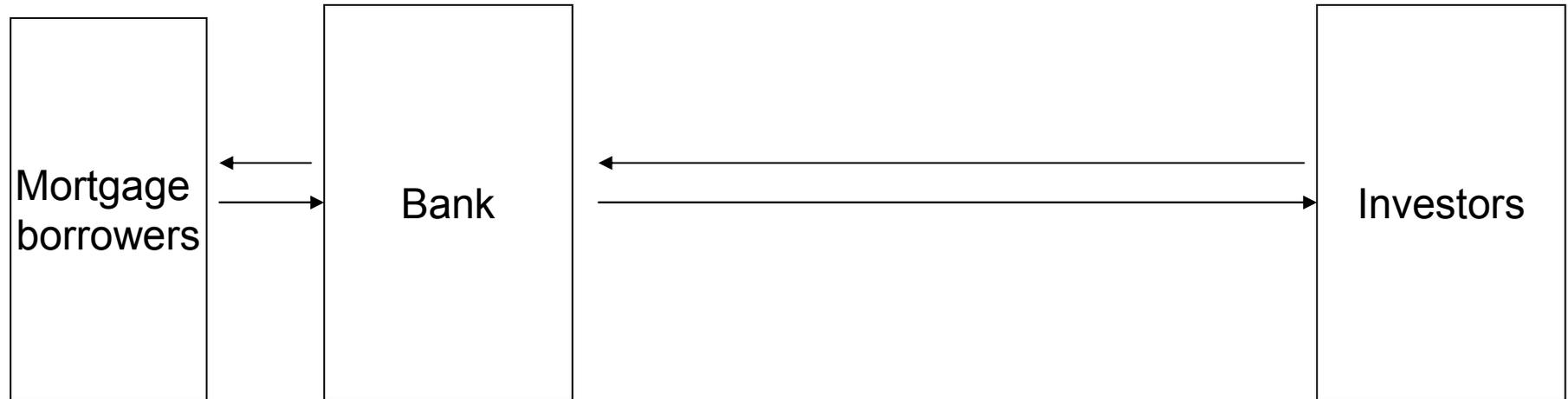


# Asset Securitization

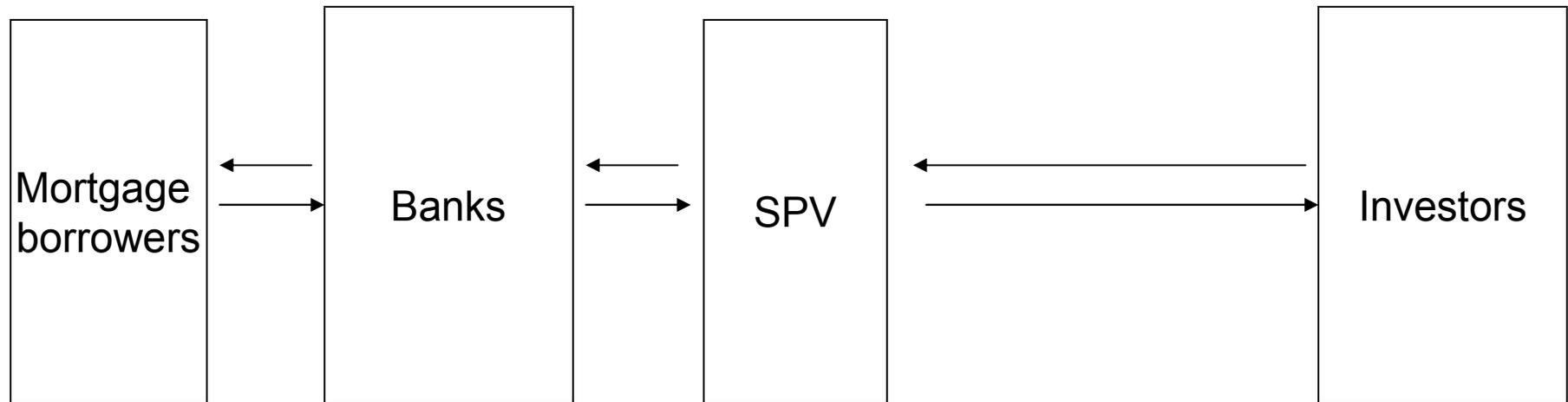
# No securitization



# No securitization

- Consider a borrower that needs a bank loan to buy a house
- The bank lends the money in exchange of monthly mortgage payments over a long period
- The mortgage payments are part of the banks assets
- If the bank needs financing, it can issue a bond. The return paid to investors depends on the overall bank riskiness.
- A Bank with BBB ratings will pay BBB returns etc.

