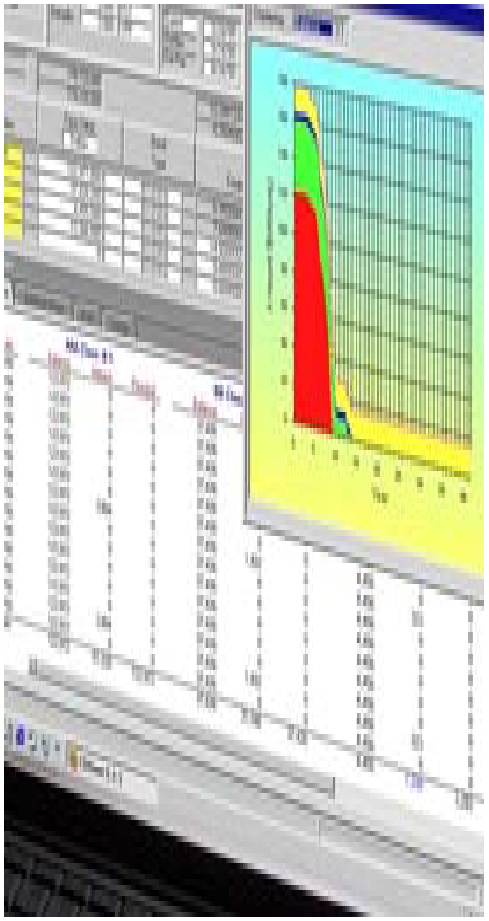
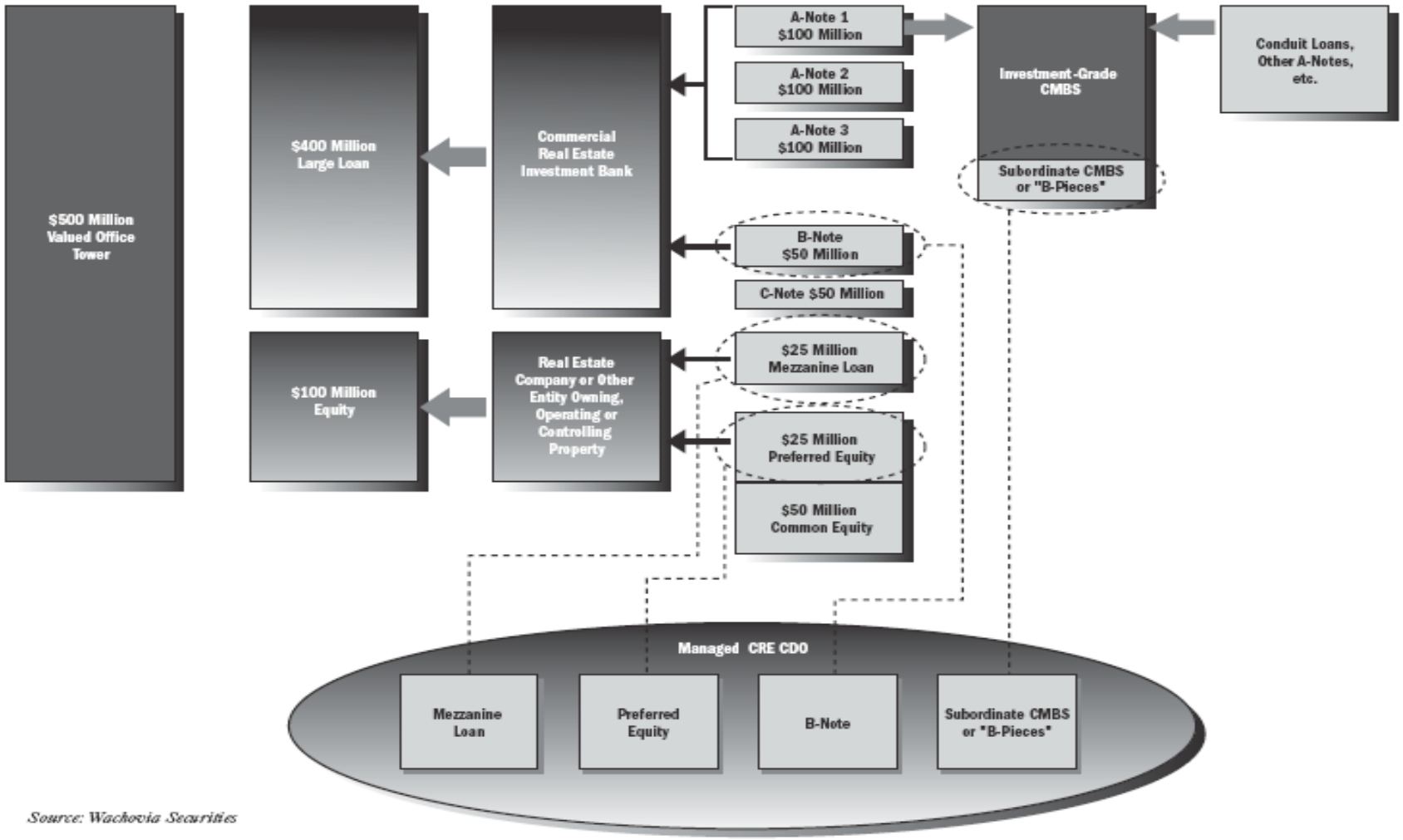
Mortgage Backed Securities (MBS)


Real Estate Finance Tower



Source: Wachovia Securities

Major Government Players in **Agency** MBS Market

- Government National Mortgage Association (Ginnie Mae)
  - Sponsor MBS Programs by Financial Intermediaries
  - Guarantees Timely Pass-Through of Principal and Interest (Insurance)
- FNMA and FHLMC ((Fannie Mae and Freddie Mac).
  - Purchases packages of mortgage loans from banks/thrifts
  - Finances purchases by selling MBS to outside investors
  - Also swaps MBS with a financial intermediary for original mortgages with FI reselling MBS or holding them

For Agency MBS, there are no “defaults” because Ginnie Mae prepays loan

Government Financing

- **FHA Loans**
- **VA Loans**

Government Conduit

- Ginnie Mae

* Fannie Mae and Freddie Mac are also minor players in the government financing market segment

Conventional Financing

- **Conforming Loans**
- **Non-Conforming Loans**
  - **Subprime Loans**
  - **"Alt" A Loans**
  - **Jumbo Loans**

Agency Conduit

- Fannie Mae
- Freddie Mac
- FHLB

* Private Conduits may also issue securities based on conforming loans

Private Conduits

- Commercial Banks
- Insurance Companies

Why Create Derivatives: Resolving the Puzzle

- Make Financial Markets More "Complete" Due to Incomplete Spanning: A market is complete when there is a wide variety of assets such that any conceivable eventuality can be either bet or hedged

  ☑ Risk-Based Clienteles (Traditional Story): high risk, last tranche

  ☑ Maturity Based Clienteles: segmentation of cash flows to allow short term investors to participate

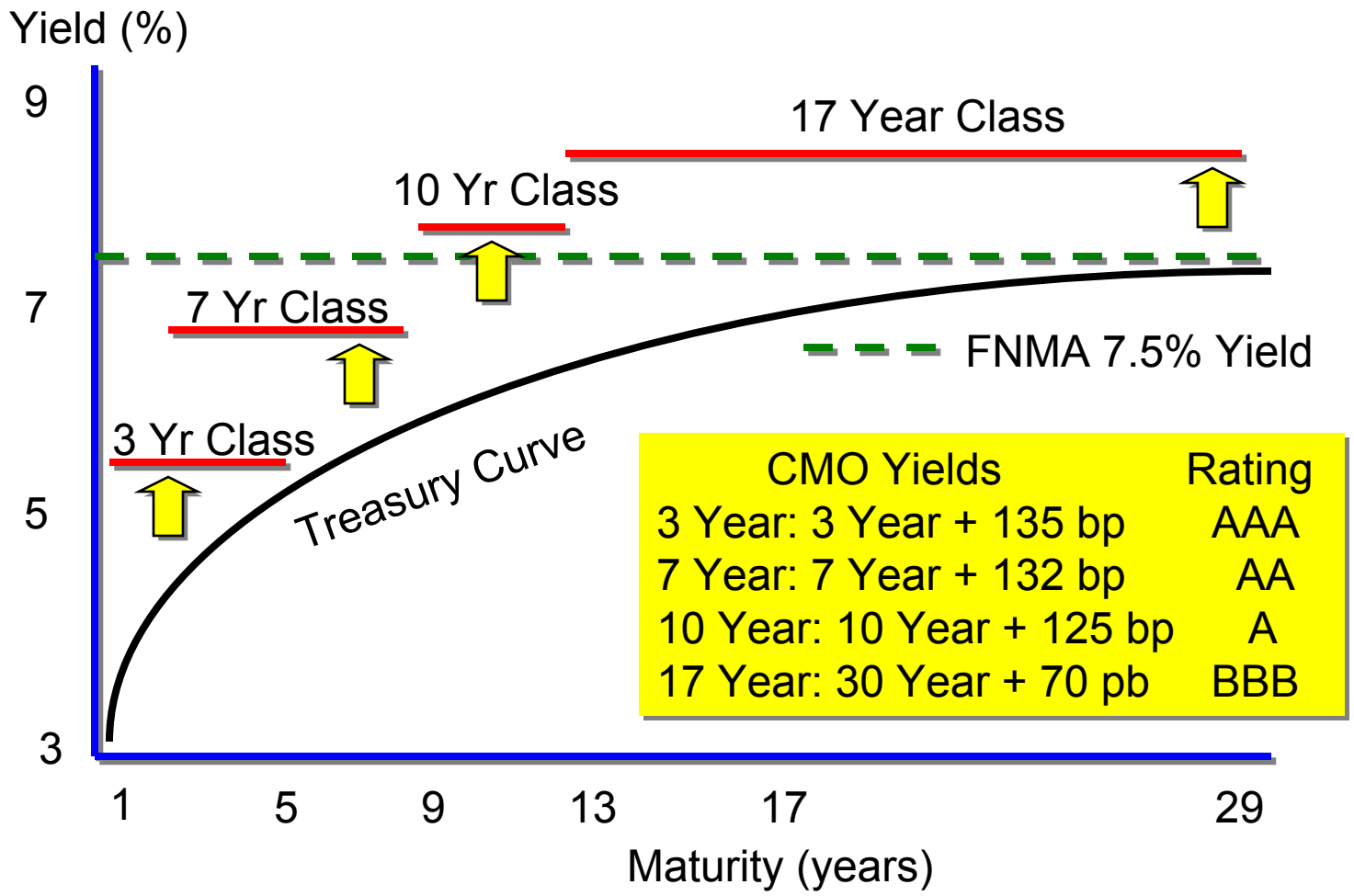
- Value Additivity Need Not Hold: Manner in which individual pieces are designed affect the value to the issuer.

Value Additivity: Why It Might Not Hold

Intuition: Given that the price of a particular security depends on the quantity of the issue sold in the market and that there is a cost associated with unissued assets retained by the issuer, value additivity need not hold.

Point: The manner in which individual pieces are designed affect the value to the issuer

Intuition for Bond Classes or "Tranches"



Senior Subordinate Structure for NonAgency MBS

Pool of Mortgage Loans →

Class Type	Rating	Class Size	Cushion
Senior	AAA/AA	94.0%	6.0%
B	AA	2.0%	4.0%
C	A	1.0%	3.0%
D	BBB	1.0%	2.0%
E	BB	1.0%	1.0%
F	B	0.5%	0.5%
G	NR	0.5%	0.0%

Subordinated/ Junior Classes

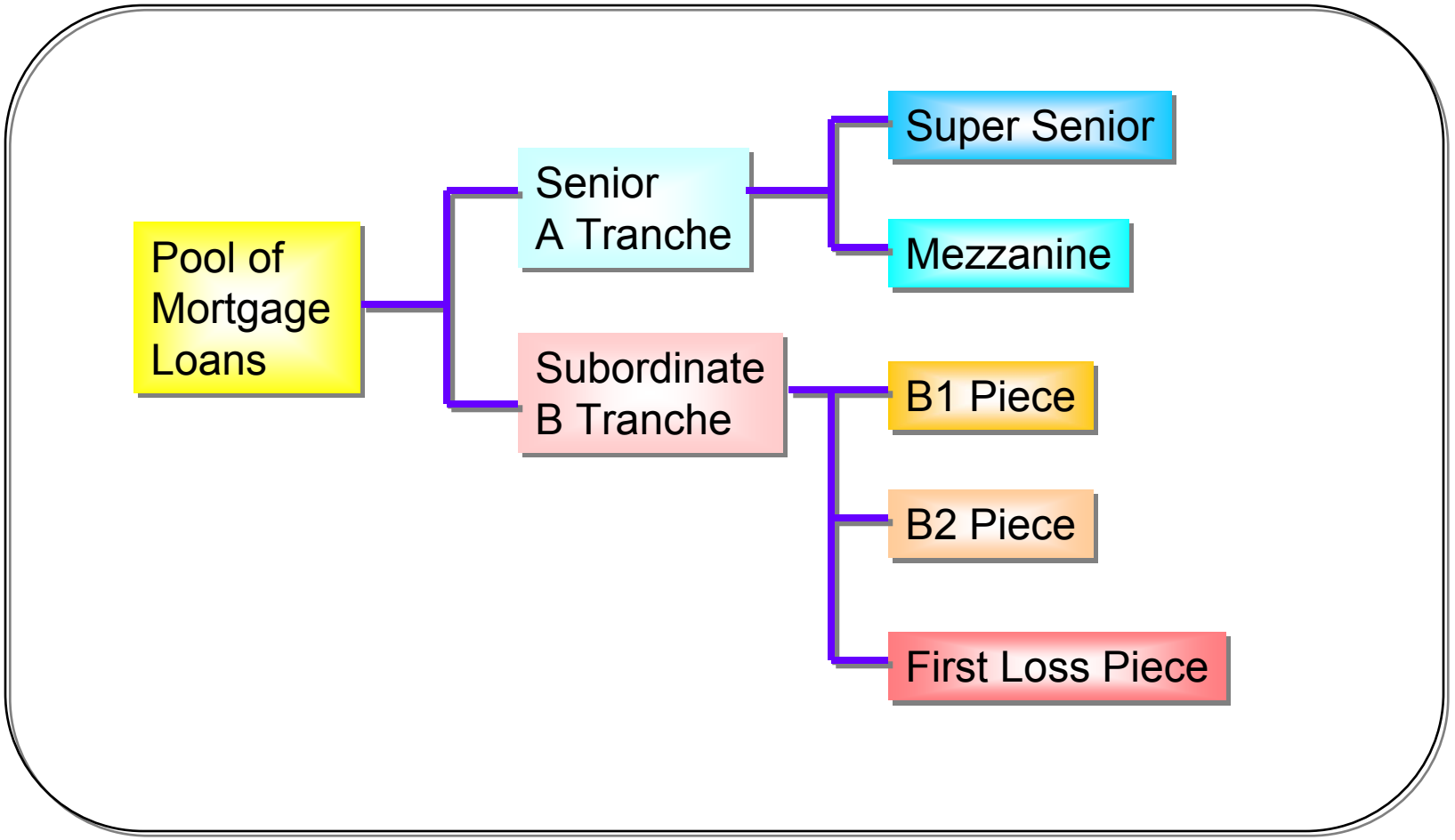
*Note: Cushion refers to the cushion provided by classes below

