

# An Overview of the Residential Mortgage Market

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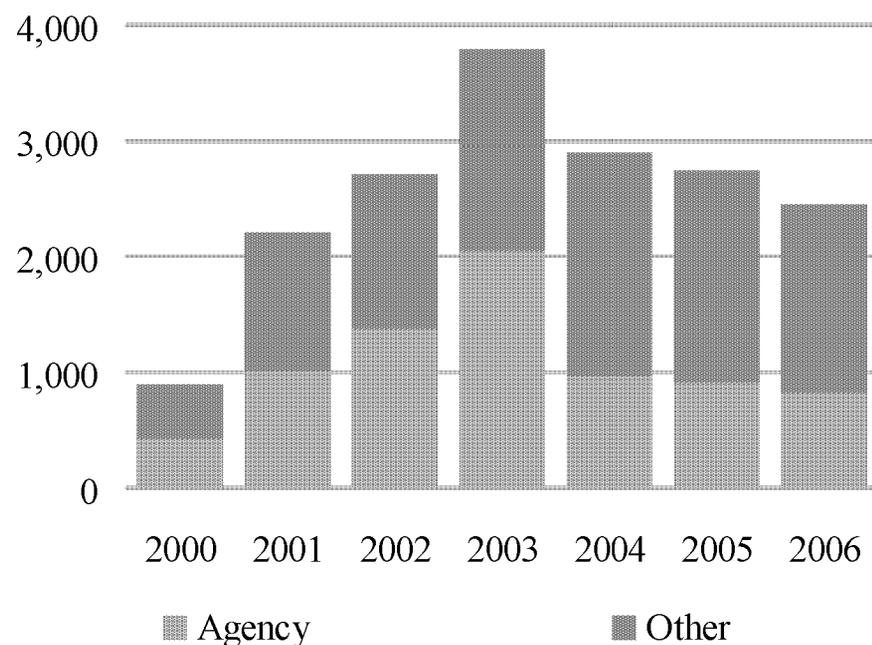
October 2007

**LEHMAN BROTHERS**

# Excess Capacity in the Origination Industry Led to Loose Underwriting Standards

- ◆ Origination volumes in late 2005 / 2006 remained high despite the fall in rate incentive
- ◆ The share of high CLTV and lim-doc loans increased significantly
- ◆ Contrary to popular perception, the share of investor properties didn't change much

Origination Volumes \$bn



Characteristics of Non-Agencies <sup>1</sup>

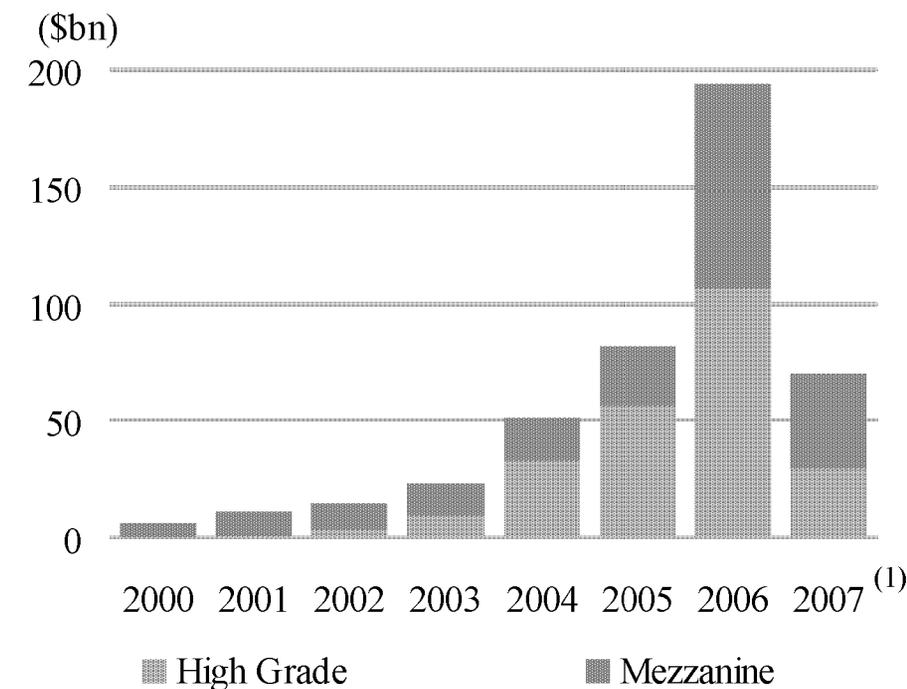
	2003	2004	2005	2006
% CLTV >80	31	42	46	51
% CLTV >90	14	22	25	29
% IO	17	39	51	49
% Lim-doc	43	48	56	64
% Investor	9	11	12	12

Source: MBA, Loan performance and Lehman Brothers  
 1. Includes prime jumbo, alt-A and subprime loans.