# Securitization



# Securitization

- Securitization is the transformation of illiquid assets into a security, that is, an instrument that is issued and can be traded in a capital market.
- Assets that have been transformed in this manner include residential mortgages, auto loans, credit card receivables, leases and utility payments.
- The term asset-backed security (ABS) is generally applied to issues backed by non-mortgage assets.

- Asset Backed Security (ABS): Financial securities issued to the public market that are backed (securitized) by pledging specific assets, for example:
  - Mortgage Backed Securities (MBS)
  - Auto Loans (CARS)
  - Credit Card Receivables (CARDS)
  - Home Equity Loans (HELs)
  - Royalties (eg David Bowie Bonds)
  - Student Loans

- How do banks securitize assets?
  - ABS securities are created by removing assets from the balance sheet of the bank
  - It sells pledged assets to a special purpose vehicle (SPV). The SPV is not owned by the bank
  - The SPV issues debt to the public market, using the pledged assets to securitize the offering
  - The yield on the issue is based on the quality of the pledged assets and not the bank from which they came. A higher credit rating results in lower yield (more valuable bonds)

## Structure

- The central element of securitization is the separation of assets from a company or financial institution's balance sheet, and the use of these assets as backing for securities that appeal to investors.
- Such separation makes the quality of the asset-backed security independent of the credit worthiness of the originator.

## Cash flows

- In the normal arrangement, principal and interest cash flows received by the seller are paid directly to the SPV, which then pays investors the promised interest and any principal that has been returned.
- In a structure of this kind, the investors may incur the payment-timing risk as well as other risks of the underlying assets, but not the credit risk of the originator.

## Originators

- Commercial banks constitute the principal originators of the loans and similar assets that are securitized.
- Some weaker borrowers or countries have discovered that they can employ their good assets to access capital markets that would otherwise be closed to them.

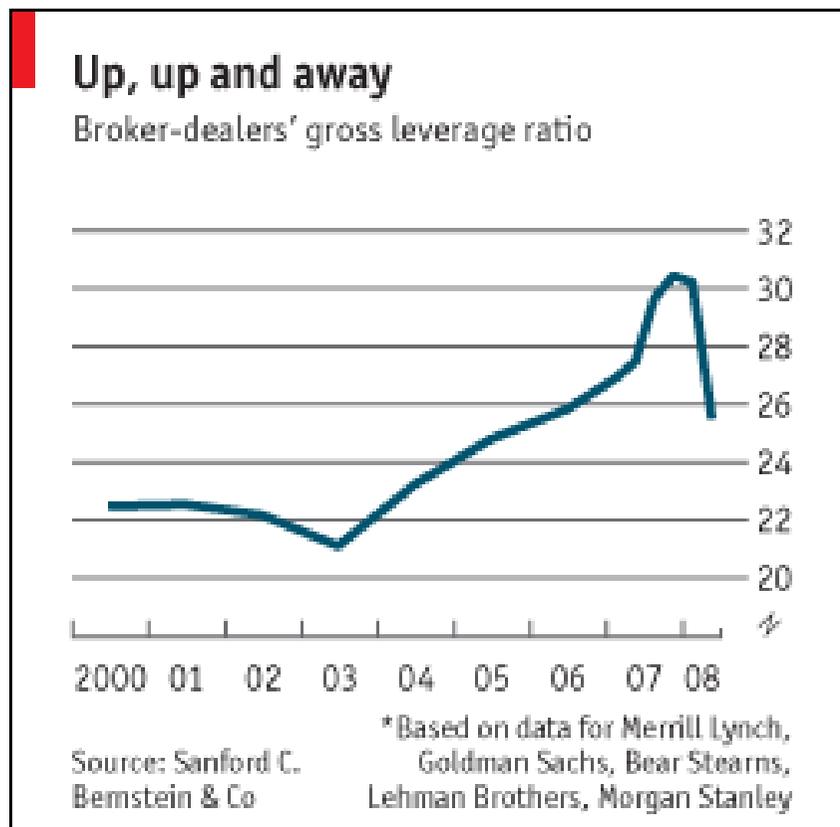
## Investors

- The great majority of asset backed securities are held by institutional investors, such as insurance companies, mutual funds, money managers, banks, pension funds and the like.