Credit Support Needed for a Typical Single Family Securitization to Achieve Specific Credit Ratings

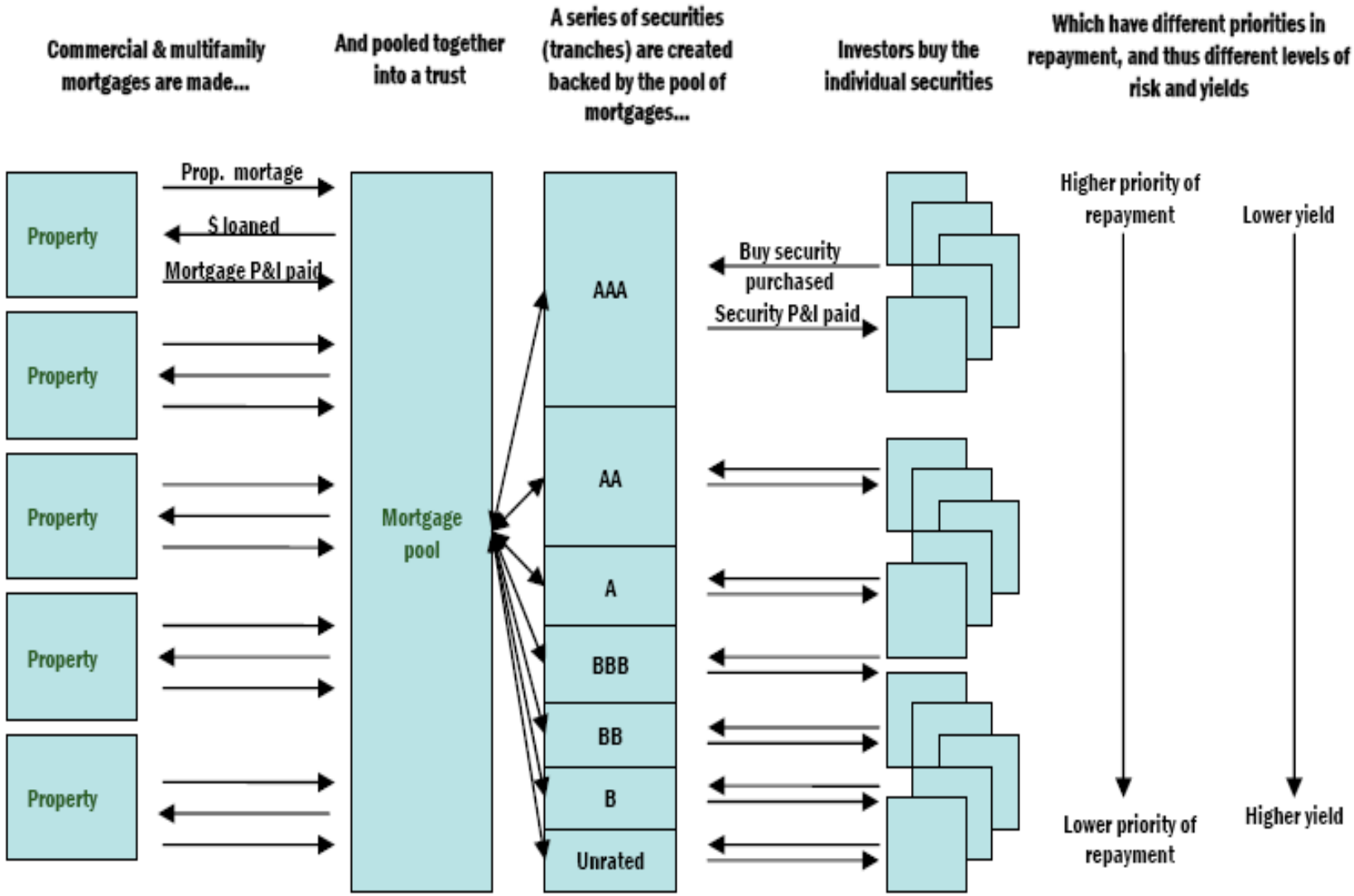
Rating of Class	Size of Class ($)	Size of Class (% of Deal)	Percentage Subordination Protecting Class	Yield Spread to Treasury	Application of Losses
AAA	75,000,000	93.75	6.25	+105 bps	last
AA	1,800,000	2.25	4	+160 bps	sixth
A	1,400,000	1.75	2.25	+180 bps	fifth
BBB	1,000,000	1.25	1	+210 bps	fourth
BB	360,000	0.45	0.55	+450 bps	third
B	120,000	0.15	0.45	+550 bps	second
First Loss/ Unrated	320,000	0.4	0	+700 bps	first

Source: Chapter 11, Whole Loan CMOs, Fabozzi, Ramsey, Ramirez

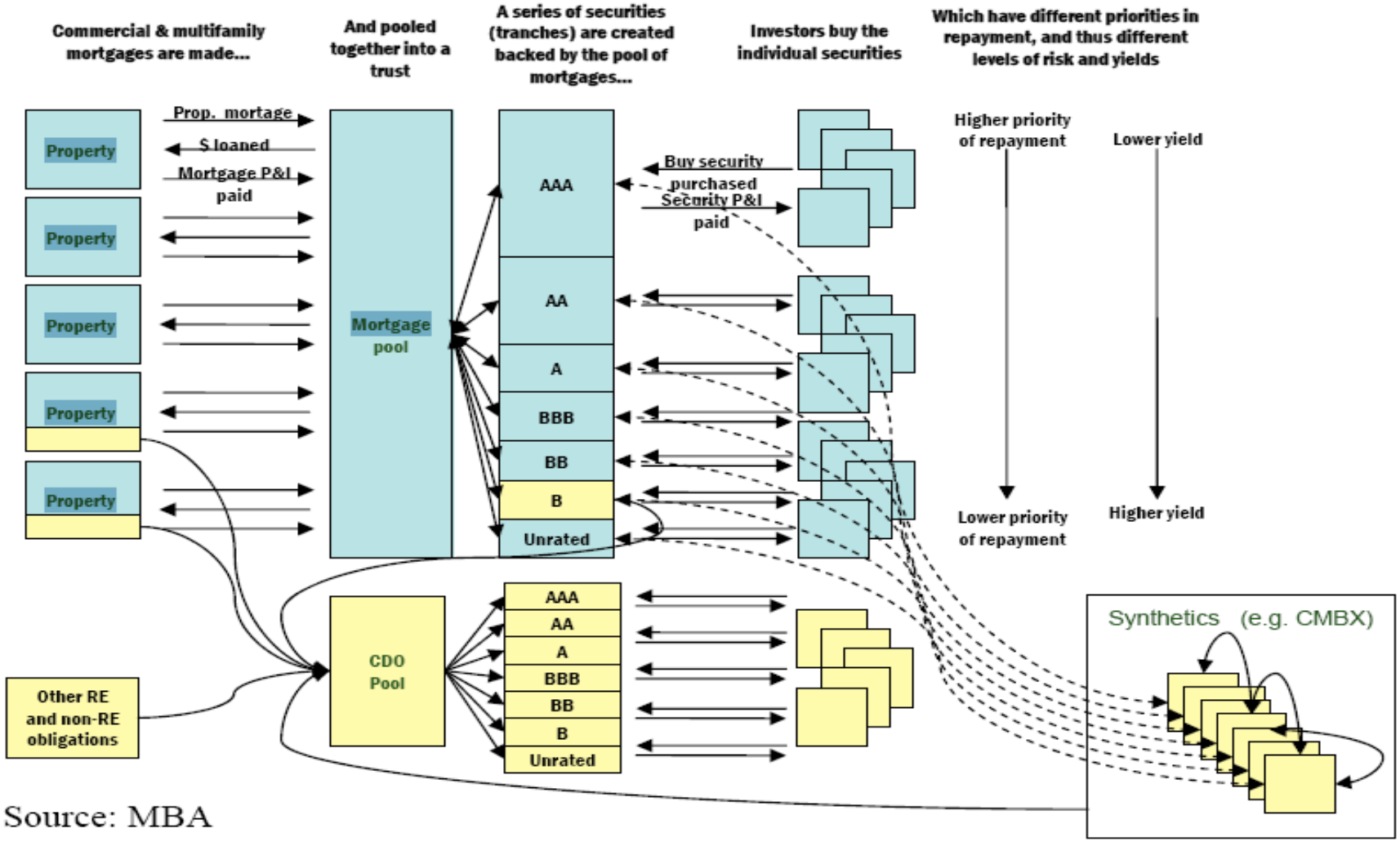
Senior Subordinate Structure: Another View



Another View of MBS Credit Tranching



MBS vs. Collateralized Debt Obligations (CDOs)



Source: MBA

Senior Subordinate Structure: Simple Example

Class	Amount	Percent
Senior	92,250,000	92.25%
Subordinate	7,750,000	7.75%
	100,000,000	100.00%

If there are $5 million of losses, the subordinate class will realize 64.5% of the loss ($5/$7.75)

If there are $10 million of losses, the subordinate class will realize a loss of $7.75 million or 100% of the loss and the senior class will experience a loss of $2.25 million ($10M - $7.75M) or a 2.4% loss ($2.25/$92.25)

Senior Subordinate Structure: Another Example

$100 Million Fixed Rate

Class	Rating	Amount
A	AA	$90 Million
B	BBB	$5 Million
C	NR	$4 Million
D	NR	$1 Million

Hypothetical Loss Scenario:

Suppose $4 million of loans default on which there is a 50% recovery ($2 million) and resultant loss of $2 million

- The $2 million (recovered) is treated as prepayment causing the A class to be reduced to $88 million.
- The $2 million loss reduces Class D balance to zero and Class C to $3M

Basic CMBS Structure

Class	Rating	Size	Subordination	Coupon
A	**Aaa/AAA**	**$85M**	**15%**	**5.25%**
B	**Aa2/AA A2/A Baa2/BBB**	**$9M**	**6%**	**5.50%**
C	**Ba2/BB B2/B**	**$4M**	**2%**	**7.50%**
D	**NR**	**$2M**	**0**	**---**

Subordination for Aaa/AAA level stress:

Foreclosure Frequency X Loss Severity= Level of subordination needed
30% X 50% = 15% coverage (subordination)

Hypothetical Class Structure

Rating	Size	Loss Coverage/ Subordination		Loss Frequency		Loss Severity
Aaa/AAA	**$85M**	**15%**	**=**	**30%**	**X**	**50%**
Aa2/AA	**$3M**	**12%**	**=**	**30%**	**X**	**40%**
A2/A	**$3M**	**9%**	**=**	**30%**	**X**	**30%**
Baa2/BBB	**$3M**	**6%**	**=**	**20%**	**X**	**30%**
Ba2/BB	**$2M**	**4%**	**=**	**20%**	**X**	**20%**
B2/B	**$2M**	**2%**	**=**	**10%**	**X**	**20%**
NR	**$2M**	**–**		**–**		**–**

Collateralized Mortgage Obligations (CMOs)

Divides a set of cash flows from a pool of mortgages (or one or more mortgage pass-throughs) into several (usually sequential) classes or "tranches" of bonds of different maturities with the mortgage pool constituting the "collateral".

How Created? Methods

- Packaging and Securitizing Mortgage Loans
- Placing Existing Pass-Throughs in a Trust Off the Balance Sheet

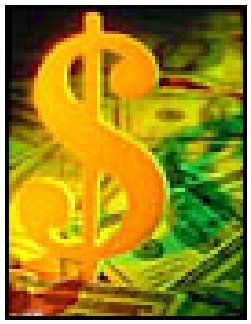
What is a Mortgage Pass-Through?

Assume that a financial institution purchases 10 loans and pools them for use as collateral to issue securities.

Cash flows are passed-through on a **pro-rata** basis

Each loan is for $100,000.

