The Lehman Bankruptcy: Before & After

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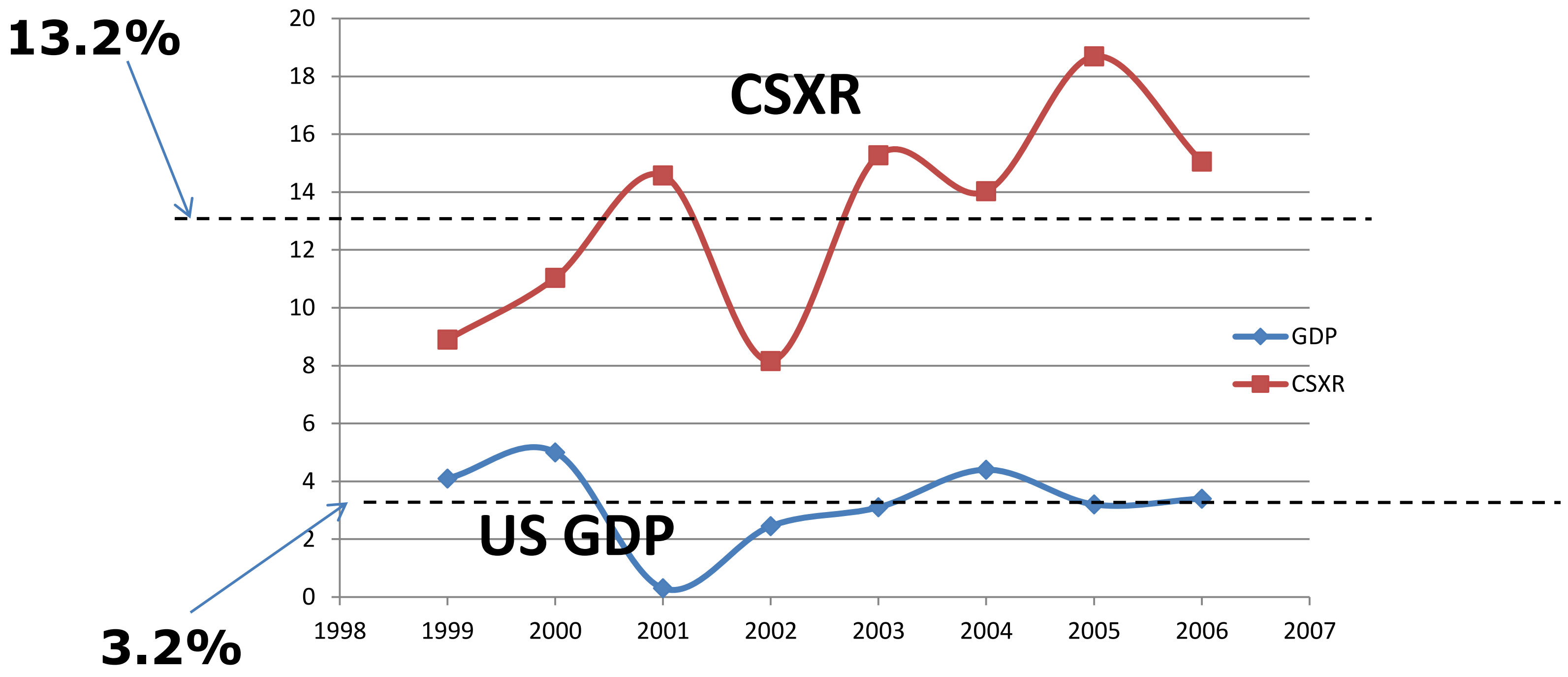
Lehman Brothers
Founded in 1850
Filed for bankruptcy, September 15, 2008

Largest bankruptcy in US history,
US$ 690 billion (value at bankruptcy)