# Benefits for originators

- Originators gain from securitization by obtaining many of the benefits of high credit-quality financing without retaining the debt on their books and without foregoing profitable aspects of the assets, including origination, servicing, expansion of business, and retention of excess spread.
- The price paid is that the technique can be complex and may require a significant initial investment of managerial and financial resources.
- For those companies willing to make this investment, there can be significant and permanent advantages from having access to the asset-backed market. These advantages include the following:

1. Assets removed from the balance sheet. If structured as a sale, securitization can allow the issuer to reduce its assets and its debt, thereby increasing its scope for borrowing. In effect, securitization allows a bank or business to achieve greater leverage.

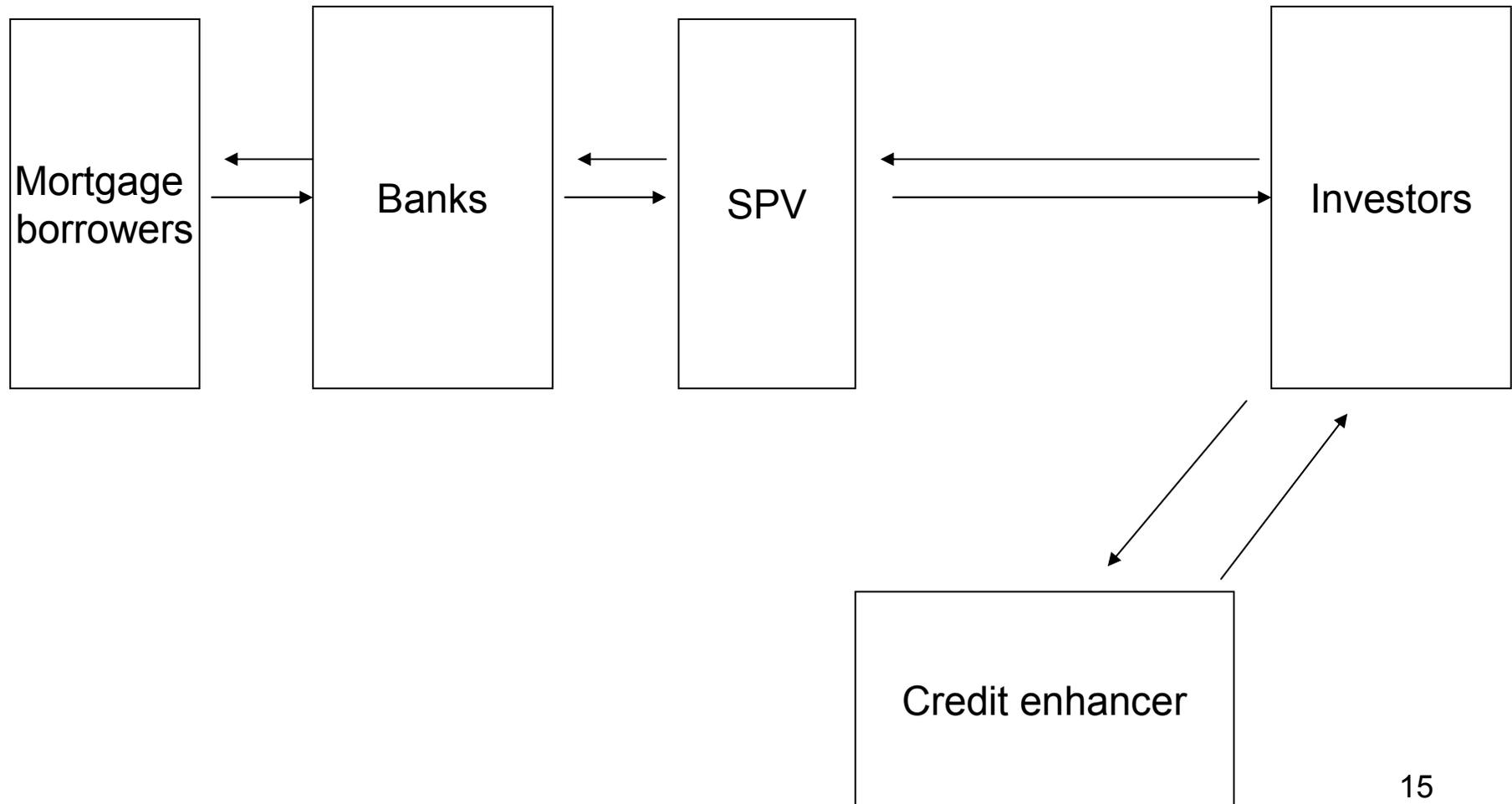