# Securitizations Let Originators Layoff Most of the Risk

- ◆ Most inv-grade subordinates created in recent years have been by absorbed by CDOs
- ◆ The rate impact of CDO demand for borrowers was limited...
- ◆ ... The more important effect was the ‘commoditization’ of credit

**Issuance in ABS CDOs \$bn**



**Change in Borrowing Costs**

	Size %	Credit Spreads (bp)		
		2003	2006	Change
AAA	81%	35	15	-20
AA	5%	100	32	-68
A	5%	150	40	-110
BBB	6%	325	175	-150
Total	97%	60	26	-34

Source: Lehman Brothers

1. The 2007 numbers are YTD estimates, but there should be no issuance for the rest of the year.

# The Markets Underestimated the Importance of Equity as an Attribute Driving Performance

- ◆ Unlike previous episodes, credit score has proved less important than equity
- ◆ Rating agency assumptions around loans with piggyback seconds were rather benign

## Cumulative Non-Performers <sup>(1)</sup>at 12 WALA

FICO	Conforming		Non-Conforming	
	80 CLTV	100 CLTV	80 CLTV	100 CLTV
650	3.5%	9.0%	3.4%	19.0%
675	2.0%	6.3%	2.3%	14.5%
700	1.7%	5.7%	2.0%	13.4%
725	1.1%	4.4%	1.8%	10.7%
750	0.6%	3.2%	0.7%	8.5%

## Rating Agency Assumptions in 2006 <sup>(2)</sup>

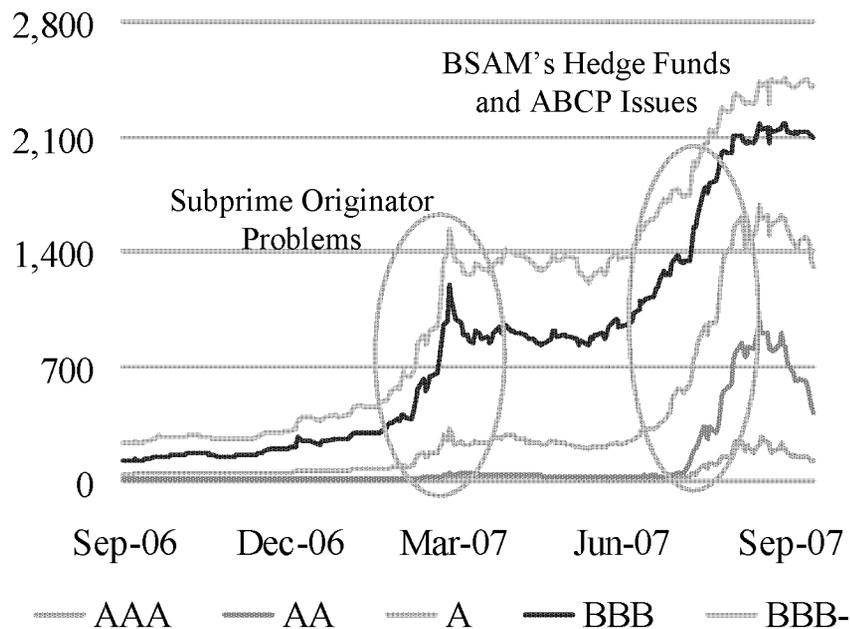
LTV	CLTV	Frequency	Severity	Loss
80	80	1.0x	1.0x	1.0x
80	100	1.5x	1.0x	1.5x
100	100	4.0x	1.6x	6.4x

1. Cumulative non-performers include 60 day + delinquencies (OTS style) and any cum. defaults. We show numbers for 06 originations
2. Reprint from the 2006 Securitized Conference.