BEFORE

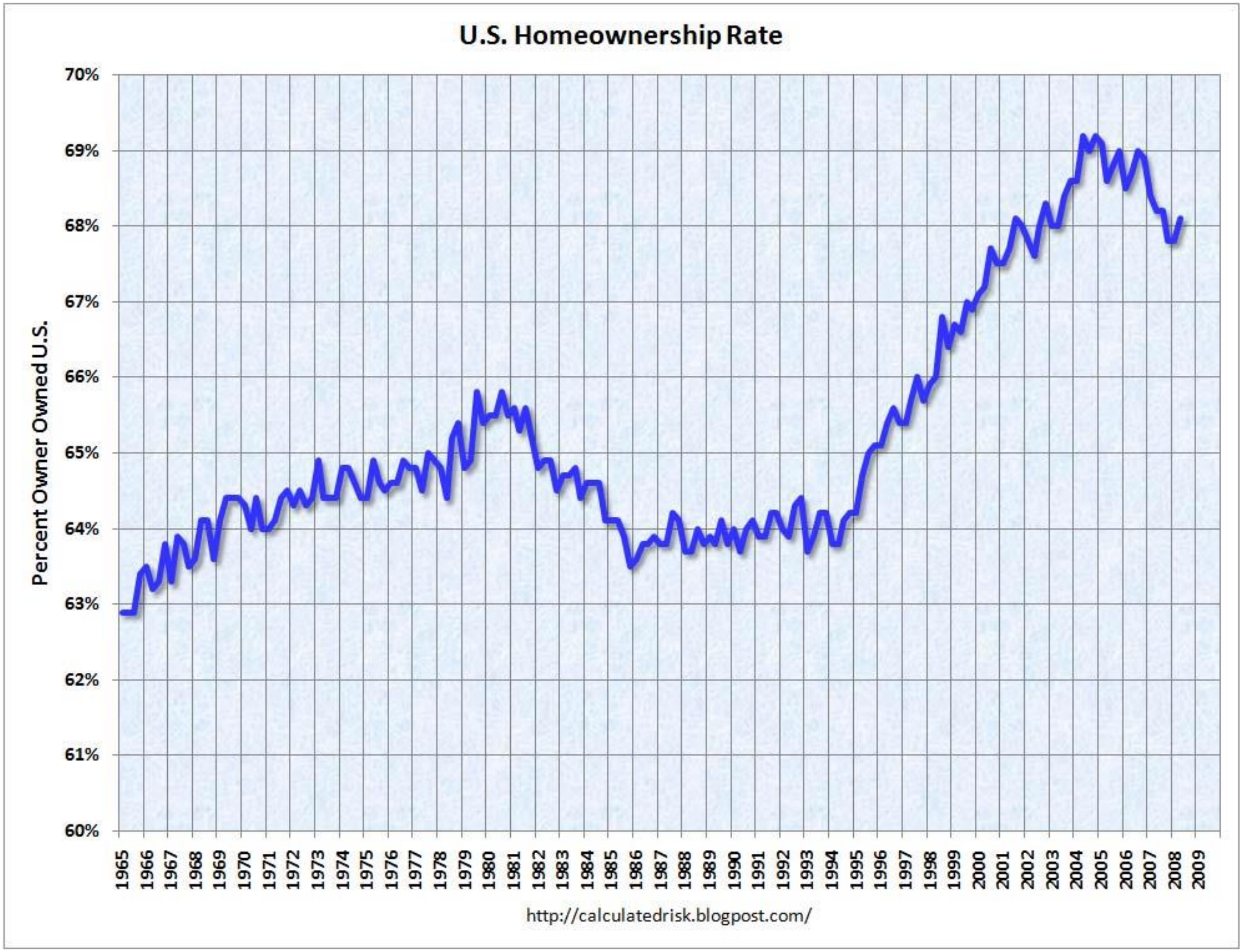
US GDP & CSXR Growth Rates



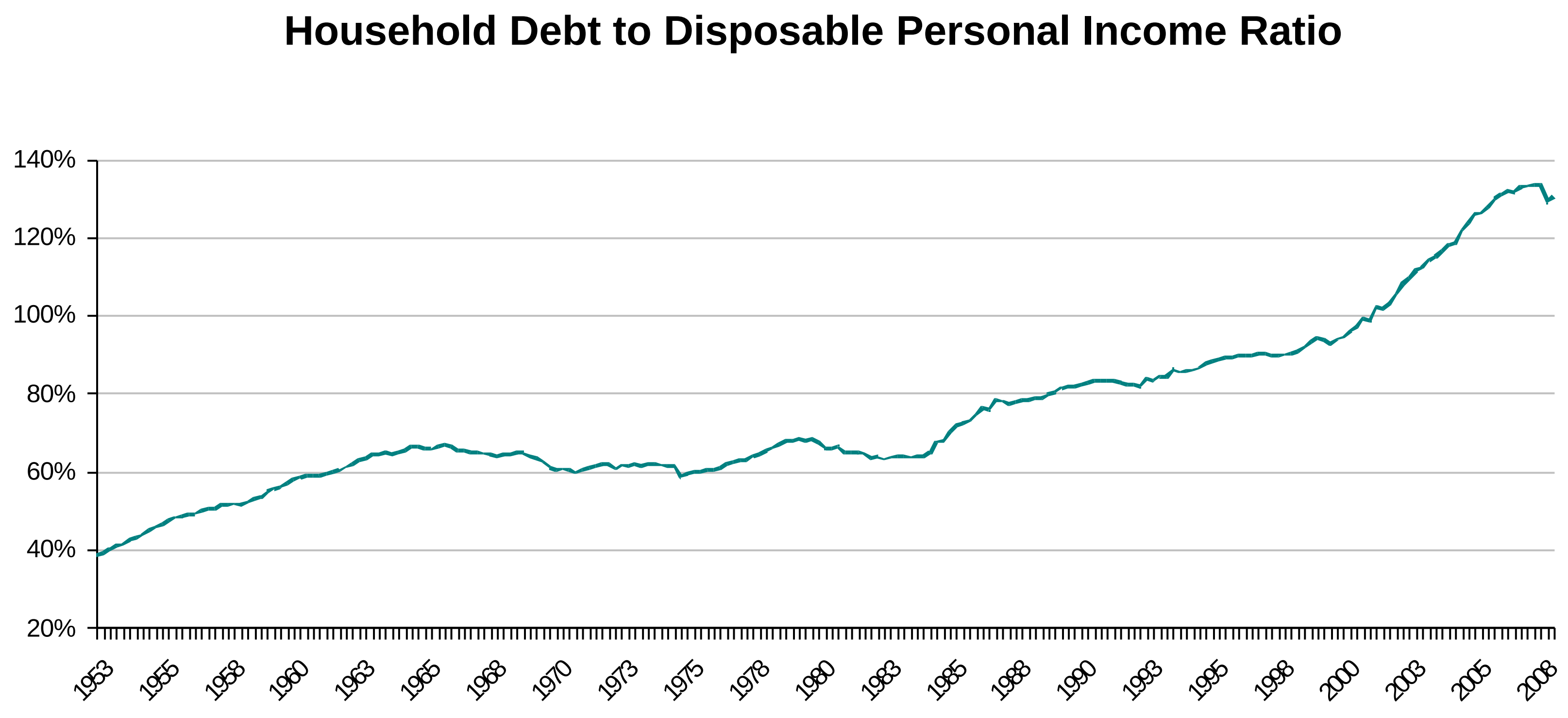
Reality: Houses cannot appreciate faster than the GDP forever

US GDP Data, CIA World Fact Book; CSXR, House Price Index, S&P, Top Ten US Metropolitan Areas

The American Dream



Household Debt as a Share of Income



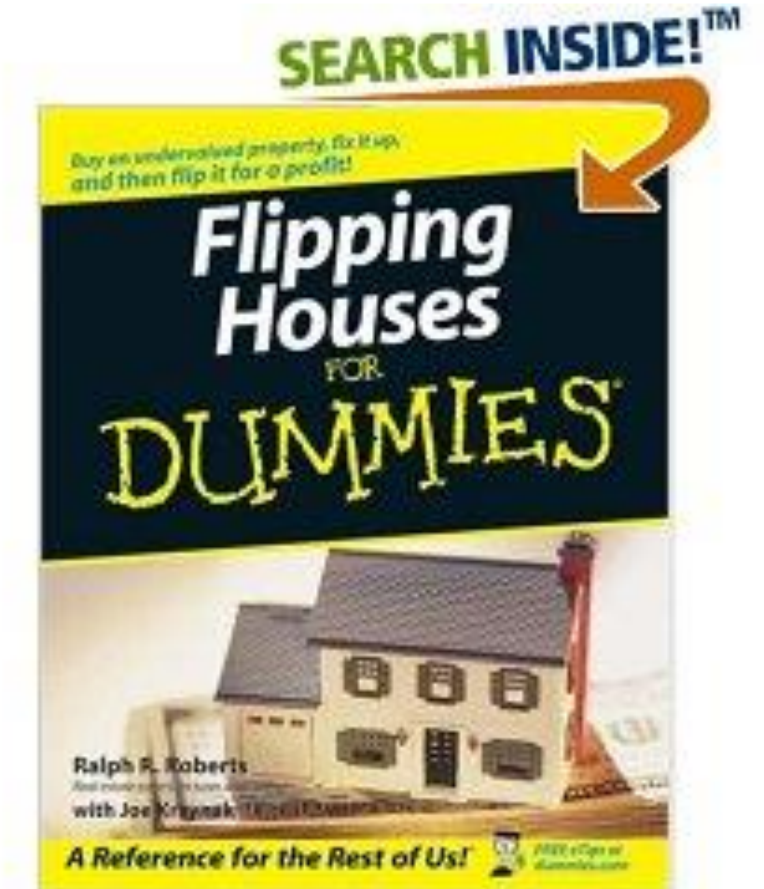
Source: www.economagic.com

Clearly, Nobody Was Reading Shakespeare

"Neither A Borrower Nor A Lender Be…"

Hamlet, Act I, Scene III, 79

The Fantasy



Published in 2006

The Basic Idea

Water = 99 lbs
Poison = 1 lb

TOTAL = 100 lbs

$\rho = 1 / (99 + 1)$
$= 0.01$

Poison concentration,
(Borderline toxic)

Senior Bottle
Water = 90 lbs
Poison = 0.1 lbs
$\rho = 0.1/(90.1) = 0.0011$
Very Safe

Mezz Bottle
Water = 6 lbs
Poison = 0.05 lbs
$\rho = 0.05/(6.05) = 0.008$
Not that bad!