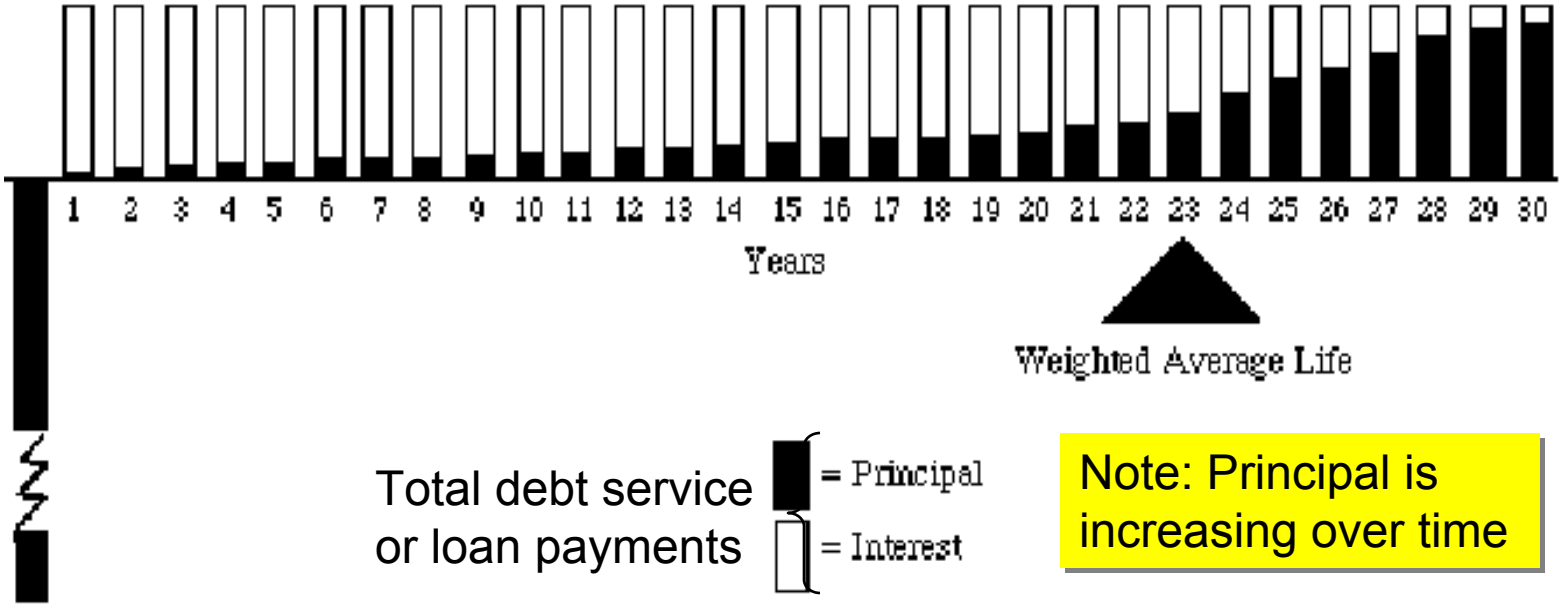
Suppose 50 units of this security are issued.



$$\text{Initial Worth of Each Unit} = \left(\frac{\$1{,}000{,}000}{50\ \text{Units}}\right) = \$20{,}000$$

$$\text{Percentage of CF that each unit is entitled to:} \left(\frac{1}{50\ \text{units}}\right) = 2\%$$

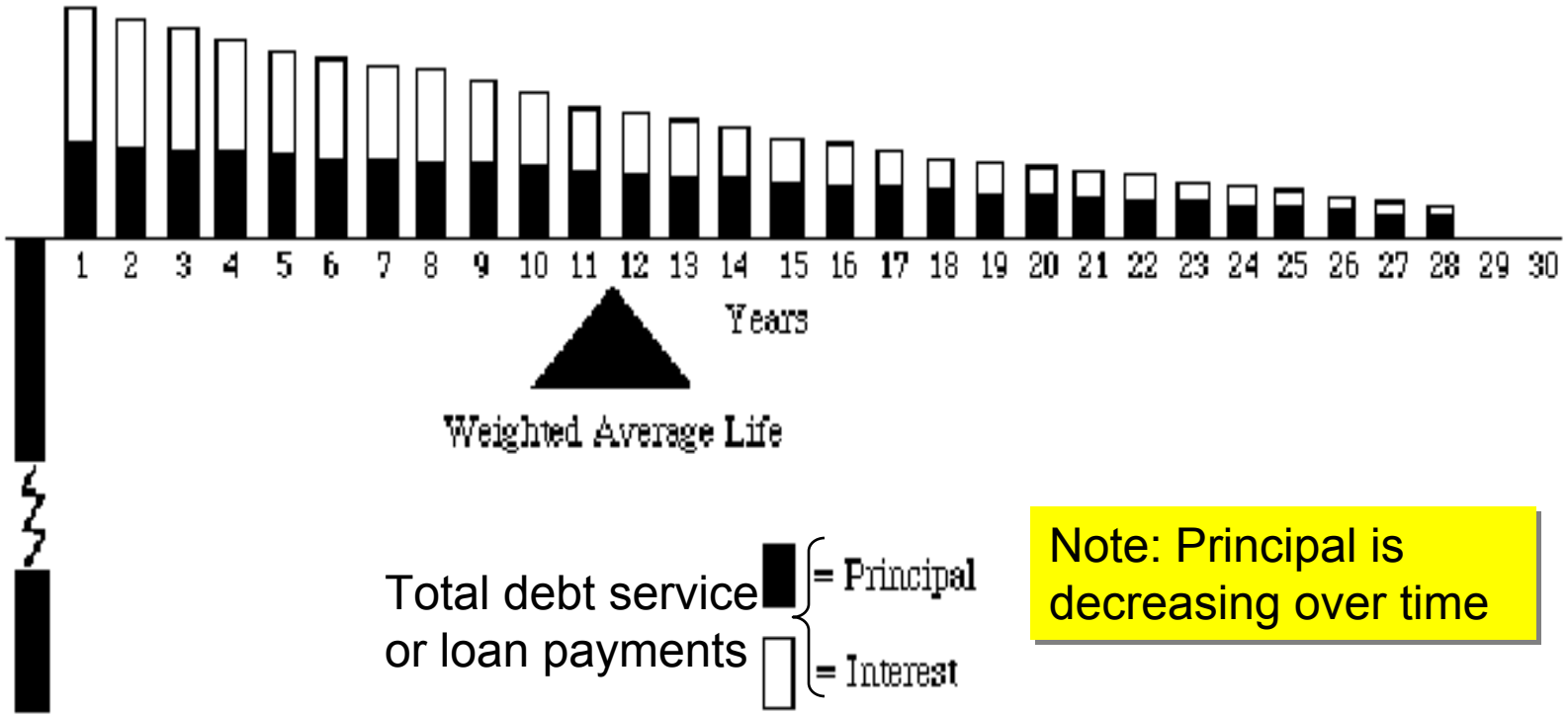
Mortgage Pool Cash Flows with Zero Prepayment Assumption



Note: Principal is increasing over time

*The length of the black bar in Year 0 equals the sum of the length of the black bars in Years 1 through 30

Mortgage Pool Cash Flows with 6% CPR Prepayment Assumption



Note: Principal is decreasing over time

*The length of the black bar in Year 0 equals the sum of the length of the black bars in Years 1 through 30

Mortgage Pass-Through: An Illustration

Interest + Principal + Prepayment of Principal

+

Interest + Principal + Prepayment of Principal

• • •

+

Interest + Principal + Prepayment of Principal

=

Pooled Monthly Cash Flow of Interest, Principal, and Prepayment of Principal

Benefits of Mortgage Pass-Throughs

What HASN't changed

- Amount of prepayment risk
- Amount of default risk
- A new instrument isn't created

Note: an investor could achieve the same result by buying all 10 loans

What HAS changed

MPT is more transactionally efficient

- $1 million dollar investment requirement is reduced
- Liquidity of the security is increased
- Can dispose of all 10 loans at once by selling a pass-through

Point: A mortgage pass-through reduces transactions costs; is a more transactionally efficient investment vehicle

Collateralized Mortgage Obligations (CMOs)

Assume that

- Financial institution purchases 10 loans and pools them for use as collateral to pass-through cash flows on some **prioritized** basis

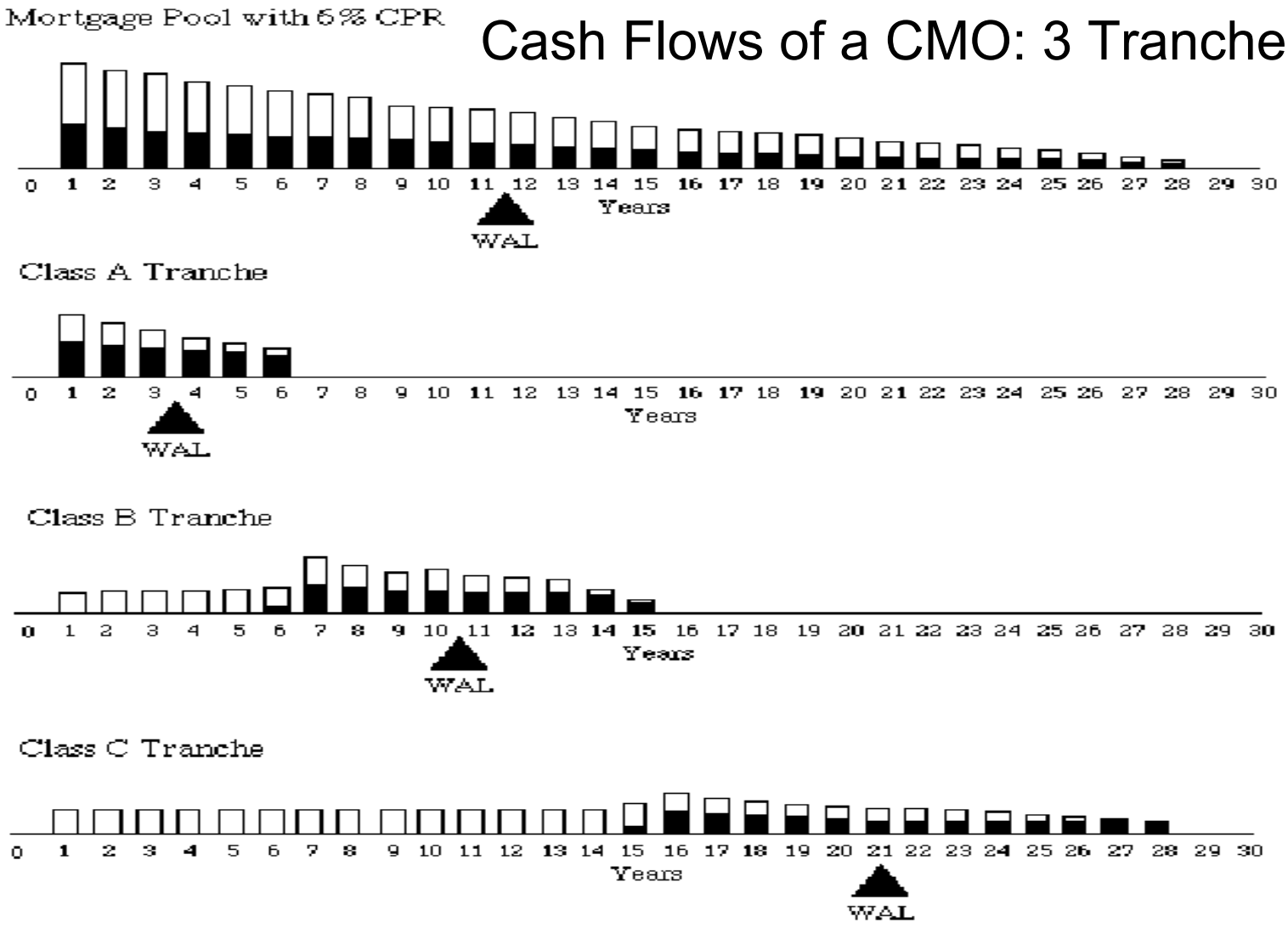
- Each loan is for $100,000

- 3 classes of bonds of different par values are constructed with a set of rules concerning how principal (scheduled principal repayment and prepayment) from the pooled monthly cash flow is allocated among the 3 classes.

Rule for Allocating Cash Flows to 3 Classes (Tranches)

Class	Par Value	Interest	Principal
A	$400,000	Pay each month based on par amount outstanding	Receives all monthly principal until Class A is completely paid off (receives its entire par value)
B	$350,000	Pay each month based on par amount outstanding	After Class A is paid off, receives all monthly principal until completely paid off
C	$250,000	Pay each month based on par amount outstanding	After Class B is paid off, receives all monthly principal

Cash Flows of a CMO: 3 Tranches



Benefits of CMOs

What ***Hasn't*** Changed:

- Amount of prepayment risk
- Amount of default risk

What Has Changed: Different allocation of prepayment risk

- Class A absorbs prepayment first, next Class B, and last of all Class C
- Class A effectively holds shorter term security; Class C has longest maturity

Point: Cash flow allocation rules lessen the uncertainty concerning the maturity of each CMO class

Slicing and Dicing

Question: How Many Tranches?

Tradeoff Between Splitting Cash Flows vs. Liquidity:

- Why split cash flows into many pieces: create value if value additivity doesn't hold
- Liquidity concerns: desire for an individual tranche size sufficient to preserve liquidity in secondary market after issuance.

Goal of CMO issuer: *segment the market* with respect to different maturities to meet different investor needs

How Do We Value MBS: Option Adjusted Spread (OAS)

Option model views the "fair" price on a MPT as divided into 2 parts:

$$Price_{MPT} = Price_{TBOND} - Price_{PREPAYMENT\ OPTION}$$

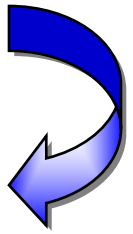
where the ability to prepay is equivalent to a bond investor writing a call option on a bond and the mortgagee (borrower) owning the call option

From a yield perspective:

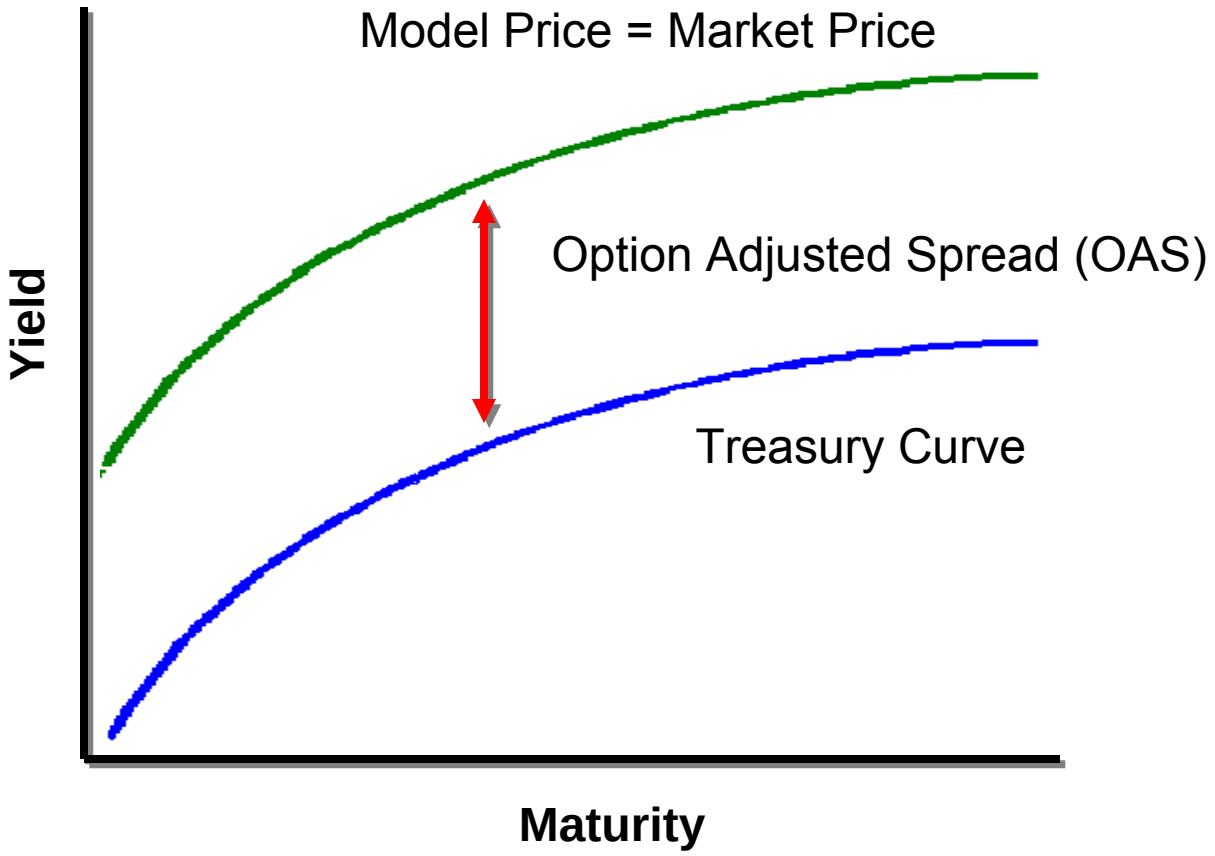
$$Yield_{MPT} = Yield_{TBOND} + Yield_{PREPAYMENT\ OPTION}$$