# Originator Problems and a Highly Visible ABX Index Hastened the Inevitable

- ◆ Buyout requirements created significant problems for subprime originators
- ◆ In recent months, liquidity in the capital markets has dried significantly ...
- ◆ ... Rates for non-conforming borrowers are now 100–300bp wider

## Pricing of the Active ABX Indices <sup>(1)</sup>



## Rates Available to Borrowers <sup>(2)</sup>

	Dec 31	Jun 30	Oct 05
Agency	6.25	6.65	6.45
Jumbo	6.50	6.95	7.50
Alt-A	7.10	7.60	8.5–9.0
HEL	8.25	8.80	10.5–11.0

1. We show the most current ABX index pricing. We used 2007-1 as the current index through out 2007.
2. Lehman Brothers estimates

# Agenda

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## Can Subprime Losses Top 20%?

- ◆ Recent trends in delinquencies
- ◆ The issue of rate resets
- ◆ The impact of a softer housing market

## The Technicals Landscape

## Relative Value and Trade Recommendations

# There Has been Some Deterioration in Delinquencies Since the Beginning of the Year

## Alt-A Performance Has Deteriorated, But Still Better than Subprime

- ◆ Subprime delinquencies are about double the levels from 2000/01
- ◆ Alt-A delinquencies are 40% higher than 2000/01

### Cumulative Non-Performers<sup>(1)</sup> Across Sectors

	At 9 WALA			At 15 WALA		
	2000/01	2004	2006	2000/01	2004	2006
Jumbo	0.13%	0.07%	0.17%	0.35%	0.12%	0.41%
Alt-A <sup>(2)</sup>	1.37%	0.40%	1.42%	2.73%	0.80%	3.77%
Subprime	4.27%	2.44%	7.51%	7.86%	4.74%	14.74%

Observed in January / February

Observed in July / August

Source: Loan performance or MIC.

1. Cumulative non-performers is the sum of 60-day+ delinquencies (OTS style) and cumulative defaults as a % of original balance.
2. We use the sector classification of Loan performance. The alt-A sector includes the 'alt-B' market and Option ARMs.

# If We Simply Extrapolate from Current Delinquencies, What Could Losses on Residential Mortgages Be?

- ◆ Within the alt-A sector, there is significant tiering. Option ARMs and alt-A fixed-rates have fared much better than alt-B and hybrid loans
- ◆ These loss projections are clearly low as they don't account for ARM resets /housing

## Recent Delinquencies and Loss Expectations Across Sectors

	CNP <sup>(1)</sup> at 15 WALA		Life-Time Defaults %		Lifetime Losses % <sup>(3)</sup>	
	2000/01	2006	2000/01	2006 <sup>(2)</sup>	2000/01	2006
Jumbo	0.35	0.41	1.2	1.4	0.09	0.11
Option ARM		2.30		5.6		0.64
Alt-A Fixed		2.48		6.0		0.69
Alt-A Hybrid	2.89	3.34	7.0	8.1	0.80	0.92
Alt-B		7.82		19.0		2.18
Subprime	7.86	14.74	15.0	28.1	3.80	7.26

