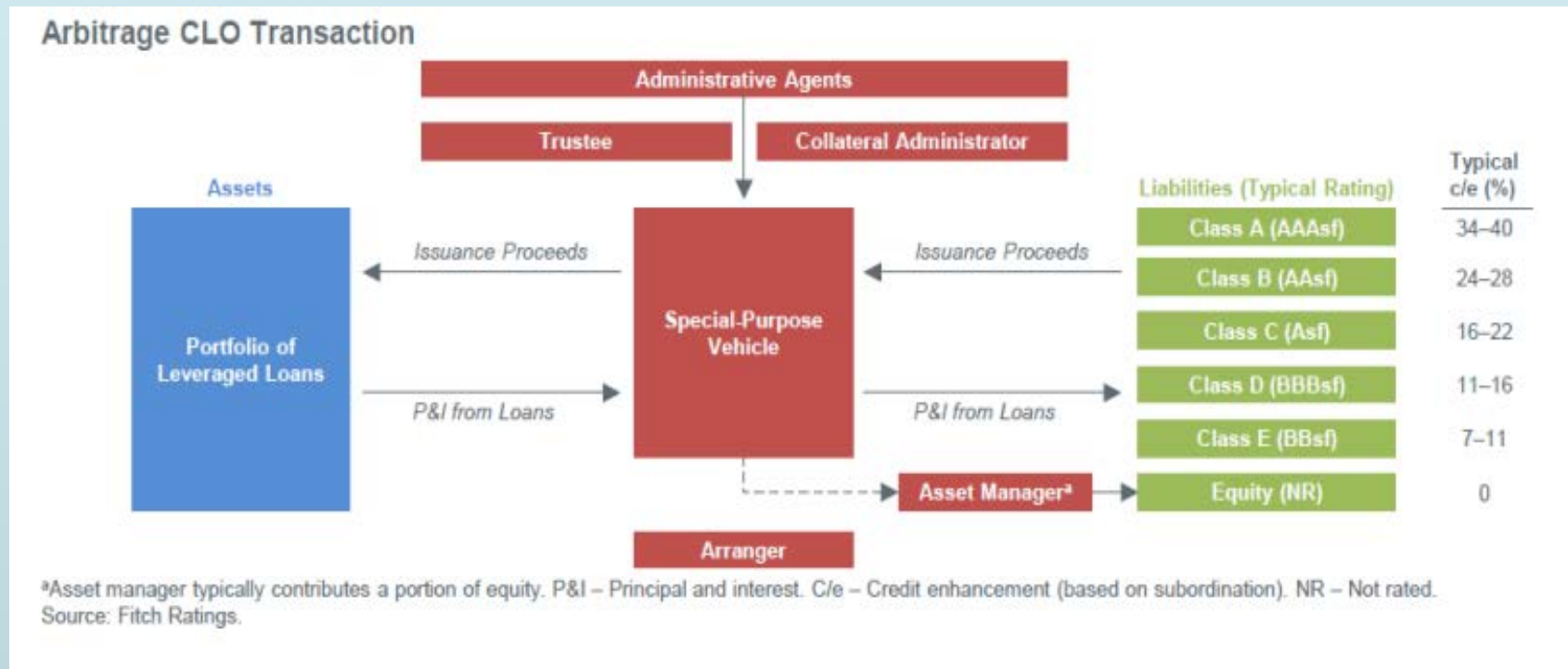
▶ Notes: \$bn, total outstanding, flow of funds data, bank loans are loans by depository institutions to NCBs

CLO is a late-bloomer and still puny



Notes: \$bn, total outstanding, all data from SIFMA

CLO process



My favorite part is the clever use of the word “arbitrage” here, marketing is one hell of a drug:

“The transaction is referred to as “arbitrage” because it aims to capture the excess spread between the portfolio of leveraged bank loans (assets) and classes of CLO debt (liabilities), with the equity investors receiving any excess cash flows after the debt investors are paid in full.”

Securitization= Pooling + Tranching

- An financial intermediary pools claims to FI cash flows into a special purpose vehicle...
- ... and uses the pool as collateral for securities with various liquidity and risk characteristics ...
- ... that appeal to the preferences of heterogeneous investors



The bottom line

- Bank's profits = Market Value of the Securities
 - Cost of Funding/Acquiring the Assets
 - Transaction Costs
- The bank maximizes profits by:
 1. Selling each security to the highest bidder
 2. Issuing the menu of securities with the highest net market value
- A pool is created if and only if there exists a feasible menu of securities whose net market value exceeds all costs



“Given the strength of demand for safe U.S. assets, it would have been surprising had there not been a corresponding increase in their supply.”