or:

$$OAS = Yield_{PREPAYMENT\ OPTION} = Yield_{MPT} - Yield_{TBOND}$$



OAS: A Graphical Perspective



Steps Taken in an Options Based Model

Price Sensitivity Estimates

Valuation

Prepayment Function

Interest Rate Process

First Two Steps Taken in an Options Based Model

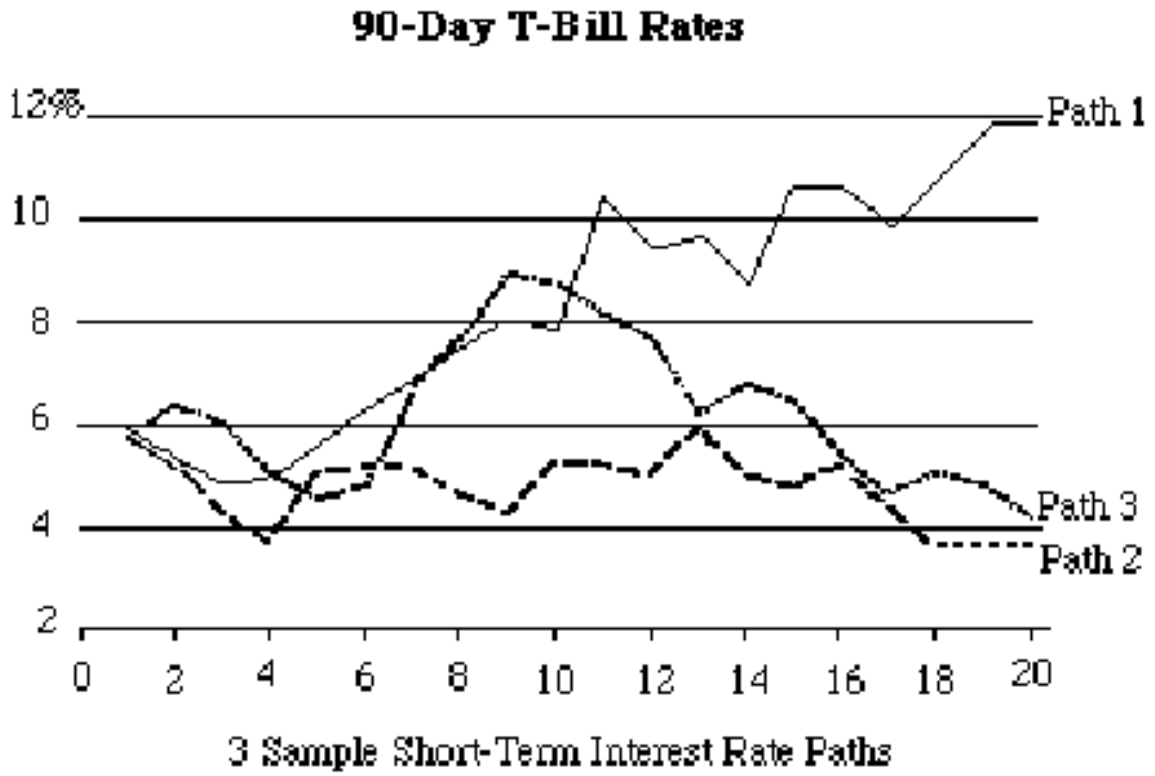
Interest Rate Process

- Assumptions
  - Short term rate volatility
  - Long term rate volatility
  - Correlation of ST & LT rates
- Constraints
  - Rate movements don't result in negative interest rates
  - Interest rates don't create arbitrage opportunities
- Result: Interest rate paths

Prepayment Function

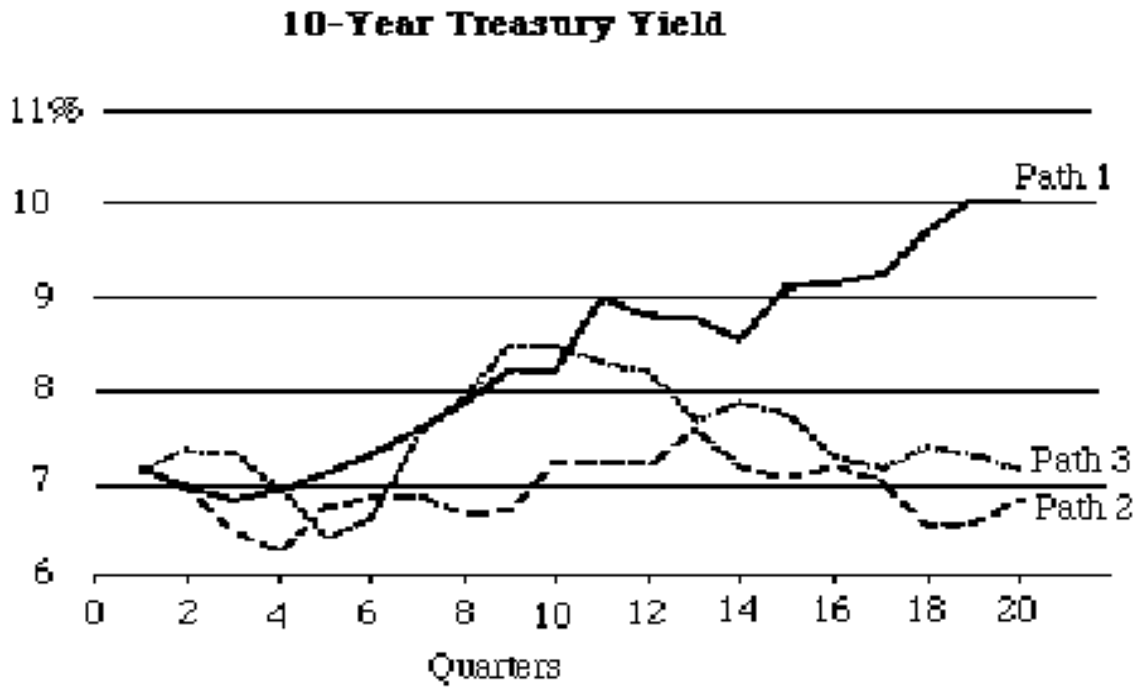
- Estimated from historical data
- Arguments include:
  - Difference between corporate and refinancing rate
  - Lagged response variables to capture homeowner inertia
  - Remaining term (age)
  - Season of year
  - Remaining MBS balance
- Result: Prepayment rates, which when applied to a particular MBS produce cash flows for each interest rate path

Interest Rate Process: Short Term Rates (Discount Rate)



Path 1-generally rising rate environment, Path 2 - generally falling rate environment, and Path 3 - rising and falling pattern. Interest rates are allowed to change once per quarter. Each change is consistent with a volatility assumption. The sample paths are derived using a short-term interest rate volatility of 25%.

Interest Rate Process: Long Term Rates (Prepayment)



3 Sample Long-Term Interest Rate Paths

Path 1-generally rising rate environment, Path 2 - generally falling rate environment, and Path 3 - rising and falling pattern. Interest rates are allowed to change once per quarter. Each change is consistent with a volatility assumption. The sample paths are derived using a long-term interest rate volatility of 13%. Note: Lower rate volatility is assumed for 10-year rates.

Last Two Steps Taken in an Options Based Model

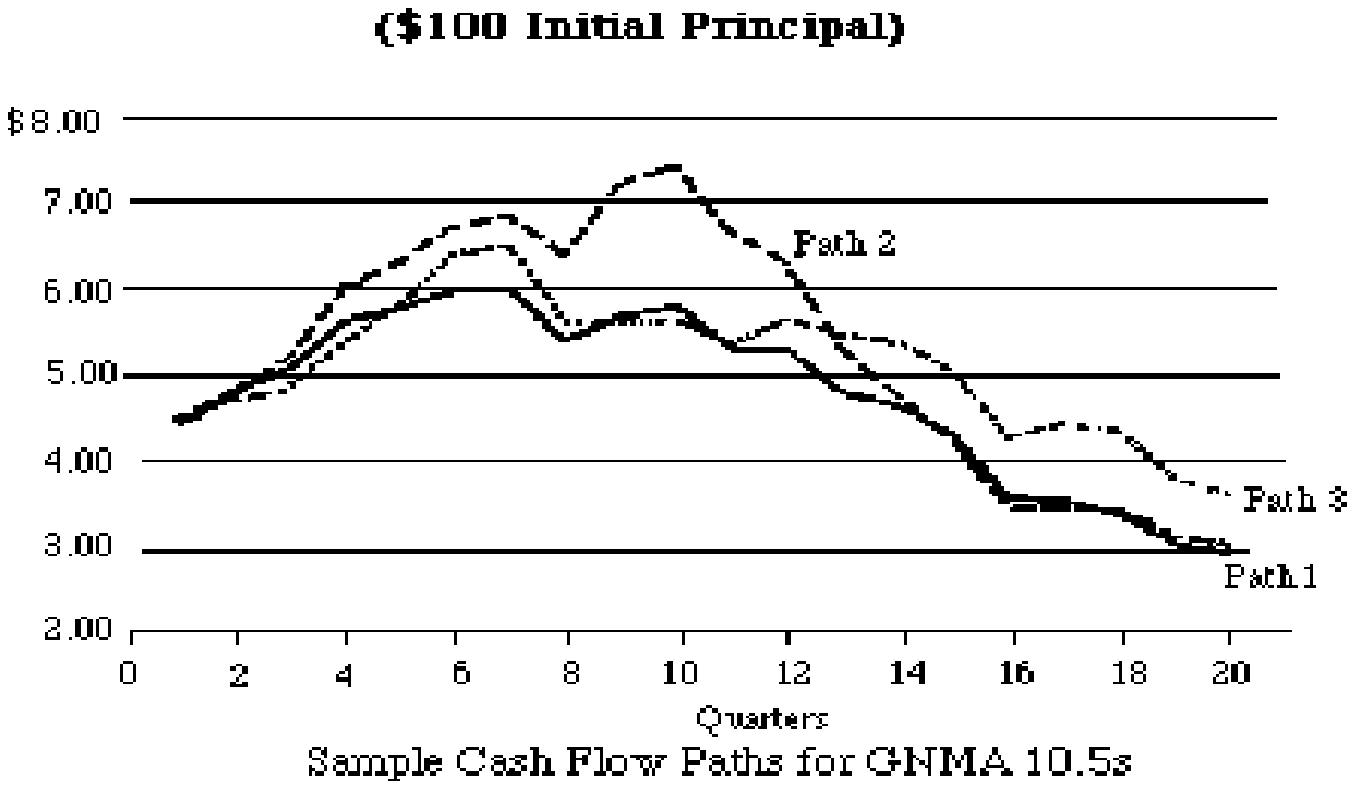
Valuation

- Each path's cash flows are discounted back to present using Treasury rates
- Average of all paths' present values is theoretical price assuming no spread off Treasuries
- Theoretical price equated to market price by adding spread to Treasury discounting rates
- Result: Options adjusted spread to Treasury curve

Price Sensitivity Estimates

- Each rate path is shocked up and down by a small increment
- Two new theoretical prices and probable market prices are obtained
- Price sensitivities are determined from these new prices relative to the initial ones
- Result: MBS duration and convexity

Valuation Process: Projected Cash Flows



Sample Cash Flow Paths for GNMA 10.5s

The preceding cash flows are based on $100 in original principal balance and are inclusive of prepayments for each of the 3 interest rate environments. The prepayment function is driven by the *10-year Treasury*.

Valuation Process: Theoretical Value of MBS Pool

$$\text{Theoretical MBS Value} = \frac{1}{S}\sum_{s}\sum_{t}\frac{CF_t^S}{\prod_{i=1}^{t}(1+r_t^S)}$$

where

S = number of interest rate paths

CF = cash flow in period t under path s

r = ***short-term*** discount rate at period t under path s.

- Theoretical price reflects the value of options embedded in the MBS.
- Theoretical price might misstate the true value since cash flows are discounted by Treasury rates.

Valuation Process: Actual Market Price of MBS Pool

$$\text{Actual Market Price} = \frac{1}{S}\sum_s \sum_t \frac{CF_t^S}{\prod_{i=1}^{t}(1+r_t^S+OAS)}$$

FNMA Variation: multiplicative OAS premium

$$\prod_{i=1}^{t}(1+r_t^S * OAS)$$

- OAS is the additional yield needed to discount cash flows to equal the theoretical model value with the market price.
- OAS is a number that when added across the Treasury yield curve, allows us to derive the MBS market price

OAS Example

Let's assume that

- Borrowers only prepay due to refinancing not for turnover reasons
- The current zero coupon yield curve for T bonds is flat
- Mortgage coupon rate: 10% on an outstanding mortgage pool
- Outstanding principal balance on pool: $1 Million
- The mortgages have a 3-year maturity and pay principal and interest only once at the end of each year.

OAS Example

Let's assume that

- Mortgage loans are fully amortized and there is no servicing fee Thus, in a world of no prepayments and no defaults

Year	Begin Balance	Debt Service	Interest	Principal	End Balance
1	1,000,000	402,115	100,000	302,115	697,885
2	697,885	402,115	69,789	332,327	365,559
3	365,559	402,115	36,556	365,559	0

- The current mortgage rate (y) is 9% .... so MPT is selling at a premium

$$\text{Price}_{\text{MPT}} = \frac{402{,}115}{1.09} + \frac{402{,}115}{1.09^2} + \frac{402{,}115}{1.09^3} = \$1{,}017{,}869$$

OAS Example

- Because of prepayment penalties and other refinancing costs, mortgagees don't prepay until mortgage rates, in any year, fall 3% or more below the mortgage coupon rate for the pool (10% in our example)

- Interest rate movements over time change a maximum of 1% up or down each year. The time path of interest rates follow a binomial process.