1. Cumulative non-performers equals 60-day+ delinquencies and cumulative defaults as a % of original balance.

2. We assume that the ratio of lifetime defaults (2006 vs. 2000) is the same as the ratio of CNP at 15 WALA.

3. We use the aggregate alt-A sector from 2000 as the benchmark for Option ARMs, alt-A hybrids and alt-B loans

# The Issue of ARM Resets

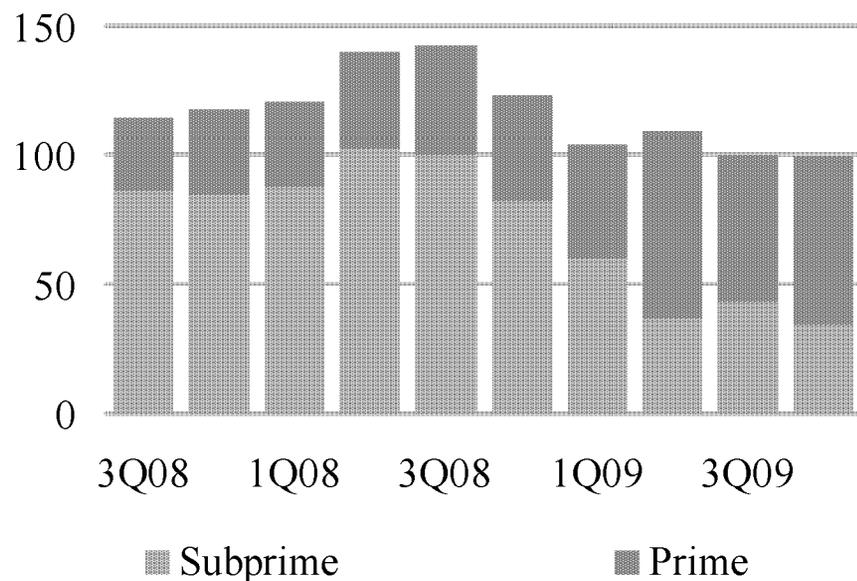
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- ◆ What is the size of ARM resets in coming months?
- ◆ What % of these borrowers cannot find a loan?
- ◆ Can the expansion of FHA / GSE programs help?
- ◆ Are loan modifications likely to take-off?

# The Magnitude of Subprime Resets in Coming Months is Significant. A Large Portion of These Borrowers May Not be Able to Refinance

- ◆ Most prime resets are 2010 and beyond. Prime resets in 2008/2009 have significant equity buildup
- ◆ Tighter underwriting around high LTV loans limit refinancing options for subprime borrowers
- ◆ About half the borrowers won't qualify for the original loan

ARM Resets in Coming Months \$bn<sup>(1)</sup>



Distribution of 2008/09 Subprime Resets<sup>(2)</sup>

CLTV	Conforming		Non-conforming		Total
	Full-Doc	Others	Full-Doc	Others	
80-85	5.0%	3.5%	1.3%	1.5%	11.3%
85-90	6.3%	4.0%	1.6%	1.7%	13.6%
90-95	6.4%	4.2%	1.6%	1.7%	13.9%
>95	11.5%	10.9%	3.2%	5.0%	30.6%
At Risk	17.9%	19.0%	7.8%	10.0%	54.7%

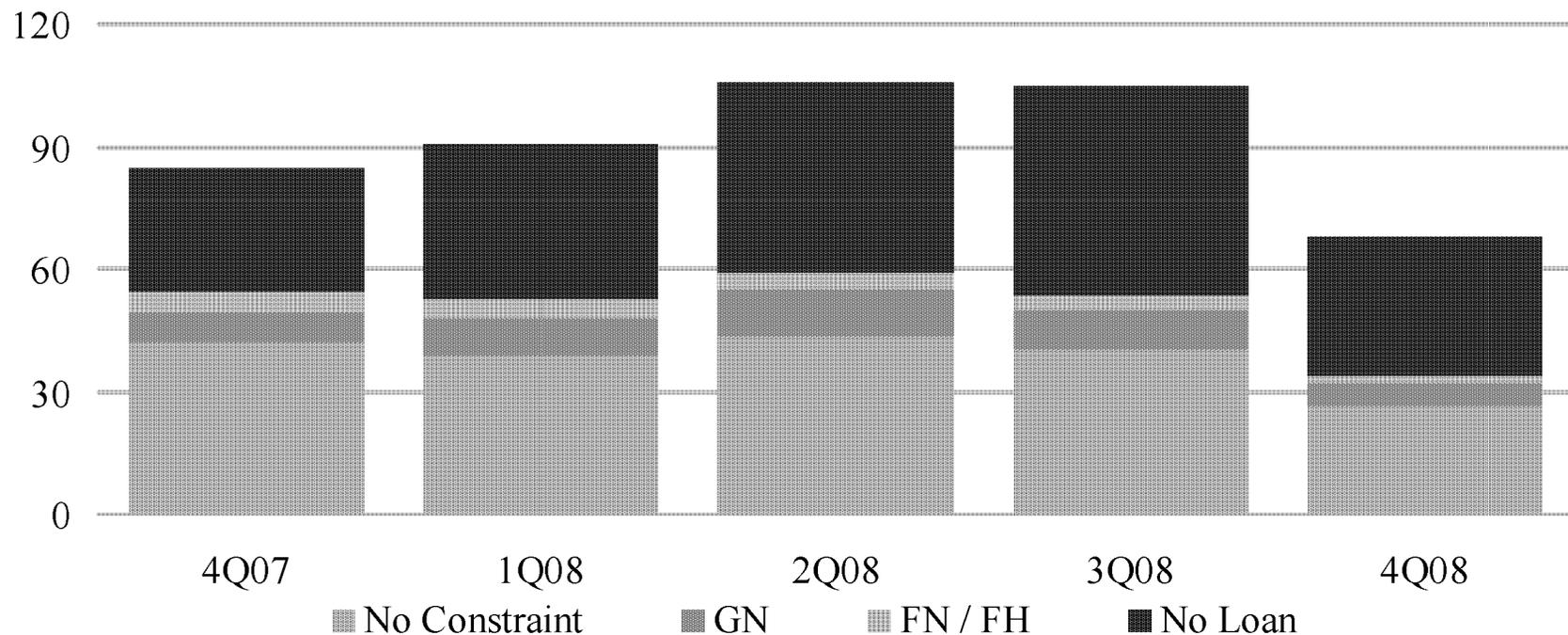
1. Based on data from Loan Performance and agency pools.