## 2. Lower financing costs:

- A bank can issue A rated bonds requiring 8% yield, or it can issue AAA rated ABS requiring a 6% yield
- Once off-balance sheet, an asset's credit rating is determined by the merit of the asset and not the overall composition of the balance sheet, hence a higher credit rating is possible.

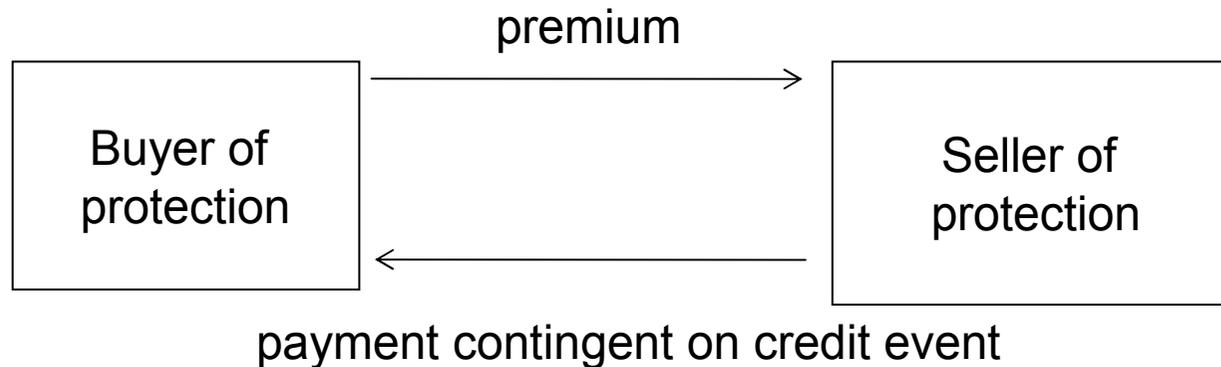
3. Reduction in required capital. For a bank or finance company that faces regulatory capital requirements, a securitization transaction that qualifies as a sale of assets for bank-regulatory purposes reduces the need for equity financing.
  
4. Recognition of gains. *A* securitization may allow a seller to recognize an accounting gain equal in the aggregate to the present value of any expected future cash flows payable to the seller that will be derived from the assets.

# Credit default swap



# Credit default swaps

- A CDS is a form of insurance against default on a loan or a bond. The two parties are:
  - the buyer of protection
  - the seller of protection