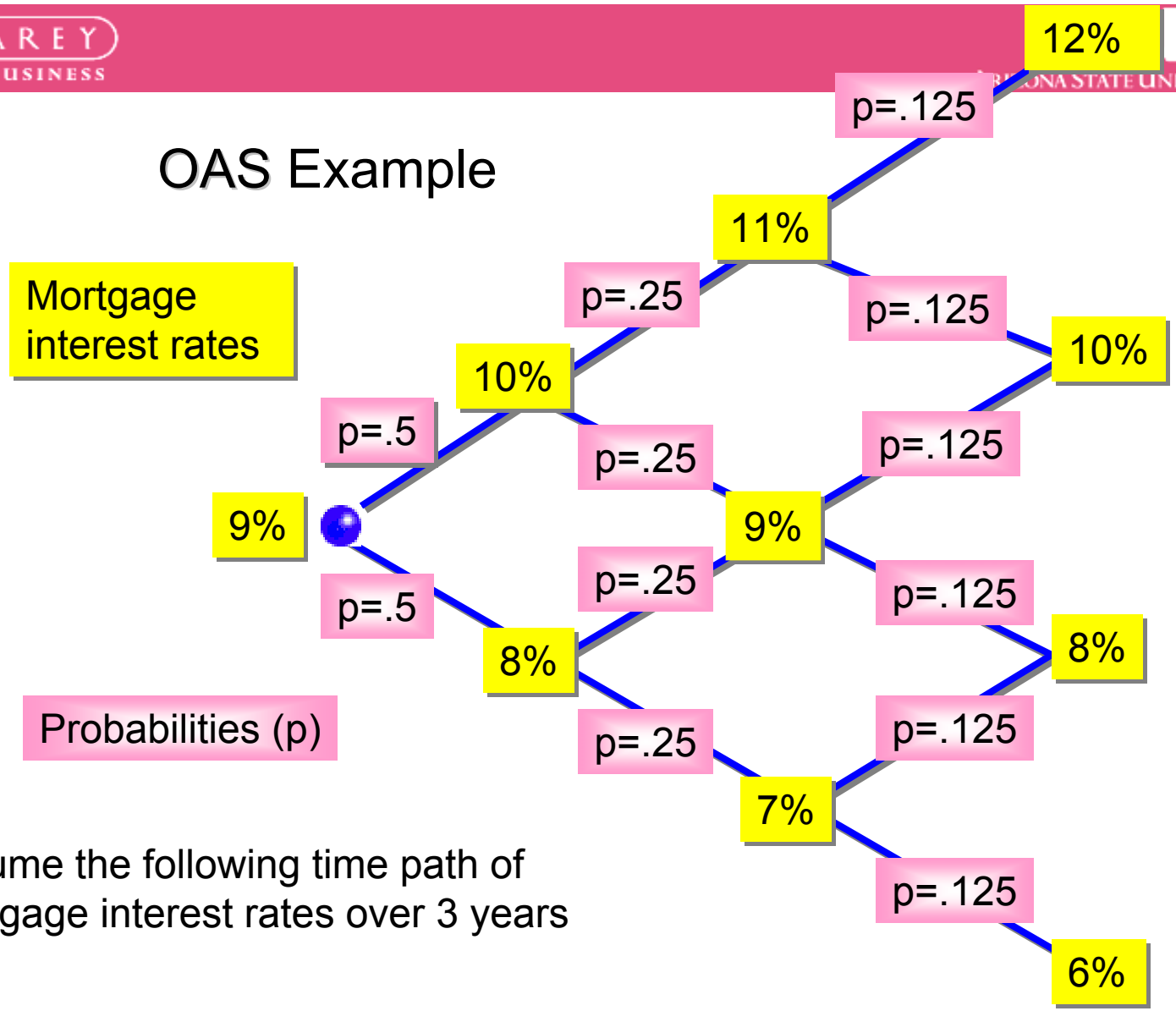
- With prepayments present, cash flows in any year can be either

  promised debt service R=$402,115

  promised debt service R=$402,115 + repayment of outstanding principal

  cash flow = 0 if all mortgages have been prepaid or paid off in prior year

OAS Example



Assume the following time path of mortgage interest rates over 3 years

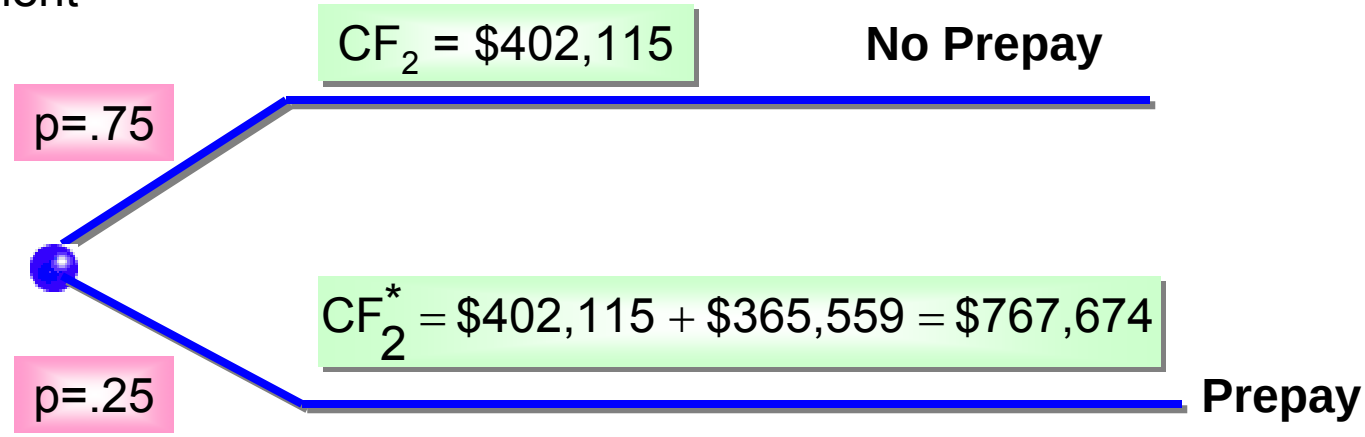
Period	0	1	2	3

OAS Example

End of Year 1*:* investor can expect to receive $402,115 with certainty

$CF_1 = \$402,115$

End of Year 2: 3 possible interest rate scenarios but only 1 triggers prepayment



Expected CF_2 = [(.25)*767,674] = [(.75)*402,115] = 493,504

OAS Example

End of Year 3*:*

Expected CF_3 = [(.25)*0] = [(.75)*402,115] = $301,586

Derivation of OAS*:* Recall that

$$P = \frac{E(CF_1)}{(1 + r_1 + OAS)} + \frac{E(CF_2)}{(1 + r_2 + OAS)^2} + \frac{E(CF_3)}{(1 + r_3 + OAS)^3}$$

where P = Price of Mortgage Pass-through
r_1 = Discount rate on 1-year, zero-coupon Treasury bond
r_2 = Discount rate on 2-year, zero-coupon Treasury bond
r_3 = Discount rate on 3-year, zero-coupon Treasury bond
OAS = Option adjusted spread on mortgage pass-through

OAS Example

Since we have assumed that the Treasury yield curve is flat,

$$r_1 = r_2 = r_3 = 8\%$$

We can now solve for the OAS:

$$\$1{,}017{,}869 = \frac{\$402{,}115}{(1+.08+\text{OAS})} + \frac{\$493{,}504}{(1+.08+\text{OAS})^2} + \frac{\$301{,}586}{(1+.08+\text{OAS})^3}$$

OAS = .96% (96 bps)

and thus

$$Y_{MPT} = Y_{TBond} + \text{OAS} = 8\% + .96\% = 8.96\%$$

OAS Interpretation

If

OAS (+) ➔ Market Price < Justified Price ➔ Undervalued (Cheap)

OAS (-) ➔ Market Price > Justified Price ➔ Overvalued (Rich)

Question: Based on our OAS in the preceding example, is our bond "cheap" or "rich"?

Option Adjusted-Spread

- Instead of determining the theoretical value of the MBS or tranche given a path of spot rates and option-adjusted spreads, analysts can use a Monte Carlo simulation to estimate the mortgage security's rate of return given its market price.

- Since the security's rate of return is equal to a riskless spot rate plus the OAS (assuming no default risk), many analysts use the simulation to estimate just the OAS.

- From the simulation, the OAS is determined by finding that OAS that makes the theoretical value of the MBS equal to its market price.

Options Based (OAS) Model: Pros and Cons

Advantages

- It's a pricing model
- Incorporates important variables that affords flexibility in adapting to new economic scenarios
- Better means of assessing value and price sensitivities of new securities
- Can compare OAS across securities

Disadvantages

- If complete model then OAS = 0
- Is model dependent
- Ad hoc adjustments are made
- Is an averaged number
- Interest rate distribution isn't consistent with model assumptions
- Implicitly assumes OAS reinvested at constant spreads

Mortgage Crisis: Subprime Exposure and SIVs

"I THOUGHT WE WERE JUST BUYING A HOUSE!"

Sub-prime Meltdown: How We Got There

Subprime lending: making loans to borrowers who do not qualify for the best market interest rates because of their deficient credit history (FICO).

- Unregulated finance companies: 52% of subprime mortgages originated by companies with no federal supervision

- Poor Monitoring: "Poorly enforced" state regulations due to lack of staff

- Lemons (quality) and subprime securitization: information on quality is costly (buyers discount all subprime securities (used cars) because can't determine quality and costly to judge) → Buyers heavily discount all such securities → Flight to quality (investors refuse to buy securities of unknown quality)

Mortgage Origination Statistics

	Total Mortgage Originations (Billions)	Subprime Originations (Billions)	Subprime Share in Total Originations (Pct of $ Value)	Subprime MBS (Billions)	Percent Subprimes Securitized (Pct of $ Value)
2001	$2,215	$190	8.6%	$95	50.4
2002	$2,885	$231	8.0%	$121	52.7
2003	$3,945	$335	8.5%	$202	60.5
2004	$2,920	$540	18.5%	$401	74.3
2005	$3,120	$625	20.0%	$507	81.2
2006	$2,980	$600	20.1%	$483	80.5

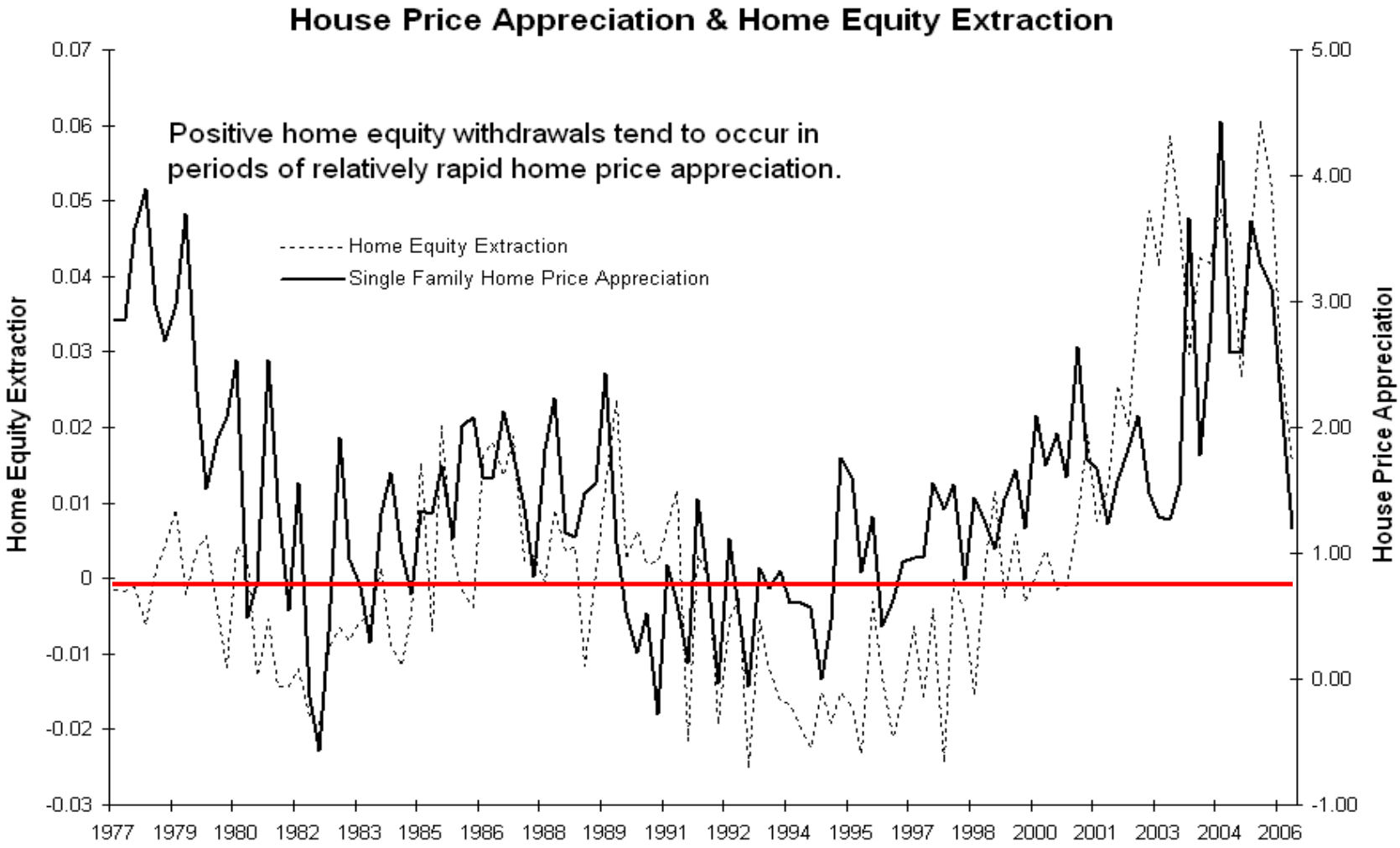
Source: Inside Mortgage Finance, The 2007 Mortgage Market Statistical Annual, Top Subprime Mortgage Market Players and Key Data (2006)

Underwriting Standards in Subprime Home-Purchase Loans

	ARM Share	IO Share	Low-No-Doc Share	Debt Payments-to-Income Ratio	Average Loan-to-Value Ratio
2001	73.8%	0.0%	28.5%	39.7	84.04
2002	80.0%	2.3%	38.6%	40.1	84.42
2003	80.1%	8.6%	42.8%	40.5	86.09
2004	89.4%	27.2%	45.2%	41.2	84.86
2005	93.3%	37.8%	50.7%	41.8	83.24
2006	91.3%	22.8%	50.8%	42.4	83.35