Ben Bernanke et al. (2011)



The rise of securitization (Amaral et al., 2021)

- What purpose does pure repackaging serve?
- Caters to the needs of heterogeneous investors by creating securities with different risk, liquidity, and return characteristics
- Completes the markets
- A machine to create safe securities backed by assets that are not...
- ... at a time mere global appetite for AAA seems insatiable (the saving glut)
- Tranching makes profitable (positive NPV) investments that would not be profitable otherwise



What else is there? (Ben Saïd et al, 202?)

- Banks are (relatively speaking) withdrawing from the loan market post-2008
- Plus, banks are just not very good at lending, so an alternative to the deposits-to-loans paradigm had to emerge
- For instance, banks are too slow in contexts (acquisitions, e.g.) where speed of execution is of the essence



Asset-backed securitization, a recent history

- The US government wanted liquid secondary markets for mortgages after the great depression: FNMA (1938), GNMA (1968), FHLMC (1970)
- Ginnie issues first pass-through in 1968
- Bank of America issues first private label pass-through in 1977
- Solomon Brothers and First Boston (simultaneously) create the CMO/CDO concept in 1983
- Late 1990s, the ultimate beast appears: synthetic CDOs
- No more actual collateral needed



Mortgages

- Mortgages are loans secured by a real estate asset:
 1. Commercial vs. Residential
 2. Permanent vs. construction
 3. CMBS loans vs. portfolio loans
- Two parties: mortgagor (borrower), mortgagee (lender)
- Two basic components:
 1. Promissory note: stipulates payment obligations
 2. Mortgage deed: stipulates claims to collateral



Mortgage process

- If all stipulations are met, deed is returned to the borrower, claim to collateral expires, and the borrower is released from the note
- In lien theory states, lender holds a lien on the property until contract is terminated
- In title theory states, lender holds a title to the property until termination
- In deed of trust states, a trustee holds title to the property until contract is terminated
- Trustees or mortgagees can have power of sale in 29 states
- In other states, only courts can sell collateral in judicial sales



Liens

- Liens are claims against the property for payment of a payment obligation (taxes, account payables, mortgage debt...)
- Liens are organized by seniority:
 1. Taxes
 2. Mechanics' liens (construction services providers)
 3. Mortgage liens in the order in which they were recorded, barring explicit subordination clauses