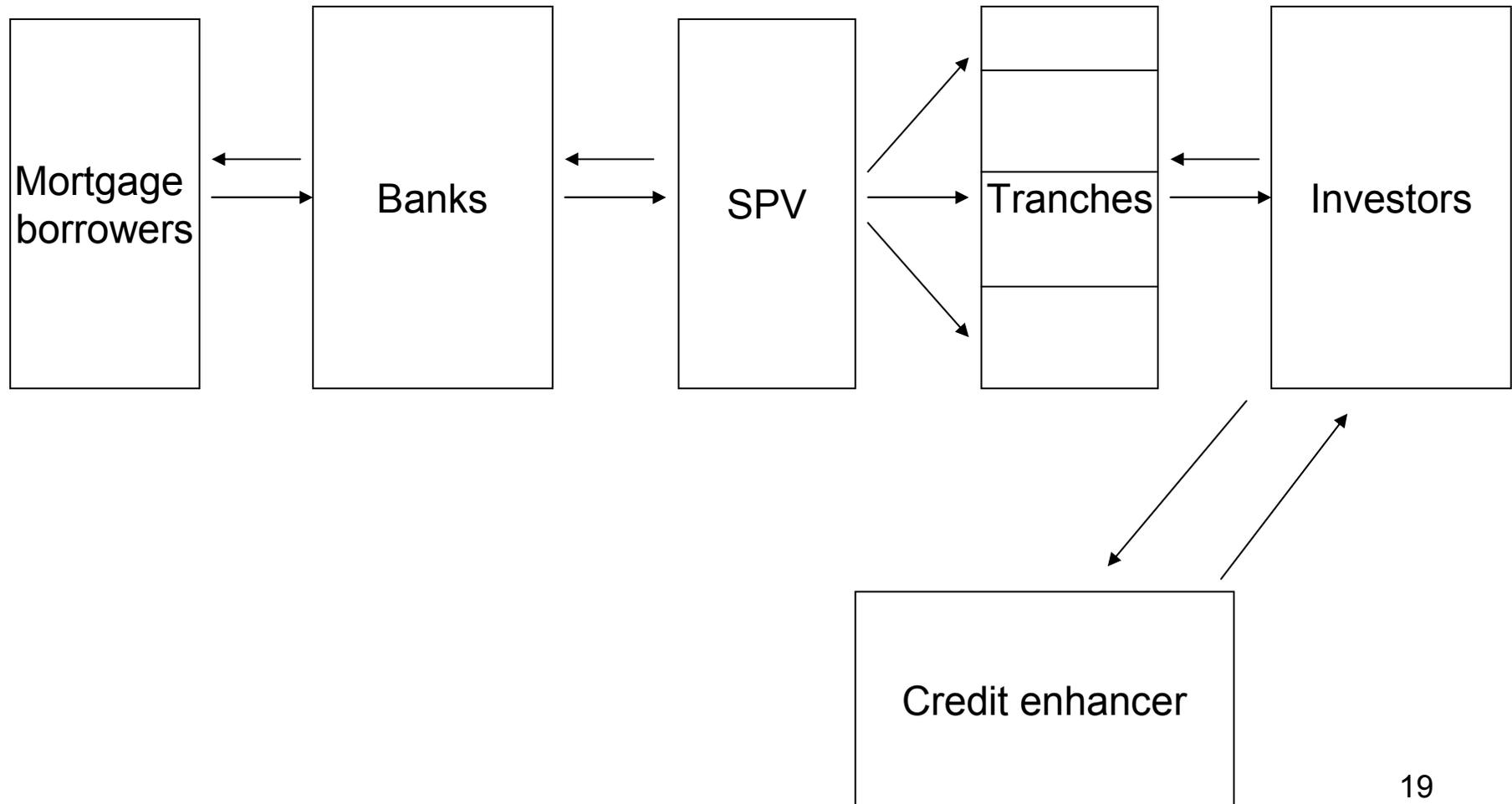


- Events that trigger the contingent payment: bankruptcy, insolvency, failure to meet payment obligation when due, credit rating downgrade.

- Most ABS investors are unwilling to take significant credit risk.
- Hence, even when the assets being securitized are themselves of good quality, many deals entail some form of credit enhancement, such as overcollateralization or a third party guarantee.
- For this reason, mortgage-backed and asset-backed securities tend to have excellent credit ratings.
- Depending upon the financial guarantee company's own rating, a security may be raised to the single-A or triple-A level.
- In effect, the guarantor rents its rating for a fee.