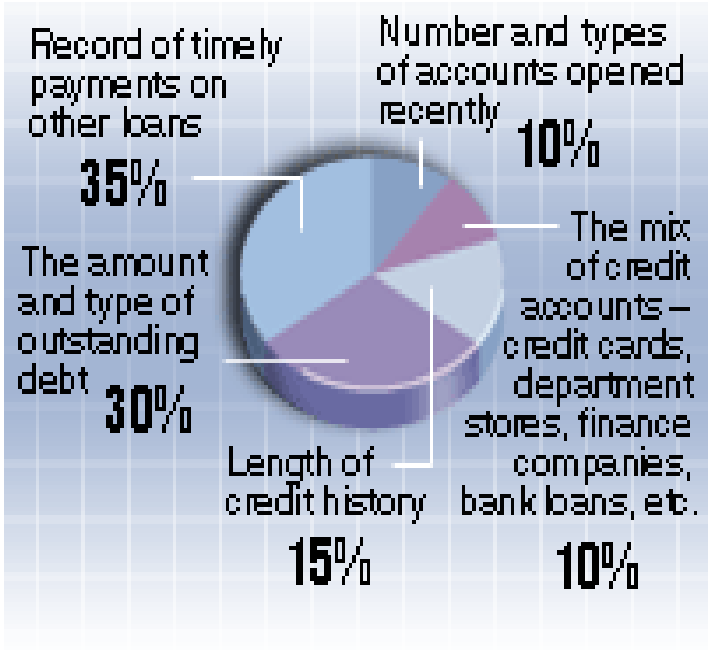
Source: Freddie Mac via International Monetary Fund (http://www.imf.org/external/pubs/ft/fmu/eng/2007/charts.pdf)

Homes as ATMs: Borrowing Against the Equity



Credit Scores: Rating Borrowers

FairIsaac

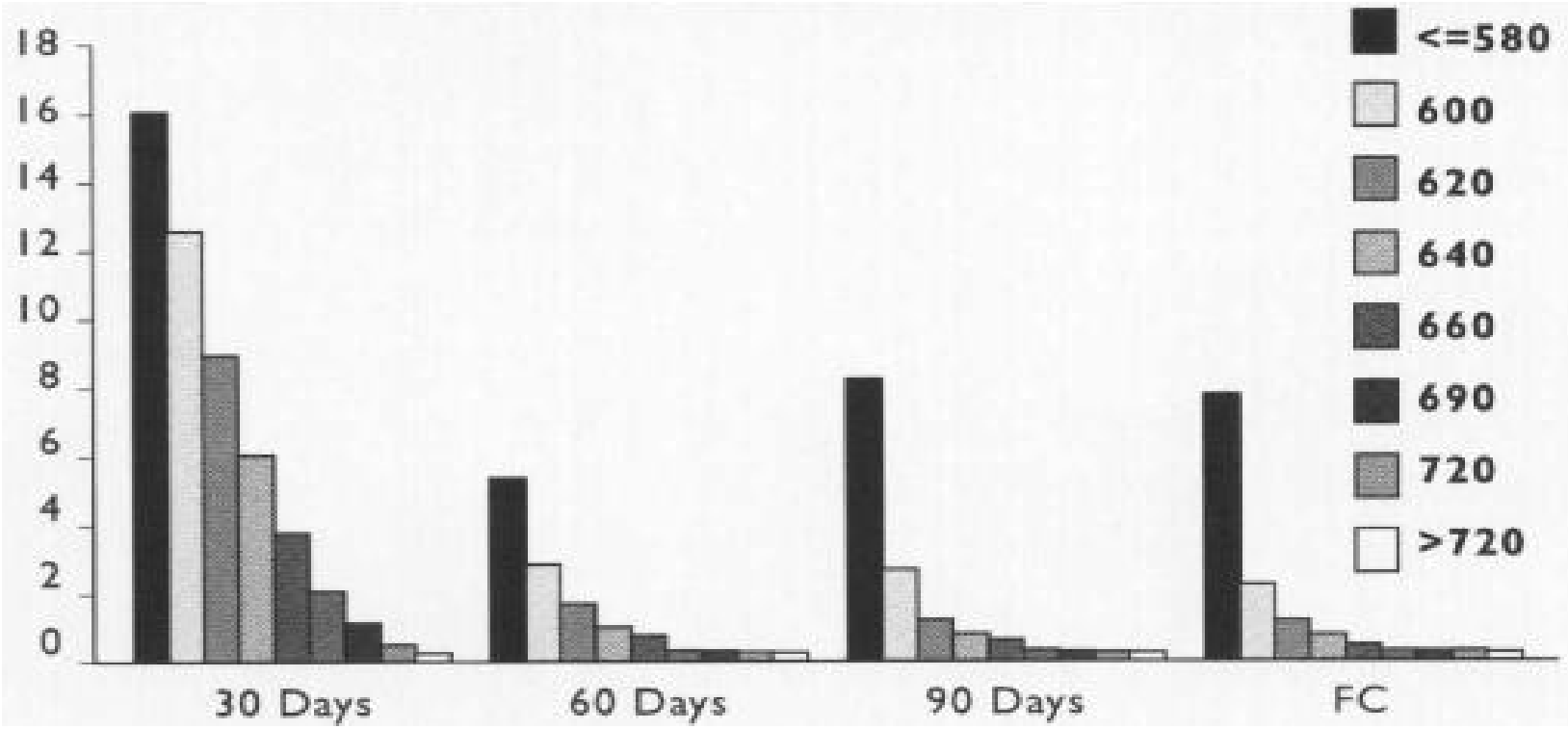


Factors in determining credit score, and the weight they are given

Fair Isaac's (FICO) creditworthiness score deals only with **financial information** about a borrower and doesn't consider such factors as place of residence, age, race, sex or nationality

Scores are on a 900-point scale. Generally, a score of **640 or higher** results in a mortgage on favorable terms.

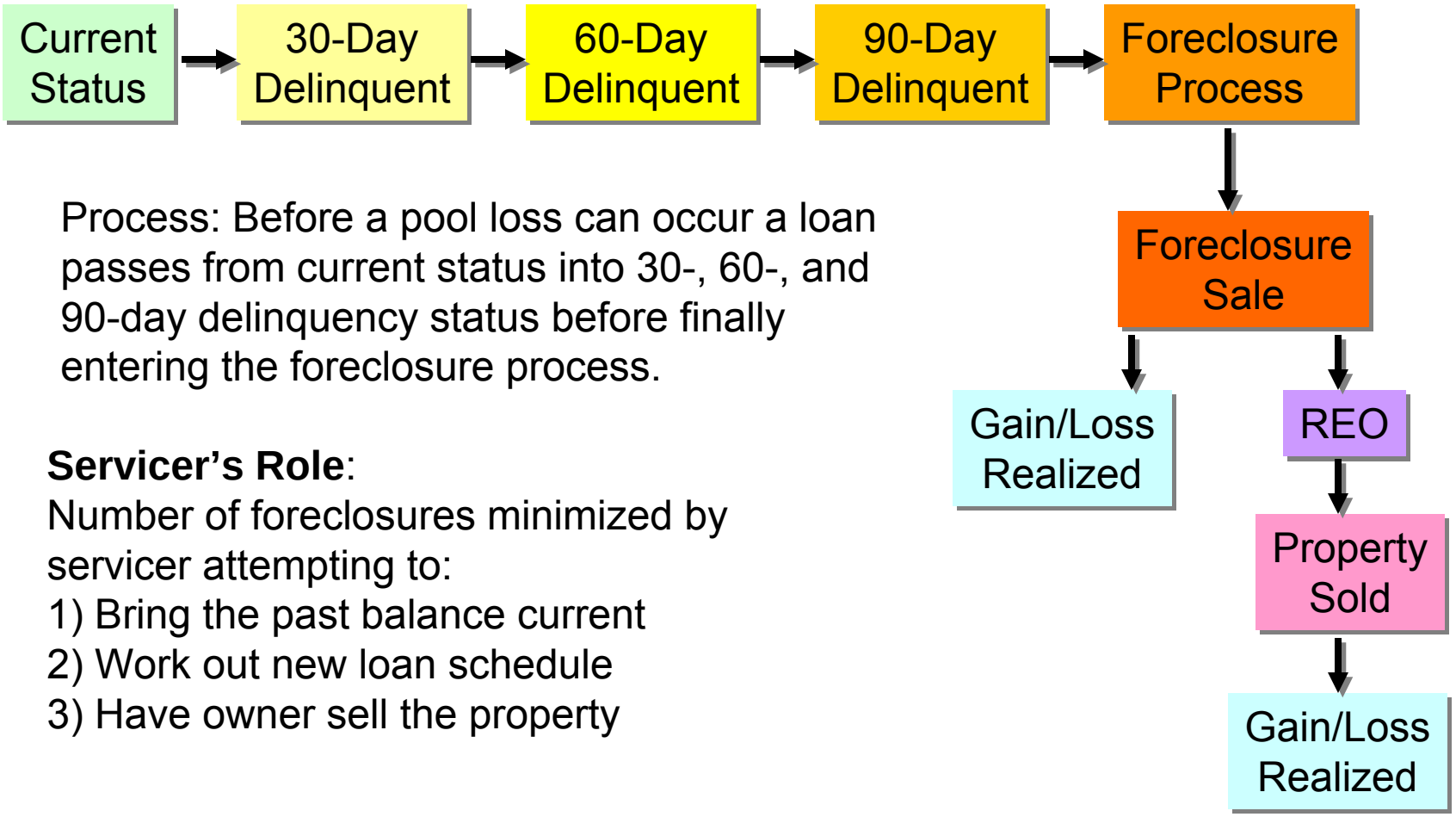
Credit Scores Rank Order Risk on All Delinquency Measures



Source: A tactical approach to credit scores, *Mortgage Banking*; Washington; Feb 1999; Dan Feshbach; Pat Schwinn;

The lower the credit score, the higher the percentage of clients in that stage of late payment status

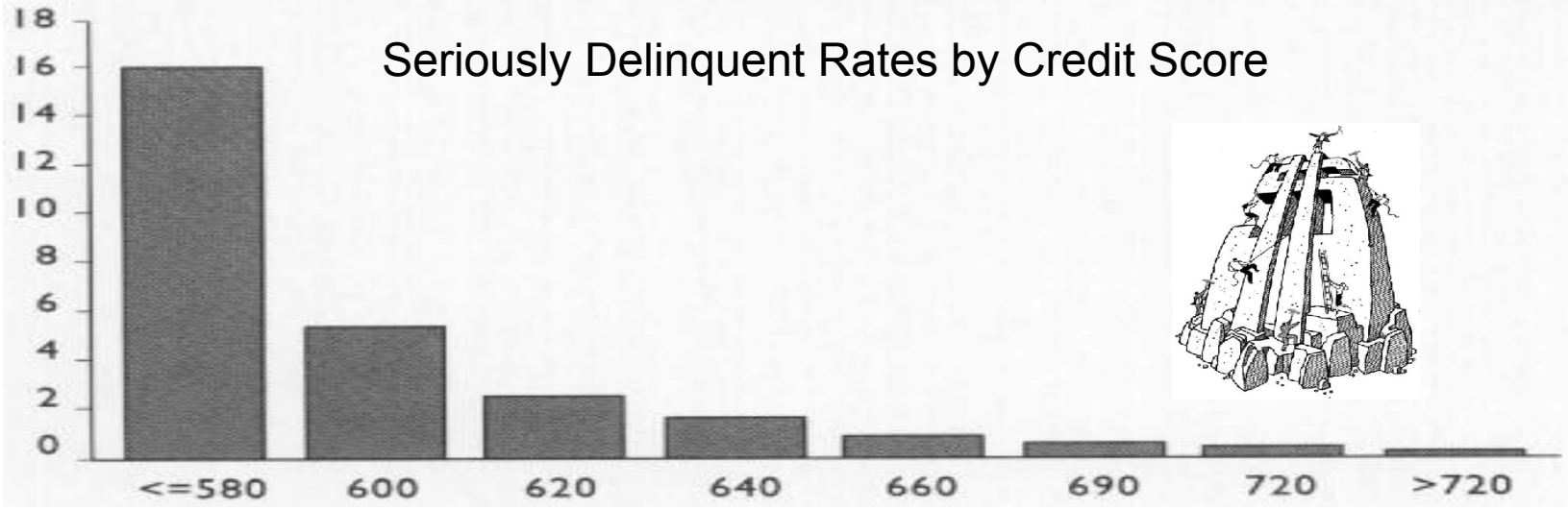
How Losses Occur: Chronological Process



Process: Before a pool loss can occur a loan passes from current status into 30-, 60-, and 90-day delinquency status before finally entering the foreclosure process.