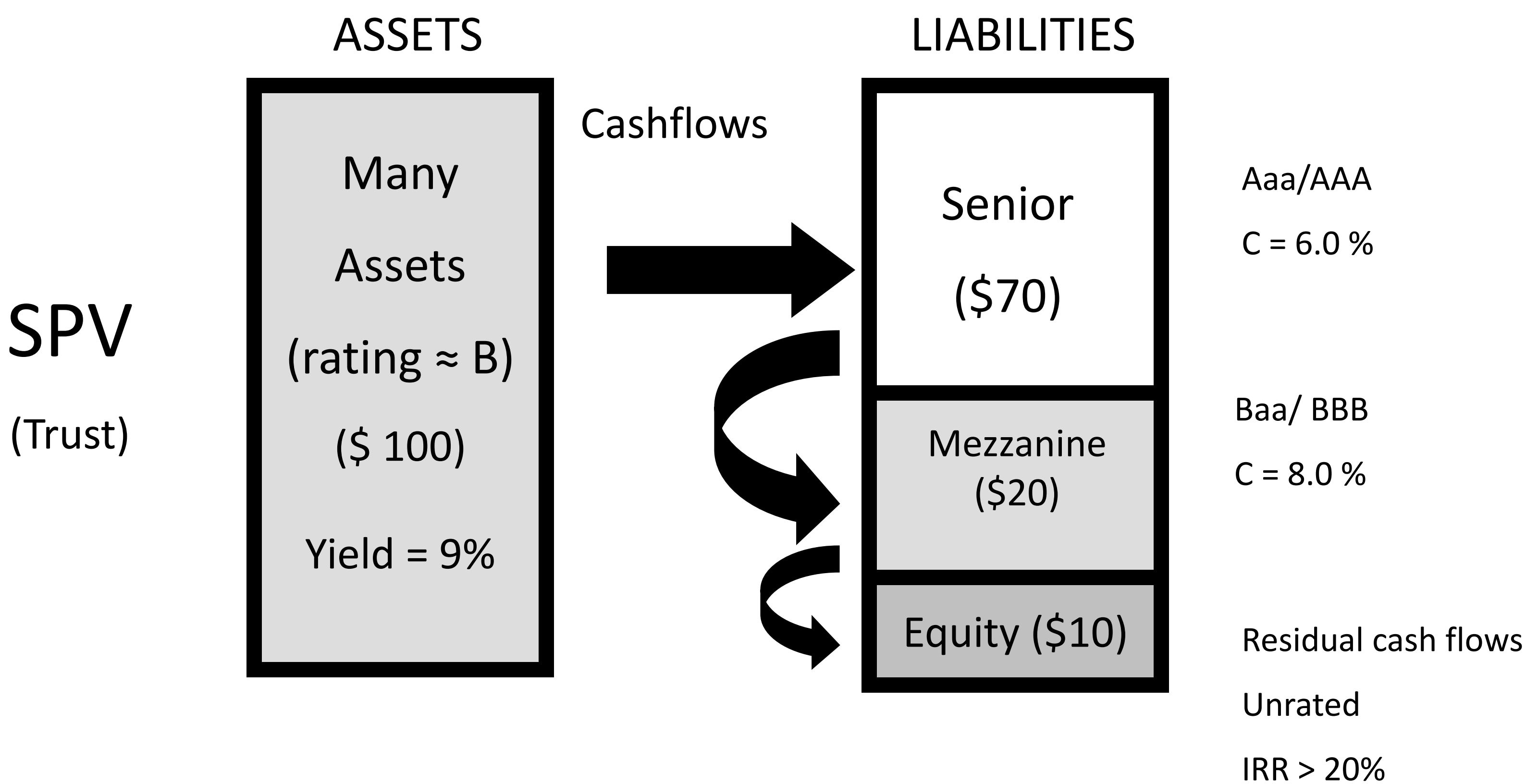
Equity Bottle
Water = 3 lbs
Poison = 0.85 lbs
$\rho = 0.85/(3.85) = 0.22$
Very Dangerous!!!

Note: The total amount of poison (1 = 0.1 + 0.05 + 0.85) is the same, just the “allocation” has changed