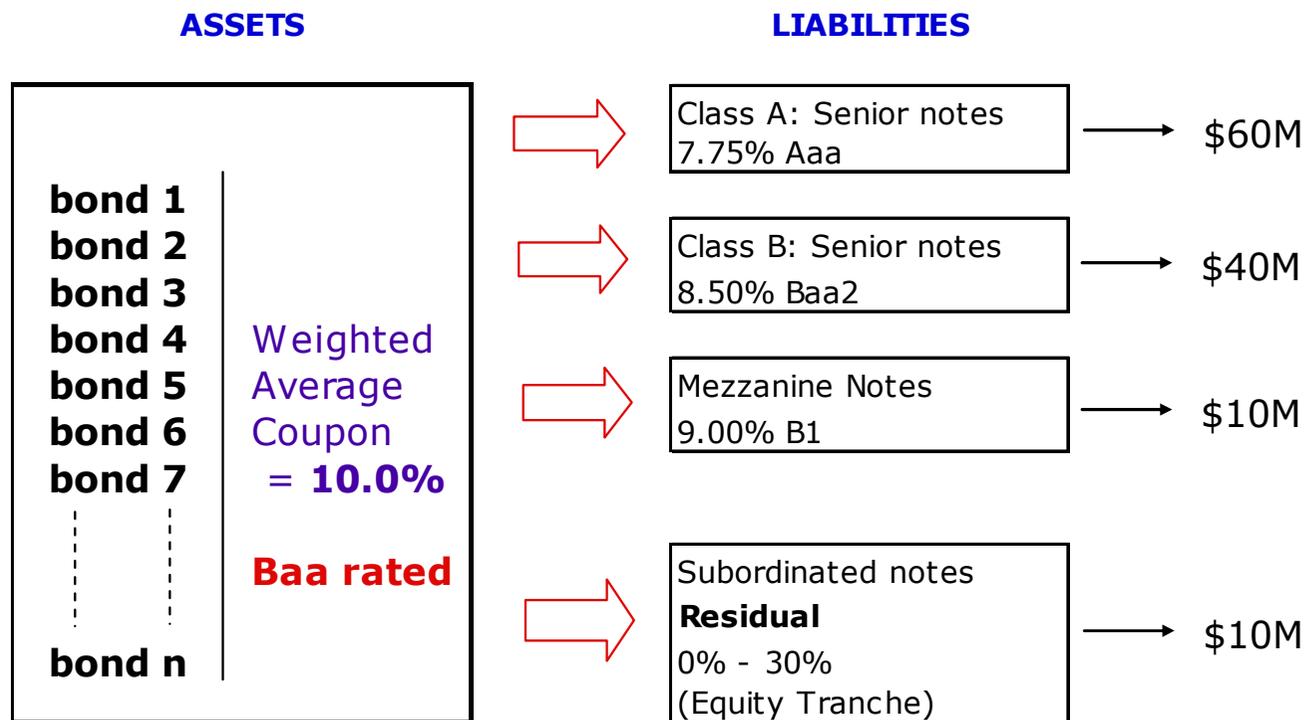
- Depending on the cases, the enhancement is bought either by the investors or by the SPV.
- Problem with credit enhancement: Credit enhancers are allowed to enhance as much securities as they want.
- The only constraint is that enhancing the credit of too many mortgages (sometimes) reduces the credit worthiness of the insurer himself.

# Collateralized debt obligation



# Collateralized debt obligation

- CDO (Collateralized Debt Obligations): A diversified pool of different types of debt obligations



# Collateralized debt obligations

- CDOs are ABS that have more than one class of seniority
- Tranches (or prioritized claims) are structured in senior bonds, mezzanine, and junior bonds.
- Example: Consider two bonds with probability  $p$  of default, and pay \$0 conditional on default and \$1 otherwise.
- If we pool the two bonds, a junior tranche can be written s.t. it bears the first \$1 of losses.  
Hence the junior bond pays \$1 if both bonds avoid default.  
The senior bond pays \$1 unless both bonds default.

- If  $p=0.1$ , the senior bond default risk is 0.01, and the junior bond default risk is  $1-0.9^2=0.19$
- With more securities in the portfolio, a larger proportion of the issued tranches can end up with higher ratings.
- Example: we add a third \$1 bond to our portfolio.
  - The first tranche default if any of the three bonds defaults
  - The second tranche default if at least two bonds default
  - The senior tranche defaults if all three bonds default
- Hence, the default probabilities on the tranches are 0.001, 0.028, and 0.27.

Prospectus Supplement to Prospectus dated March 7, 2003

## Household Affinity Credit Card Master Note Trust I

Issuer

## Household Affinity Funding Corporation III

Transferor

## Household Finance Corporation

Servicer

### Series 2003-1 Asset Backed Notes

	<u>Class A Notes</u>	<u>Class B Notes</u>	<u>Class C Notes</u>
Principal Amount .....	\$451,750,000	\$30,000,000	\$18,250,000
Interest Rate .....	One-Month LIBOR <i>plus 0.12% per year</i>	One-Month LIBOR <i>plus 0.55% per year</i>	One-Month LIBOR <i>plus 1.45% per year</i>
First Interest Payment Date .....	April 15, 2003	April 15, 2003	April 15, 2003
Expected Principal Payment Date ...	February 15, 2008	February 15, 2008	February 15, 2008
Final Maturity Date .....	February 16, 2010	February 16, 2010	February 16, 2010
Price to Public .....	\$451,750,000 (or 100.000%)	\$30,000,000 (or 100.000%)	\$18,250,000 (or 100.000%)
Underwriting Discount .....	\$1,016,438 (or 0.225%)	\$75,000 (or 0.250%)	\$63,875 (or 0.350%)
Proceeds to Issuer .....	\$450,733,563 (or 99.775%)	\$29,925,000 (or 99.750%)	\$18,186,125 (or 99.650%)

The Class B notes are subordinated to the Class A notes. The Class C notes are subordinated to the Class A notes and the Class B notes.