2. To estimate the CLTV at reset, we assume that the momentum in housing persists. 'Full-Doc' stands for borrowers with full documentation.

# ... Even with Some Help from the FHA and the GSEs

- ◆ About 20-25% of the problem borrowers may find a home in FHA or FN/FH loans
- ◆ That still leaves a sizeable portion of borrowers with no loan at reset
- ◆ A significant part of the ‘no constraint’ population could still end up in a FN/FH pool

Outlets for Resetting Subprime Borrowers (\$bn)

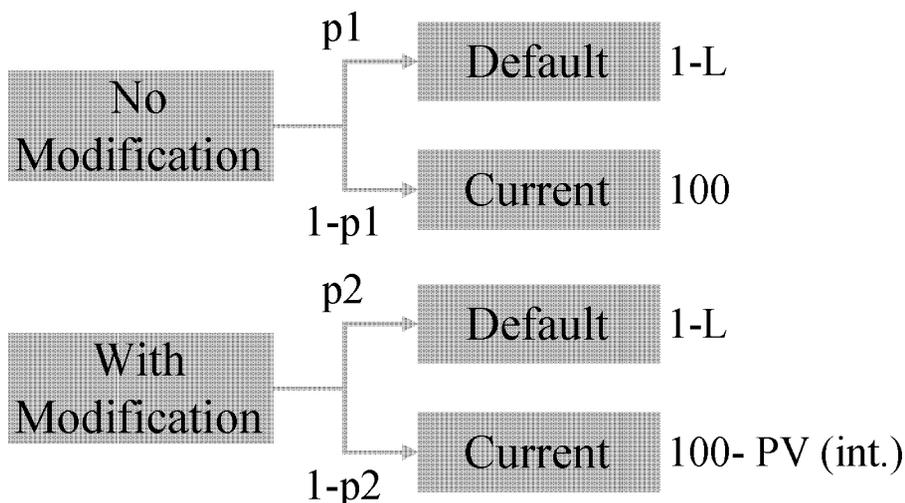


1. We assume that the FHA is able to ‘price based on risk’ by early 2008, allowing them to provide insurance to lim-doc borrowers.
2. For FN/FH, we assume that full-doc borrowers with FICO < 660 and lim-doc borrowers with FICO < 680 don’t qualify.

# Loan Modifications to the Rescue?

## The Most Suitable Loans for Modification are Subprime ARMs at Reset

### The Economics of Modification



To justify modification,  
 $(p1-p2) > PV (int.) / L$

### Defaults Required to Justify Modification<sup>(1)</sup>

	Default Prob. (p1)	Break-Even Default (p2)	Possible Default Prob. <sup>(2)</sup>
Current	20%	0%	10%
Cur. at Reset	50%	30%	20%
30-Day Delinq.	50%	30%	35%
60-Day Delinq.	67%	47%	48%
90-Day Delinq.	79%	59%	55-65%
Foreclosure	95%	75%	65-85%

1. We assume that loss severities are 40% and the PV (interest change) ~8%. We assume a 3% drop in interest and a 2.5-year multiple.  
 2. We use the difference between performance of loans in a 10% HPA scenario and a 0% HPA scenario as an indicator of the potential change in defaults.