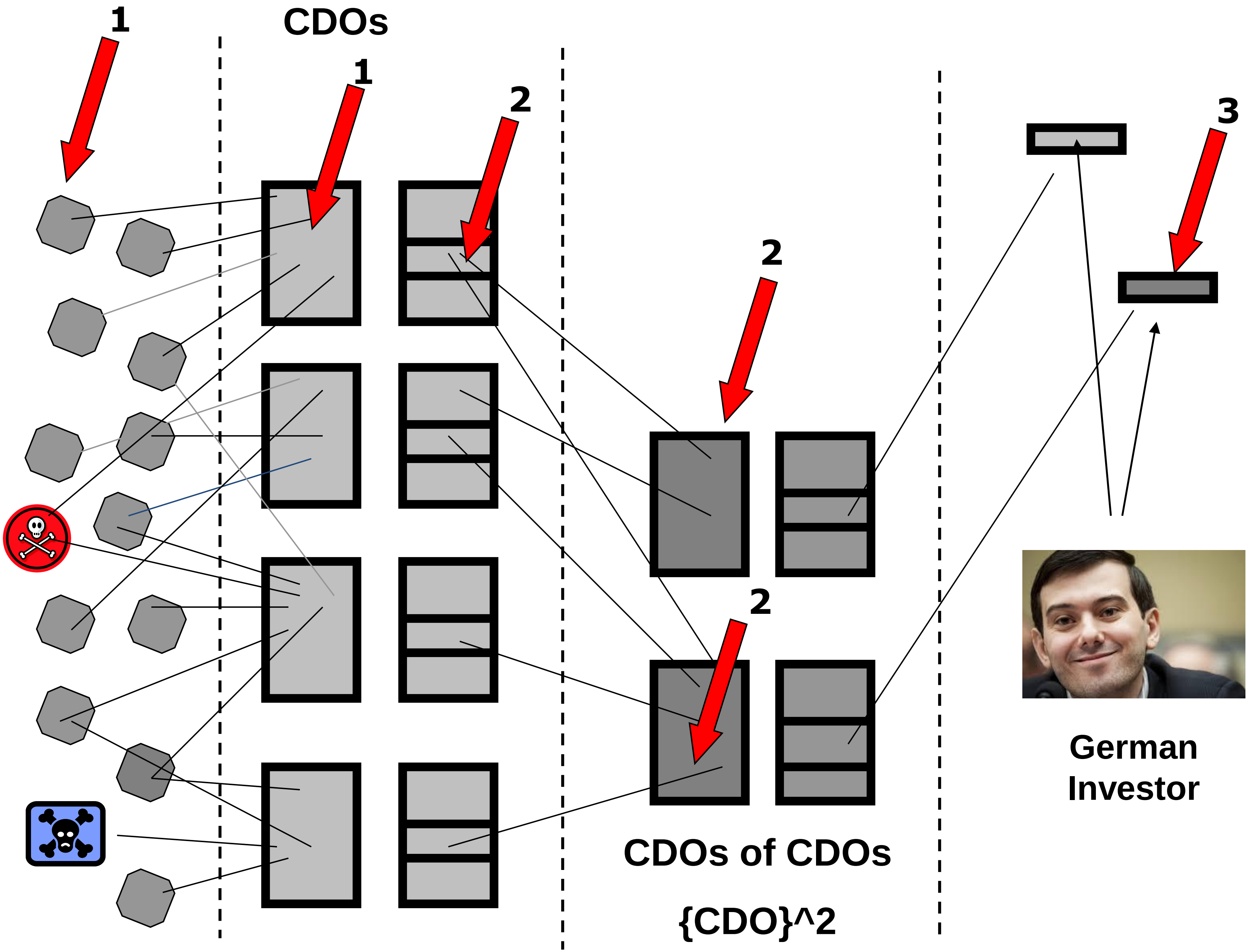
Credit Ratings Symbols

Moody's		S&P
Aaa		AAA
Aa	Investment	AA
A	Grade	A
Baa		BBB
Ba		BB
B	Speculative	B
Caa	("Junk")	CCC
Ca	Status	D

Typical Securitization (CDO) Structure

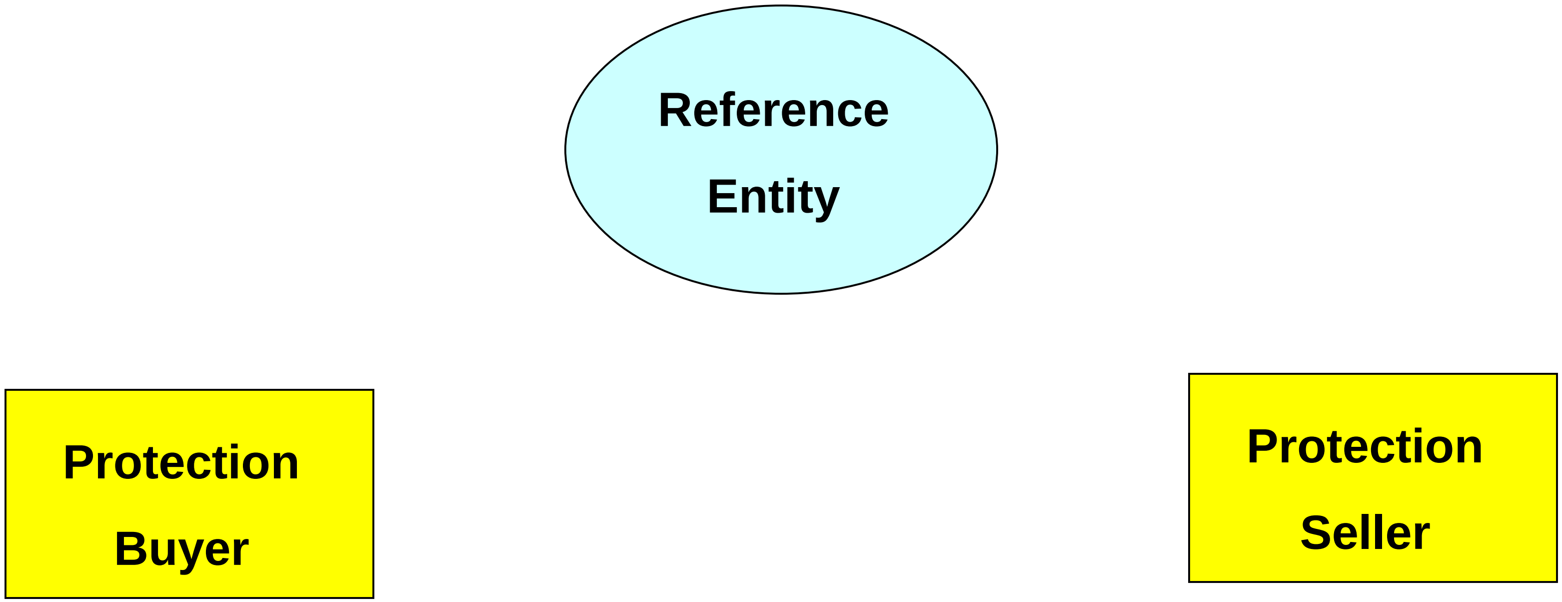


<u>Assets could be</u>: bonds, bank loans, emerging market debt, project finance loans, mid-market loans, TRUPs, etc. and **YES—subprime mortgages**