The primary assets of the trust are receivables originated under "The GM Card<sup>®</sup>" program in MasterCard<sup>®</sup> and, if issued in the future, VISA<sup>®</sup> revolving credit card accounts.

We expect to issue your series of notes on or about March 13, 2003. We will deliver your series of notes in book-entry form.

## Reapply securitization with junior tranches (CDO<sup>2</sup>)

- With two bonds, the junior tranche default rate was 19%. We can combine it with a junior tranche from another bond pool, for a second round of securitization.
- The senior tranche has now a 3.6% default probability. The junior tranche default probability is 34%.

# Correlation

- The ability to create tranches depends on the correlation between the default probabilities.
- The higher the correlation, the more difficult it is to create low risk tranches
- Example: Assume that the two bonds are perfectly correlated, ie. there is a 10% probability that both default and 90% that both don't default
- Hence, the default probabilities on the senior and junior tranches are now both 10%.

# Rating CDOs

- Rating CDO is much more difficult than rating individual bonds or mortgages.
- In order to rate a CDO, the joint distribution of payoffs (determined by the correlations) must be known.
- Underestimating the correlation leads to overestimating the credit worthiness of senior tranches.
- Coval et al. 2009: Table 3

# Securitization and the subprime mortgages

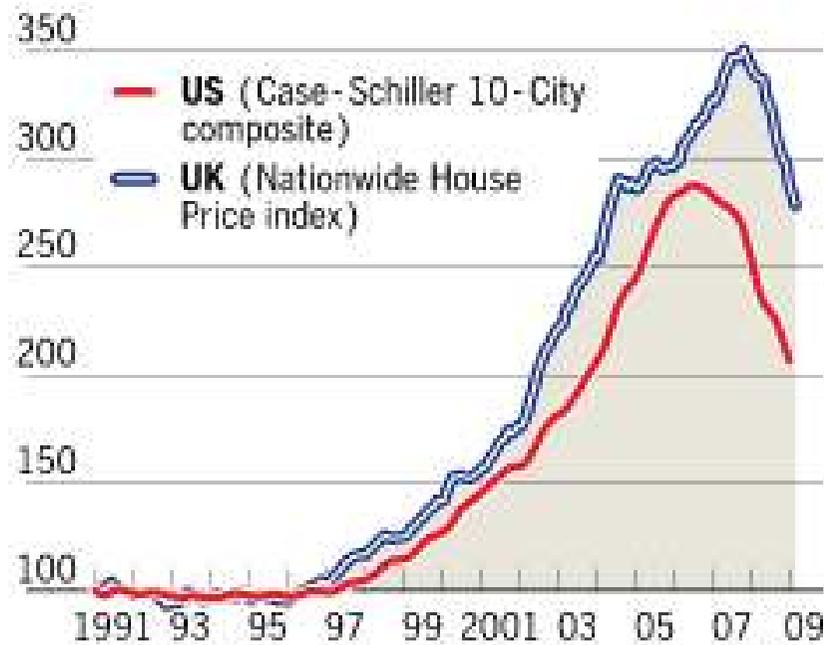
- Since the late 1990s, individuals with low credit quality were allowed to get mortgages.
- Reasons:
  - Optimistic credit ratings
  - Behavior of credit enhancers
  - Risk-taking by the banks
  - Lack of regulation

# Securitization and the subprime mortgages

- Other reasons:
  - Rising home prices allowed borrowers to refinance in case of default.
  - Macroeconomic imbalances between the West and Asia, where huge savings had to be invested somewhere
  - Animal spirits: when housing prices go up, people expect them to keep going up.
- These subprime mortgages grew from \$96bn in 1996 to \$600 in 2006.

## US & UK house prices

Indices (rebased)



Source: Thomson Datastream

## Developed world banking stocks

Market value as a % of total developed world market value



Source: Thomson Datastream