# There are Some Legal / Operational Constraints, But Modifications Can Prevent Disastrous Outcomes

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## Servicers can Modify a Loan if it Doesn't Adversely Impact the Trust

### Legal Issues

- ◆ The pool and servicing agreement (PSA) dictates terms around modifications
- ◆ The servicer can modify any loan with approval from the master servicer
- ◆ In some trusts, there is a 5% cap on modifications (can be usually waived by the rating agencies)
- ◆ Modifying current loans is a grey area from the standpoint of 'true sale' accounting treatment

### Servicer Incentives

- ◆ In targeted modifications, servicers incur costs of \$500–1,000 that is not redeemable from the trust
- ◆ The borrower needs to make 6–18 payments for servicers to break-even
- ◆ Blanket modifications raise the risk of moral hazard. It is not clear that modifications help the trust in such instances

### Certificate Holders

- ◆ There are concerns around seniors losing from modifications as delinquency triggers pass and cashflows are passed on to subordinates
- ◆ Current loss assumptions for subprime are so high that loss triggers fail and modifications don't alter the cashflows to seniors vs. subordinates

### Potential Candidates

- ◆ ARM borrowers who have been current until reset
- ◆ Loans with high loss severity expectations (small loans, high LTV loans)
- ◆ Subprime over prime borrowers

# The Potential Impact of the Housing Market

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What Should We expect of Home-Prices in 2008 / 2009?

- ◆ What is the magnitude of overshoot in home-prices?
- ◆ Will the correction materialize in the next 2–3 years?

The Impact on Recovery Rates

# Home-Prices Have Overshot Income by 20% at a National Level and 50–60% in Regions like CA / FL

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- ◆ Ignoring financing for a second, home-prices should increase at the pace of income over the longer-term
- ◆ National home-prices can see a 20% ‘correction’ relative to income
- ◆ Can the housing market wait for incomes to catch up?

## Change in Median Home-Prices and Household Incomes from 2001

	Median Home-Prices	Median Household Income	Correction Required
US	55%	28%	21%
California	106%	29%	59%
Florida	107%	38%	50%
North East	62%	24%	31%
Texas	24%	36%	-8%

*Source: OFHEO, US census and Lehman Brothers. The north-east includes NY, NJ, CT and MA only.*