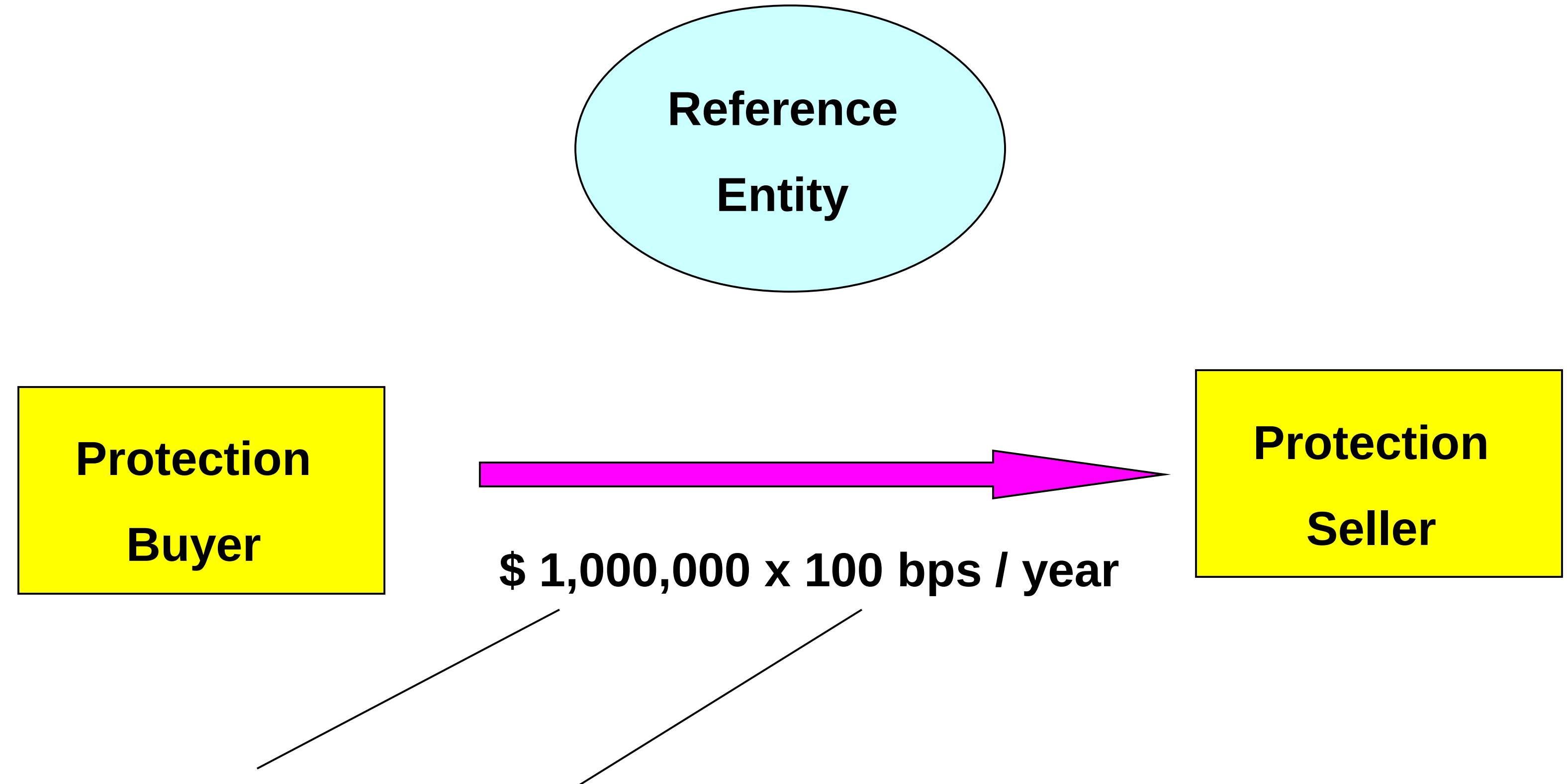
1
CDOs
1
2
2
3
2
CDOs of CDOs
{CDO}^2
German
Investor

Credit Default Swap (CDS)



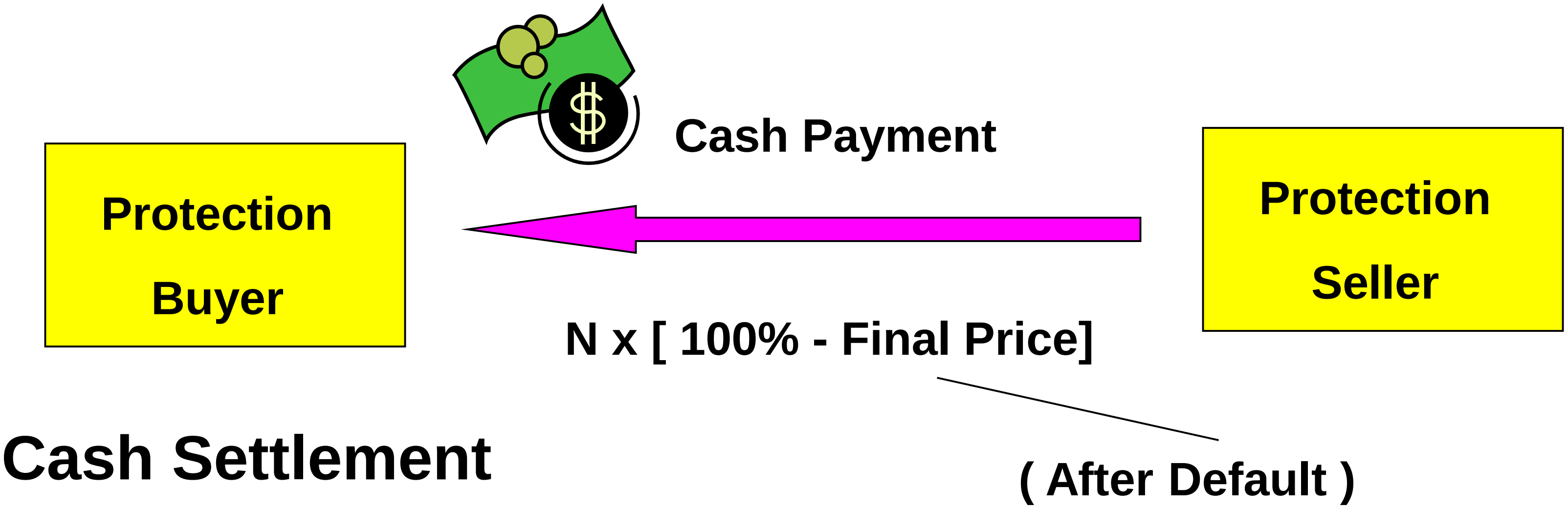
<u>Initially</u>: NO Cash Is Exchanged

Credit Default Swap



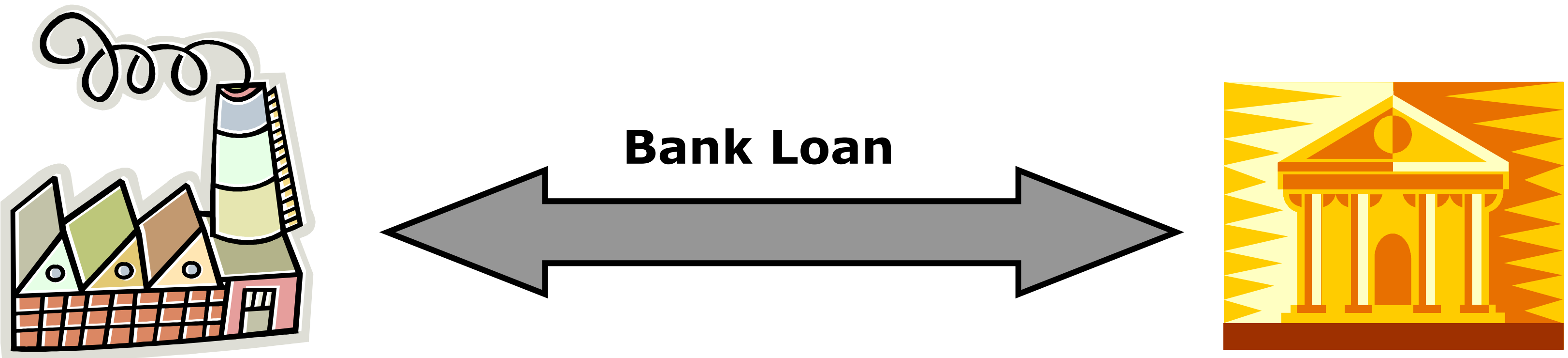
<u>Until Defaults Occurs</u> **(Or Until Maturity) The Protection Buyer Pays The Protection Seller A Premium (AKA Fee Or Spread)**