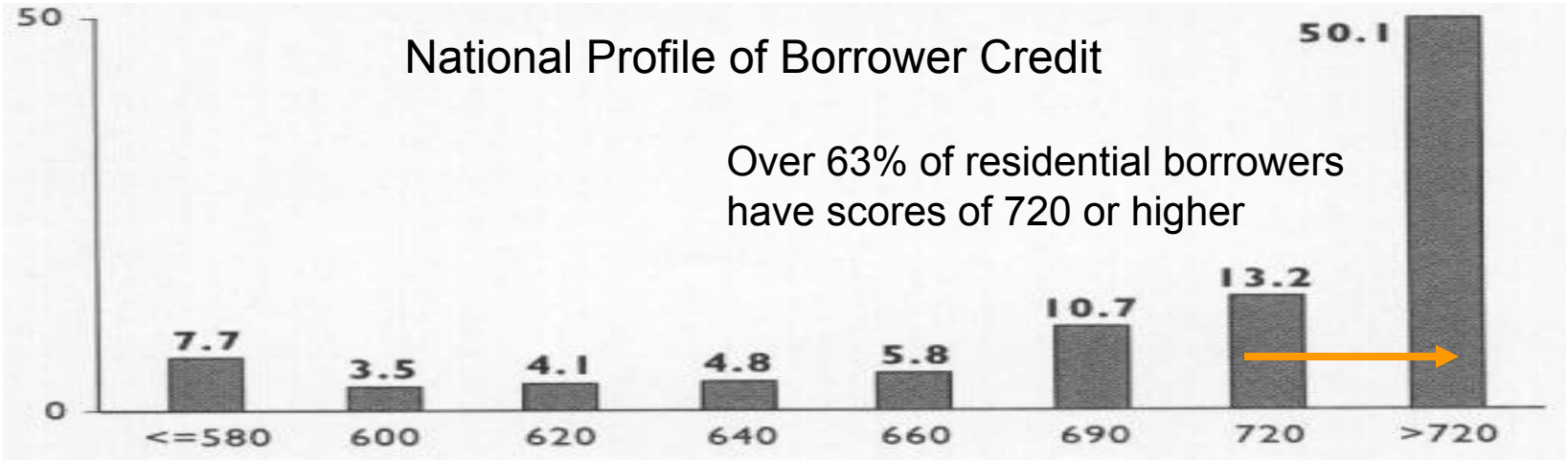
Servicer's Role:
Number of foreclosures minimized by servicer attempting to:
1) Bring the past balance current
2) Work out new loan schedule
3) Have owner sell the property

Seriously Delinquent Rates by Credit Score



National Profile of Borrower Credit

Over 63% of residential borrowers have scores of 720 or higher



450-540	540-580	580-620	620-660	680-700	700-720
C credit	B credit	A- credit	A credit	AA credit	AAA credit

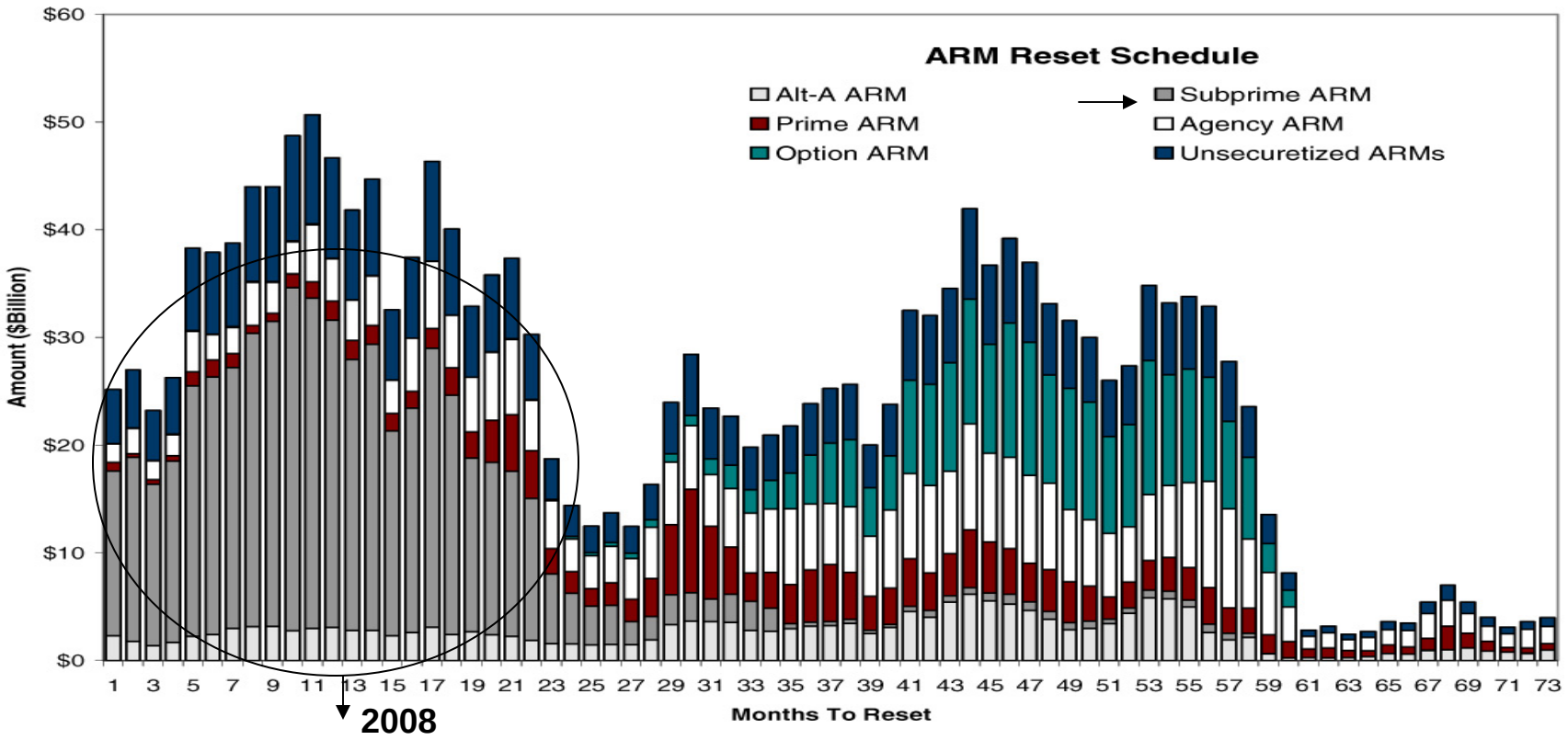
FICO Score and Sector: 2005 Originations

Sector	Average Loan Size	FICO Score	Combined Loan-to-Value	Percent Prepayment Penalty
Prime ARM	$453,000	732	73.9%	15.4%
Near Prime ARM	$321,000	711	80.0%	52.6%
Subprime ARM	$200,000	**624**	85.9%	72.4%
Prime Fixed	$499,000	742	70.6%	1.7%
Near Prime Fixed	$215,000	717	76.2%	15.6%
Subprime Fixed	$128,000	**636**	81.2%	76.6%

Source: Mortgage Bankers Association: Characteristics of Outstanding Residential Mortgage Debt

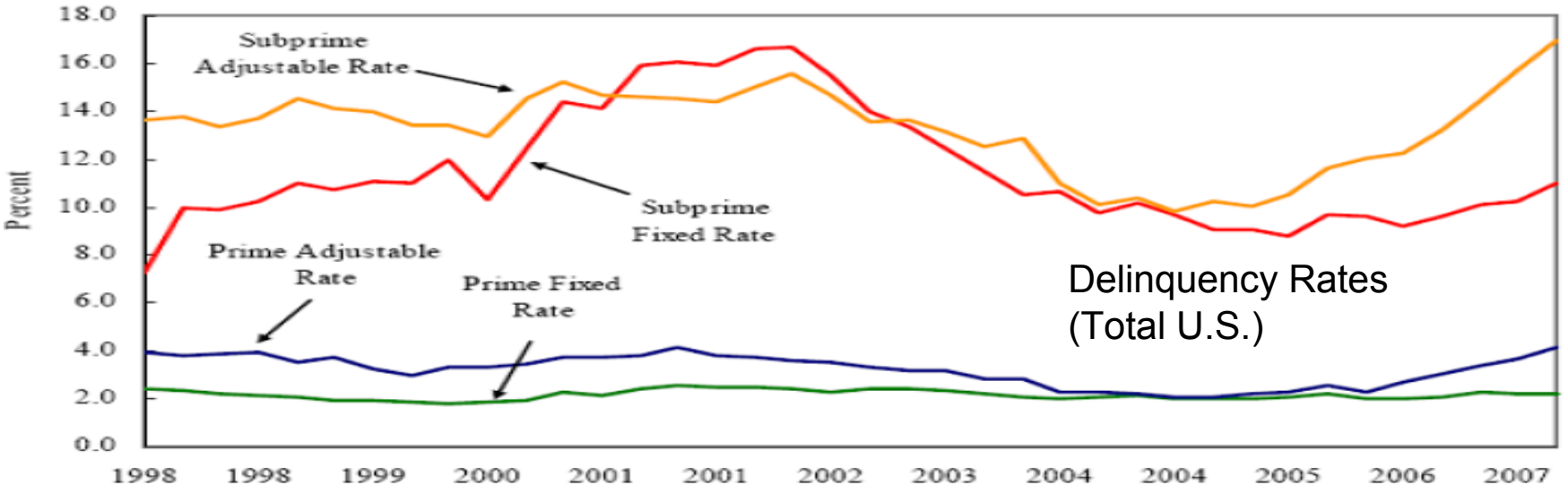
Subprime Resets: What all the fuss was about

Exhibit 42: Adjustable Rate Mortgage Reset Schedule

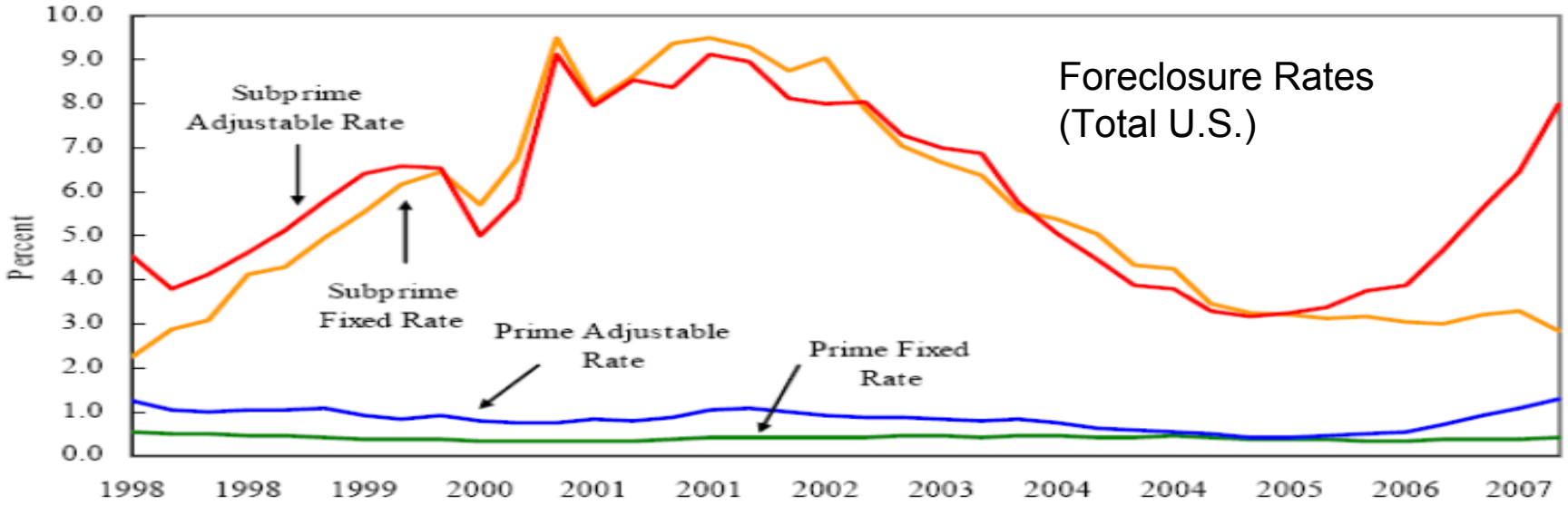


Note: Data as of January 2007.

Gray bars which make up the majority of the reset amounts due over the next 24 months (2007 and 2008) are the Sub-Prime borrowers.



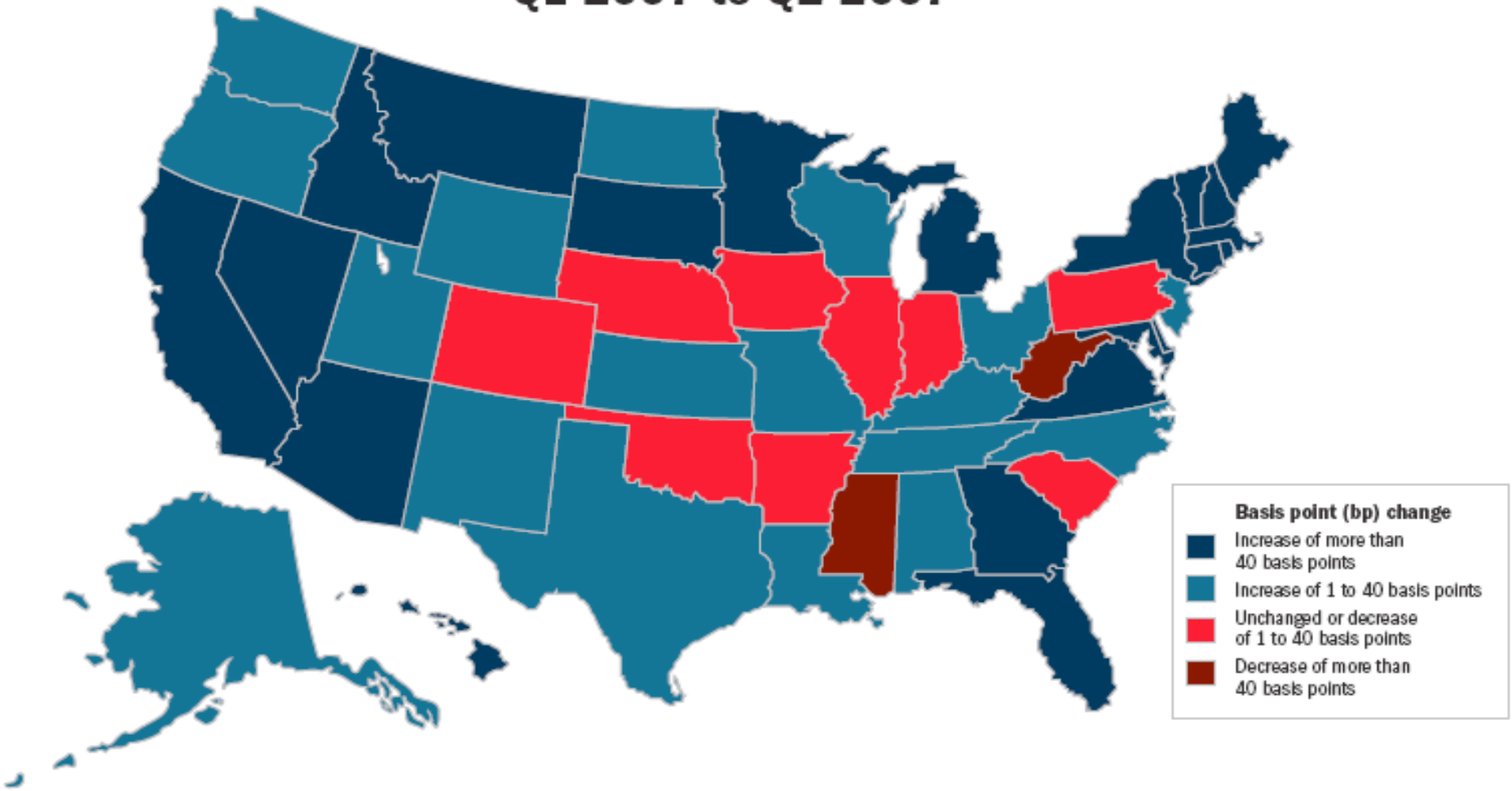
Delinquency Rates
(Total U.S.)



Foreclosure Rates
(Total U.S.)