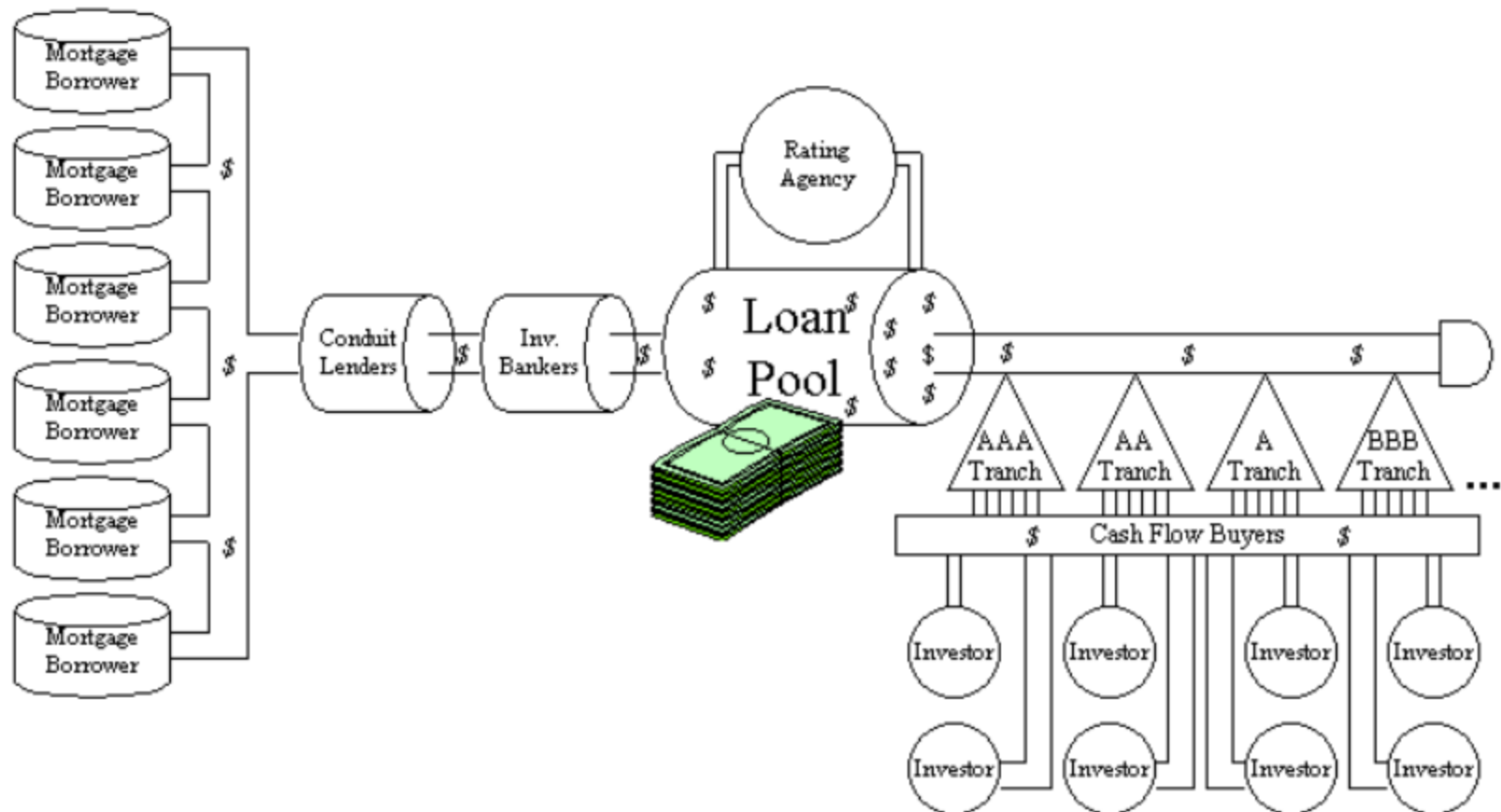


Securitization process

1. Mortgages are originated
2. Sold to and pooled by investment banker
3. Pool is used to create one or several securities:
 - i. Mortgage-backed bonds (MBBs)
 - ii. Mortgage pass-through securities (MPTs)
 - iii. Mortgage pay-through bonds (MPTBs)
 - iv. Collateralized Mortgage Obligations (CMOs)



CMBS Securitization Process



More MBS language

- Once pooled, mortgages are usually transferred to a trust
 - *Real Estate Mortgage Investment Conduit (REMIC)* are untaxed, pass-through entities that:
 1. Hold a fixed pool of mortgages
 2. Distribute payments to investors
 - Pooling and servicing agreement (PSA): specifies how loans will be serviced, and how proceeds and losses are to be distributed to investors
 - *Servicers (Primary, Master, Special)*: administer the loans
-



Basic example

- Consider a pool of 1,000 identical FRMs with initial balance \$75,000 (each), contract rate 11%, and yearly payments
- If all goes according to the plan, \$12,735,107 in P&I will be collected each year on these mortgages until maturity
- This pool can be securitized in at least 4 different ways
- But we'll jump right into the CMO version



Collateralized Mortgage Obligations

- CMOs are debt instruments issued using a pool of mortgages as collateral, with the pass-through features of MPTBs
- *Ex Uno Plures*: several classes of securities are issued against the same pool of mortgage, ordered by priority
- Each class of security is called a *tranche* (slice)
- Each tranche has its own risk and liquidity characteristics, and can be sold to investors with different objectives
- Completes the market: new sources of fairly safe fixed income instruments
- Sum of PV of the slices $>$ PV(Pool)



Basic CMO example

- Back to our \$75M pool of FRMs
- 3 tranches:
 1. A: 9.25% rate, \$27M face value
 2. B: 10% rate, \$15M face value
 3. Z: 11% rate, \$30M face value
- Payments available for reduction of principal of A and B:
Principal payments from pool + Interest Payments on Z
- Go to A first, then B
- Once A and B are retired, Z gets paid