If Default Occurs



If No Default Occurs, During the Relevant Period, the Protection Seller Keeps the Premium Payment

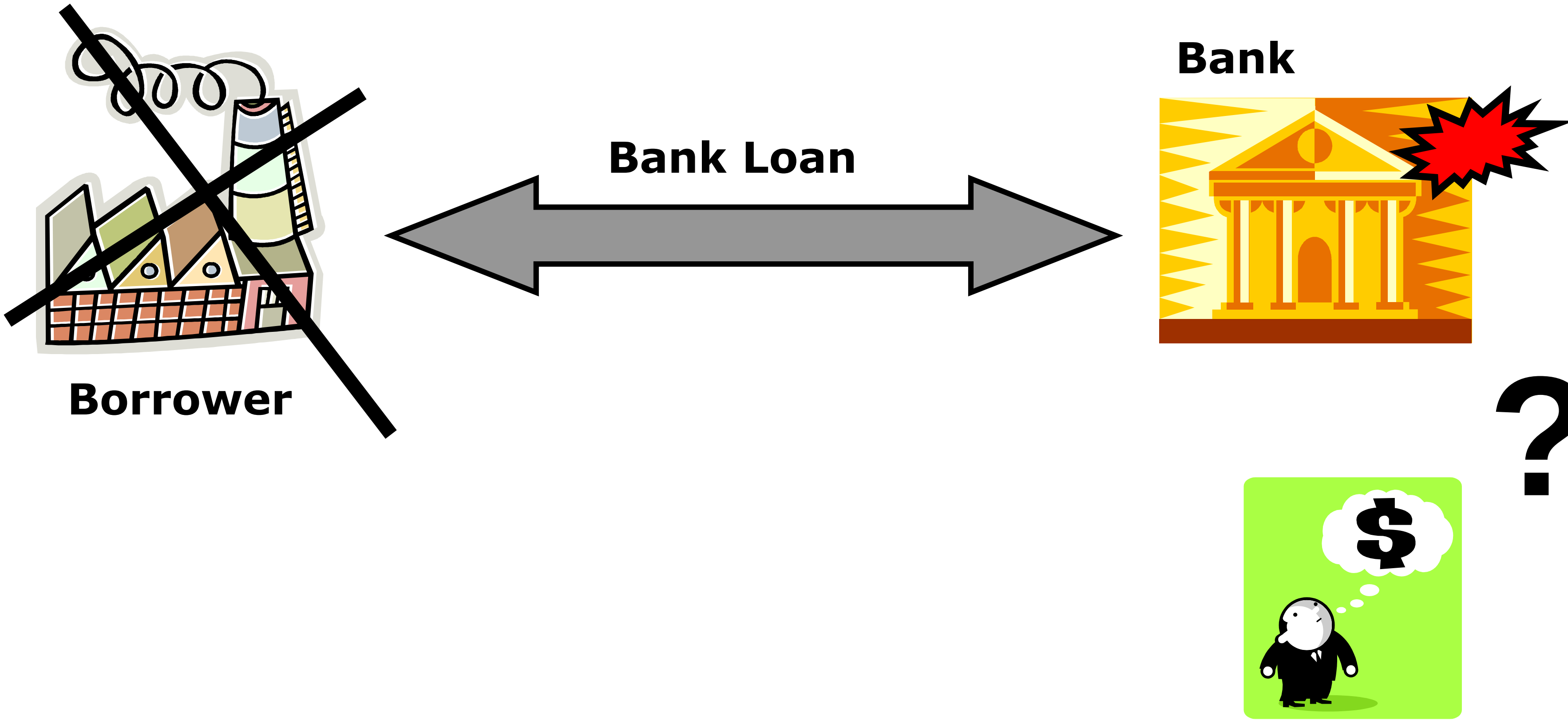
The OLD Landscape



Borrower **Bank**

The OLD Landscape

Borrower Defaults !!!