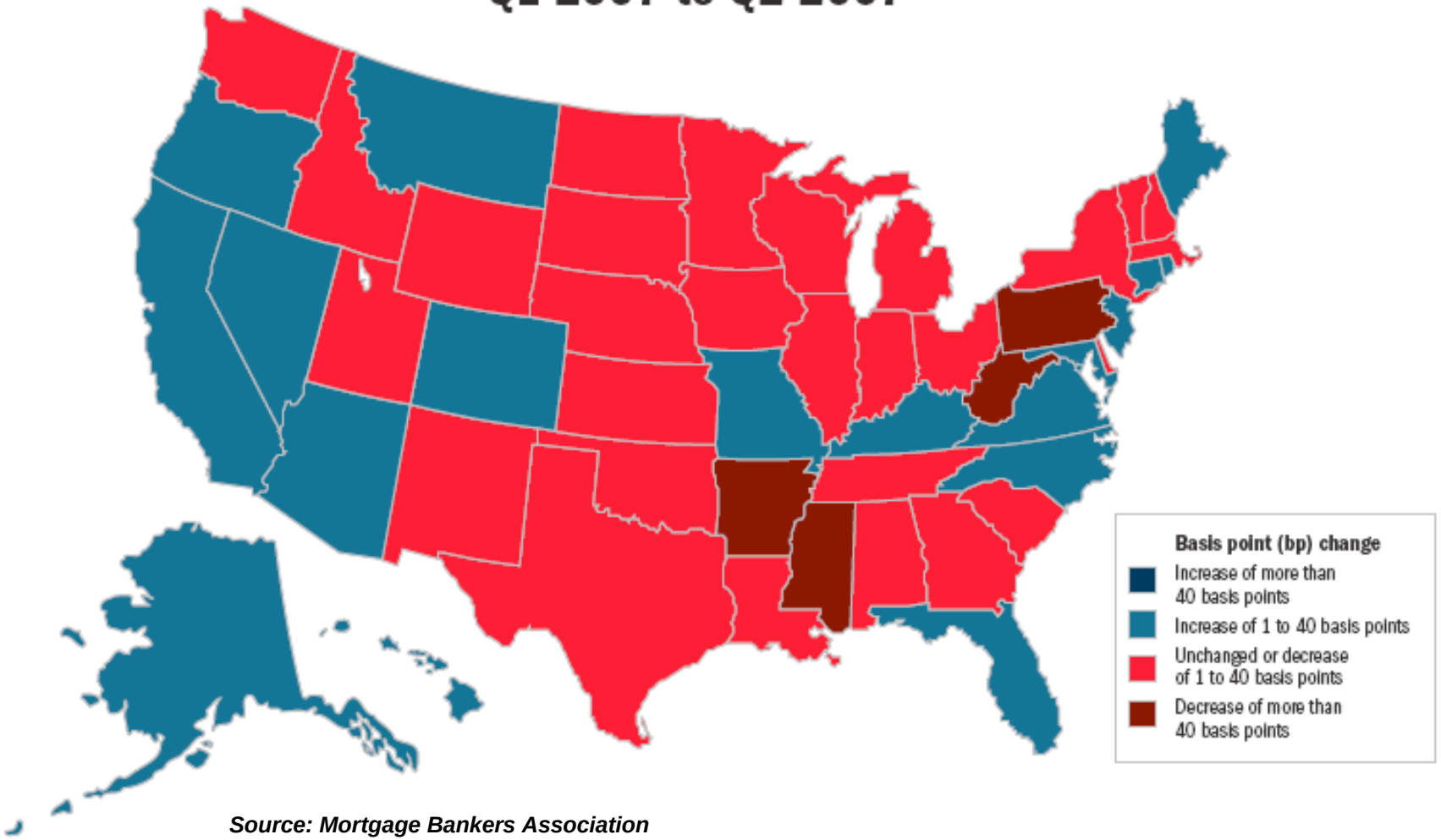
Source: Mortgage Bankers Association

Change in Subprime ARM Loan Foreclosure Starts, Q1 2007 to Q2 2007

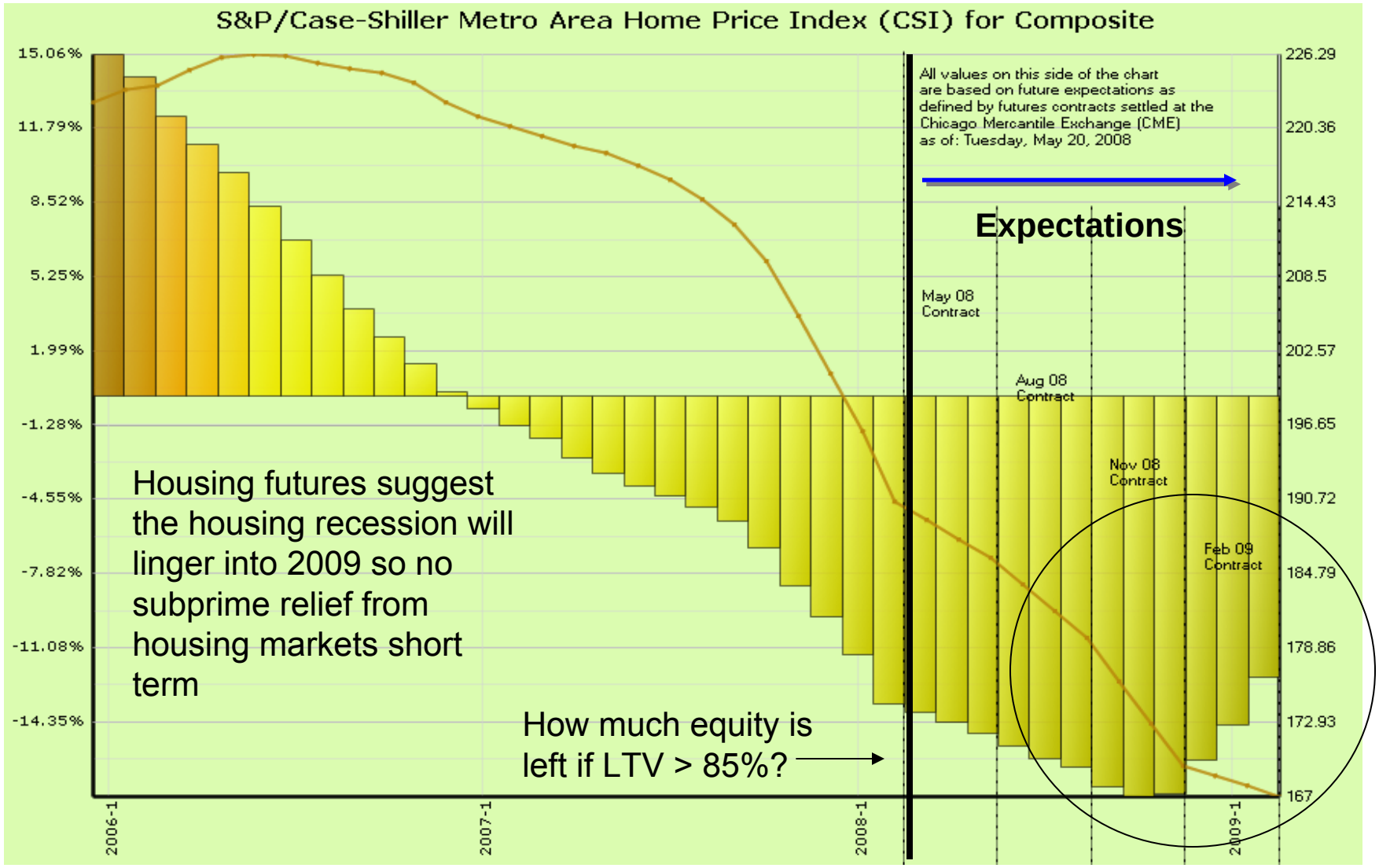


Source: Mortgage Bankers Association

Change in Subprime Fixed Loan Foreclosure Starts, Q1 2007 to Q2 2007



Source: Mortgage Bankers Association



Source: http://www.paperdinero.com/CSI.aspx

Risks of the Subprime Crisis

- **Credit risk (risk of default)**: ***default risk shared with investors*** because rights to mortgage payments repackaged into MBS or CDO.

- **Asset price risk**: If market value falls below certain levels, CDO may be required to sell collateral at a ***steep loss*** to satisfy the terms of deal.

- **Liquidity risk**: Ability of special investment vehicles (SIV) to obtain short-term loans by ***issuing commercial paper, pledging mortgage assets or CDO as collateral***. has been hampered.

- **Consumer credit "contagion"**: subprime malaise spreads to credit-card and auto loans… more people unable to pay off their debts

Subprime: What's the Concern?

- "The **crisis is one of poor information/lack of transparency**: many assets aren't yet marked to market because there is no market
- The problem: Wall Street pooled lots of **low-quality illiquid securities** into a huge pile of ***derivative securities that are not traded*** in markets at all.
- CDOs and CLOs can't be sold by originators or current owners creating a serious problem in the asset-backed commercial paper (ABCP) market.

Subprime: What's the Concern?

- Money market investors have **refused to refinance paper for SIVs** (Structured Investment Vehicles), that own CDOs and other asset-backed derivatives.

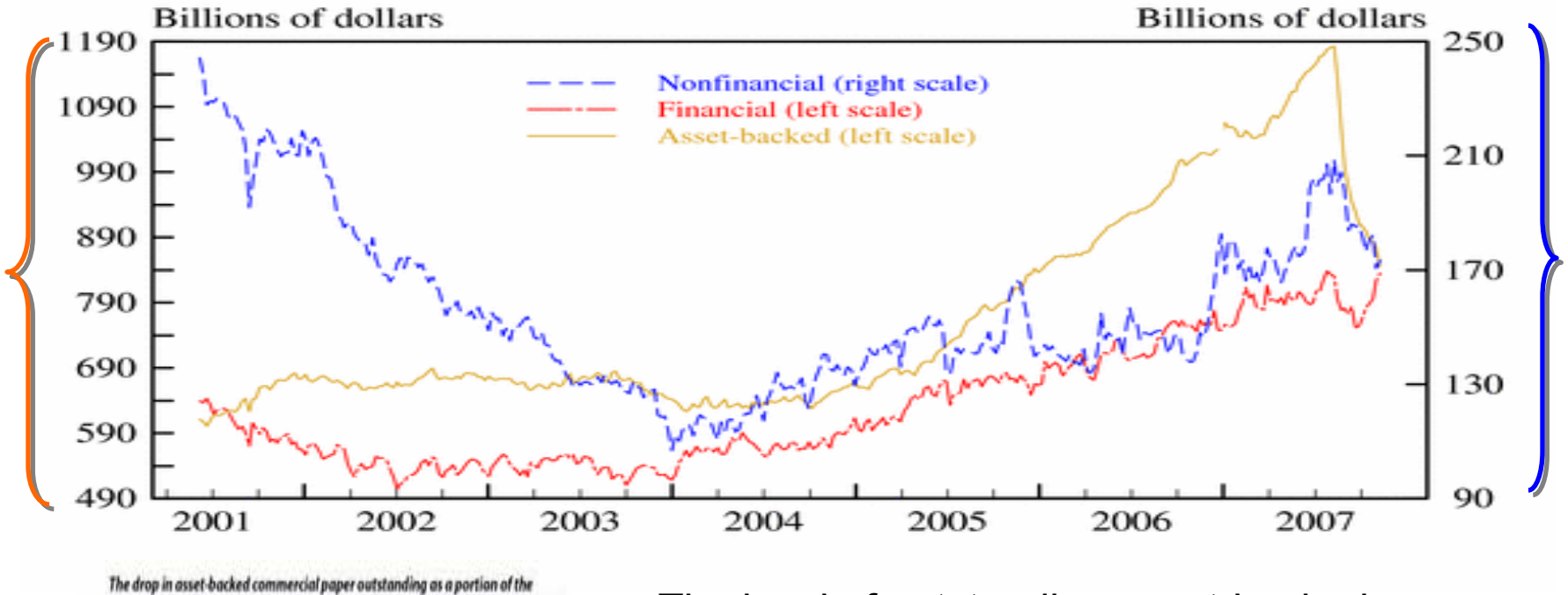
- **SIVs** are **blind pools of illiquid securities** that are **100% financed in** the usually liquid money markets.

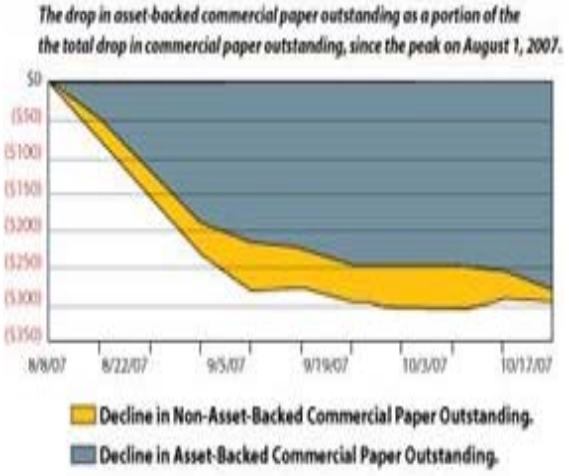
  SIV concept: SIV borrows in the **liquid commercial paper market at a lower interest rate than is earned from the bonds and loans in the illiquid CDO**. The concept doesn't work when funding dries up in the money markets.

Subprime: Why the Concern?

- Rating agencies:
  - assigned very high ratings to most ABS, CDOs, ABCP conduits and structured investment vehicles (SIVs)
  - assumed credit losses on these portfolios will be minimal.
  - However, if, many ABS and CDOs backed by sub-prime mortgages have been rated far too generously…and will eventually have to be downgraded, implied default rates and therefore banks' credit impairment charges could be much higher than the rating agencies assume."
- In this scenario, the Fed will have no choice but to lower the federal funds rate in an effort to reduce default rates, especially for subprime ARMs.

Commercial Paper Outstanding





The level of outstanding asset-backed commercial paper (ABCP) fell by -$43.6 billion, to $881 billion in the latest week (11/8/07). Traditional corporate borrowers like IBM may still tap the CP market, but not asset-backed entities in general.

Reality Check

- **Current Situation**: Federal Reserve appears to have absorbed about US$25 billion in MBS securities via "temporary" repurchase agreements e.g. seller (usually a bank) sells securities to a buyer (usually the Federal Reserve) for cash but agrees to re-purchase the securities at a later date.

The rolling 2-week total of "temporary" MBS repos soared from about zero in August…and the repos are on the rise again, despite the "recovering" credit markets.


WELL, THERE GOES THE NEIGHBORHOOD....
Mike Luckovich 9/12/7
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