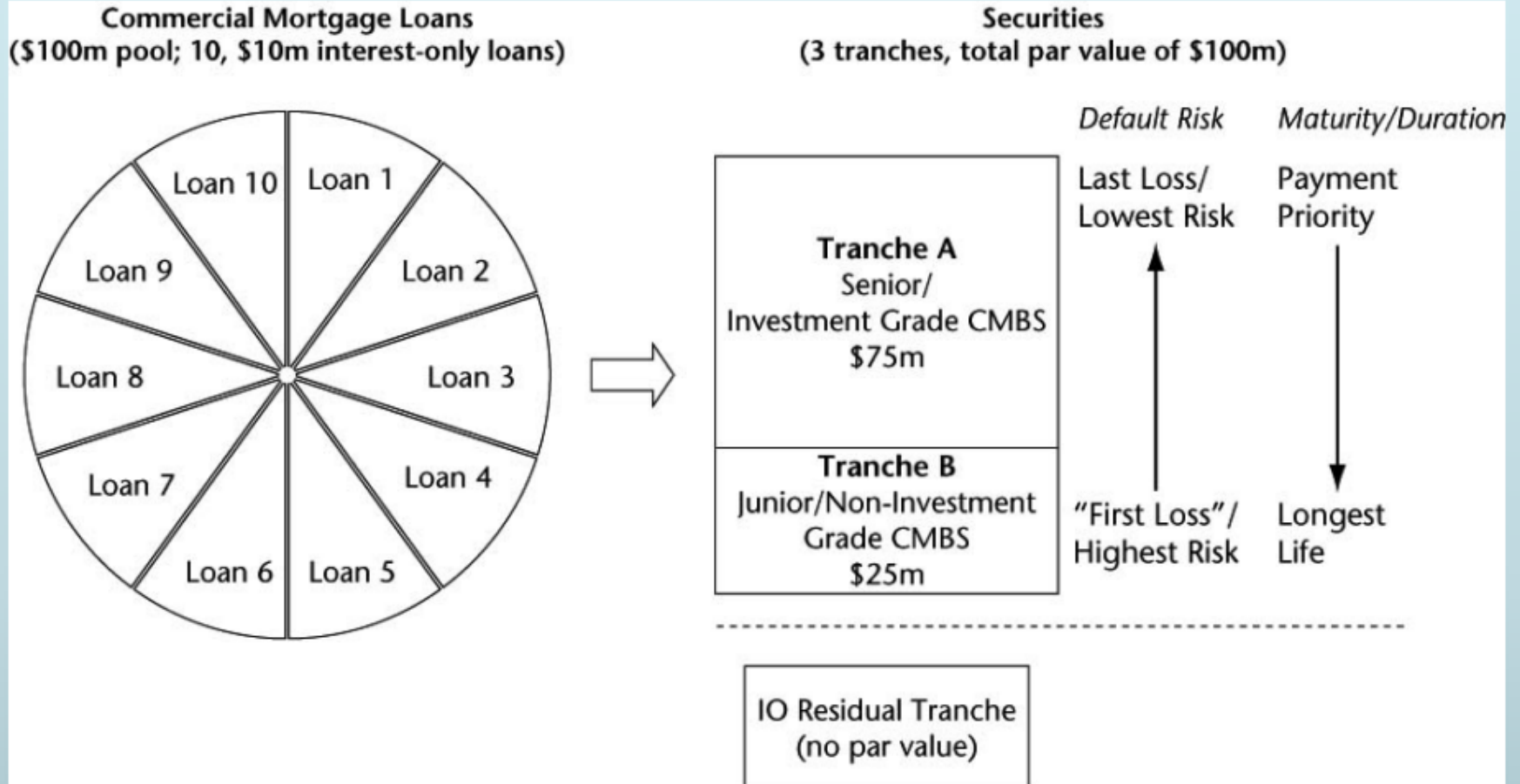


Default

- Payments go to A first, then B, then Z, and then, finally to the equity tranche (waterfall structure)
- If anything is lost to default, equity tranche is the most likely to be affected
- This is why the IRR on the equity tranche must be high, and why subordinated tranches have to be rewarded
- Assume for instance that 20% of the last three principal and interest payments are lost to default



CMOs: example 2 (GM, section 20.2.1)



Value of deal to issuer

- The value of the deal is the difference between the sum of issue prices for each tranche (net of underwriting costs) and the cost of funding the mortgages (\$100M)
- This depends on the YTM various buyers require given the risk associated with each tranche:

| Class | Par Value (millions) | WAM (yrs.) | Credit Support | Coupon | YTM | Value as CMBS* (millions) |
|-------|----------------------|------------|----------------------------|----------|-----|---------------------------|
| A | \$75 | 1.33 | 25% | 8% | 8% | \$75.00 |
| B | \$25 | 2.00 | 0% (1 st -loss) | 10% | 12% | \$24.15 |
| IO | NA | 1.25 | NA | NA | 14% | \$1.70 |
| Pool | \$100 | 1.50 | NA | 10%(WAC) | NA | \$100.85 |