The NEW Landscape …

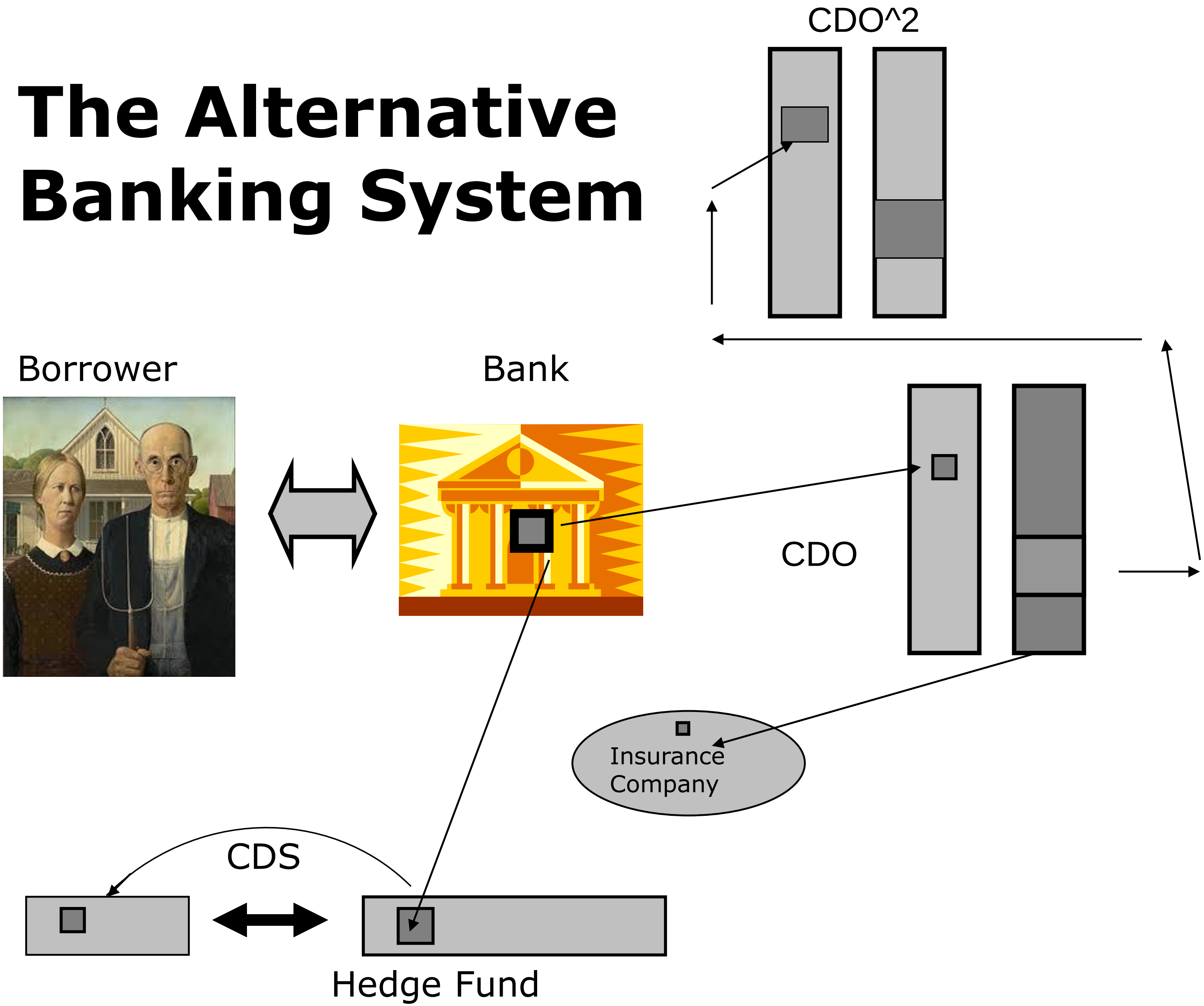
Borrowers

Bank Loan

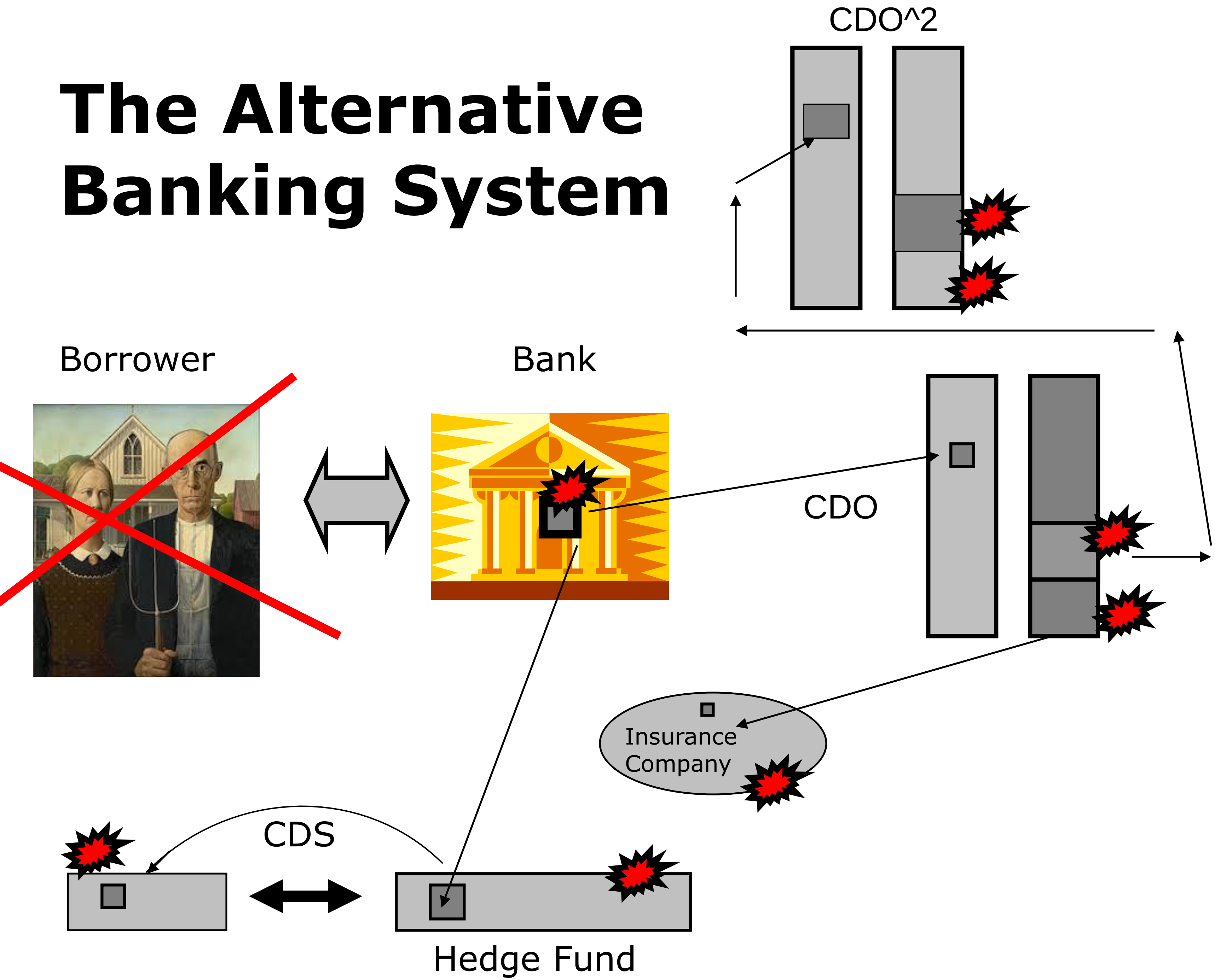
Bank

Bank Loan

The Alternative Banking System



The Alternative Banking System



In the Meantime…

The ABX Index (an index associated with subprime mortgages) normally traded at Par or close to Par.

However, that changed in **early 2007**…

- February 2007, **90**
- March 2007, **70**
- April 2007, **65**
- July 2007, **55**

Some Short-Term Canadian Debt Paper Is Snagged in Credit Crisis

The NEW YORK TIMES, SEP. 2007

OTTAWA, Sept. 6 — Few of the Canadian investors left holding a once-arcane and now troubled form of short-term debt are risk takers.

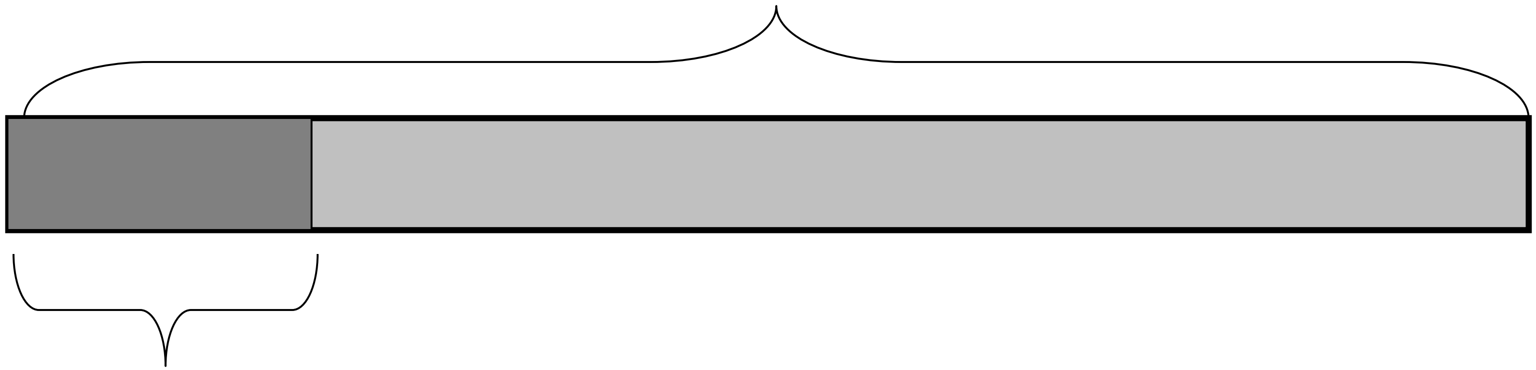
The unhappy owners of the debt, known as **asset-backed commercial paper,** include the government-owned Mortgage and Housing Corporation (257 million Canadian dollars, or $243.6 million) ; the post office (37.9 million Canadian dollars directly and 27 million more in its pension fund); Toronto's airport authority (249 million Canadian dollars); the charter airline and tour operator Transat (154.5 million); and the Ontario Teachers' Pension Plan (about 60 million).

Their unhappiness stems from a common source. The turmoil in the credit markets, particularly in the United States…

Relative Sizes

- **CDO Market (Global) ≈ US$ 2.5 Trillion**
  - **U.S. Corporate Bond Market ≈ US$ 4 Trillion**
  - **U.S. Municipal Bond Market ≈ US$ 2.5 Trillion**
  - **U.S. MBS ≈ US$ 11 Trillion**
  - **U.S. Leveraged Loan Market ≈ US$ 1.6 Trillion**
  - **U.S. Subprime, ≈ US$ 1.7 Trillion**

MBS Market = US$ 11 Trillion



US$ 1.7 Trillion

(subprime)

(June 5, 2007) IMF Conference

Thus far, however, we have not seen major spillovers from housing onto other sectors of the economy

Bernanke

(July 19, 2007) talking about subprime losses to Congress: "… some estimates are on the order of between $50 billion to $ 100 billion, this is not a big number in a $ 13-trillion economy, especially since the losses will be spread out over several years."

(((OUCH!!!)))

IMF, APRIL 2007

Strong growth and rising oil prices in the first half of 2006 raised concerns about inflation, but pressures have moderated with the decline in oil prices since August. Against the background of strong growth and reduced concerns about inflation, global financial market conditions have generally been buoyant.

Despite a bout of financial volatility in February–March 2007, and rising concerns about the U.S. subprime mortgage market, equity markets remain close to all-time highs, real long-term bond yields have remained below long-term trends, and risk spreads have narrowed in most markets.

The CRISIS---The Sequence:

[1] Institution X gives a (NINJA) loan to Y to buy a house

[2] X either sells the loan to a third party, or, alternatively, holds the loan until having a critical mass to sell them to an SPV

[3] Loan (plus many others) is securitized; X gets rid of the loan. New investors buy the notes (bonds) issued by the securitization (CDO)

[4] Re-securitization

[5] Y defaults on loan

[6] Many other borrowers default on loans

[7] Notes issued by CDOs are downgraded, some might default, margin calls

[8] Massive defaults; liquidity evaporates; bankruptcies

AFTER

The World Today

- **Strong regulatory wave**
  Dodd Frank, Basel III & Solvency II

- **Systemic risk**
  SIFI, Too Big To Fail, Too Interconnected To Fail & Too Big To Be Rescued

- **Central Banks & SWFs as asset managers**

- **Low (and sometimes negative) interest rates**

- **Regulation: by objectives (not based on silos mentality)**

- **IMF (who cares?)**

- **Macro-economic models & basic assumptions (major review)**

- **Moody’s and S&P (still alive)**

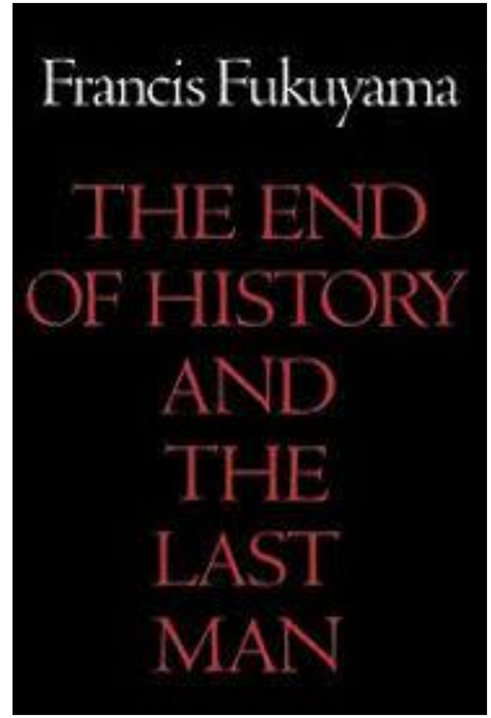
Both very wrong… but for different reasons

Alan Greenspan, August 2018, talking to Gillian Tett:

"… I had originally assumed that people would be acting wholly rational, or if not wholly rational, at least approximately wholly rational… "

(when explaining that there was a flaw in his model of how the world works)

https://www.ft.com/video/0e20f113-f559-4f8e-85b3-6773e96c75b0



Francis Fukuyama (1989, 1992)

Fukuyama entered the global imagination at the end of the Cold War when he anticipated the end of history…

A belief that, after the fall of communism, free-market liberal democracy had won out and would become the world's <u>final form of human government</u>

Globalization was the vehicle by which liberalism would spread across the globe. The rule of law and institutions would supplant power politics and tribal divisions


Vote to LEAVE the EU

Appendix

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Arturo is an Adjunct Professor at Columbia University in New York and a Research Associate at Clapes-UC in Santiago, Chile. He holds a Ph.D. in applied mechanics and a M. S. in civil engineering from the California Institute of Technology (Caltech); an MBA in finance from New York University (Stern scholar award); and a civil engineering degree from the University of Chile.

Previously, he served as President of the Chilean Sovereign Fund investment committee (US$ 25 billion), and as a member of the Advisory Board of the Division of Humanities and Social Sciences of the California Institute of Technology (Caltech).

He has authored two books, several book chapters, and many technical articles (refereed pares) on a number of topics (finance, applied mathematics, and mechanical and civil engineering). Additionally, he has written numerous opinion pieces that have been published by the *Financial Times.*

As a result of the subprime financial crisis, he was invited twice to testify, as expert witness, by the U.S. Senate. He also assisted the office of Senator Carl Levin during the post-crisis Congress investigation, and did several training seminars for the U.S. Treasury, before and after the subprime crisis.