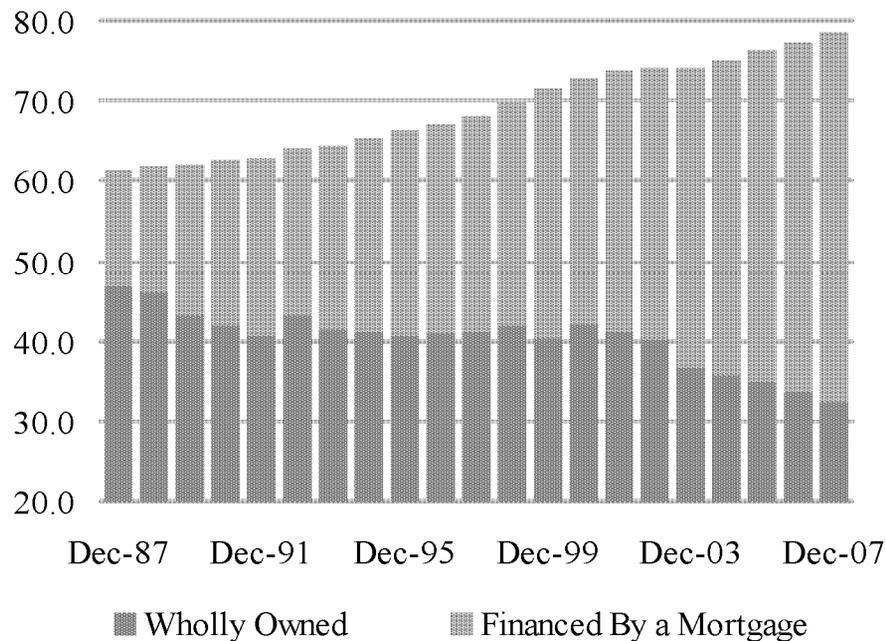
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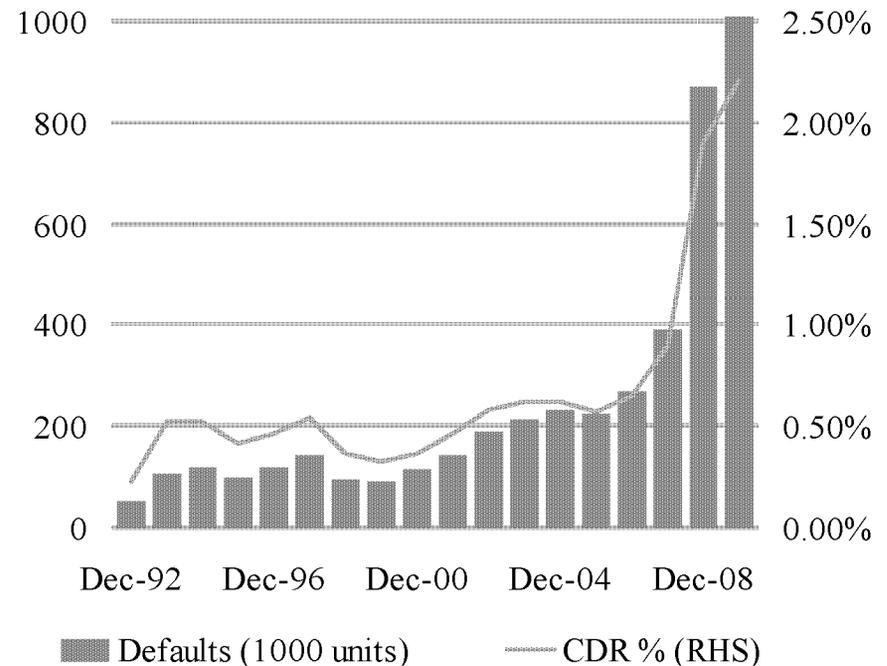
## ... But the Magnitude of Defaults is Much Higher Today

- ◆ A much larger number of homes are financed by mortgages today
- ◆ Default rates in coming months will be significantly higher than historical peaks

Number of Single Family Units (mn) <sup>(1)</sup>



Estimated Size of Defaults<sup>(2)</sup>



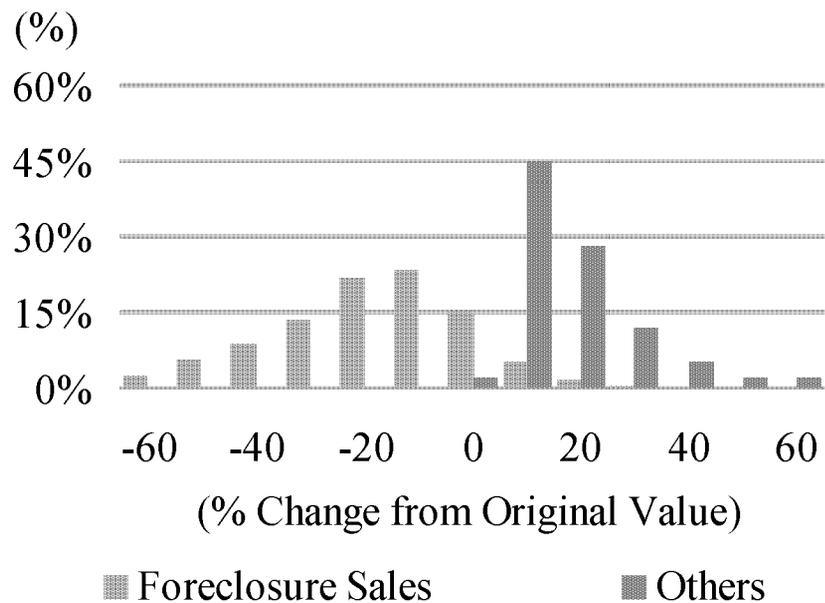
Source: Lehman Brothers, US census, the MBA

1. The total size of residential mortgages is about 100mn units, single family homes are about 80% of the total
2. Our default estimates are for just the single family universe. If we include defaults from Co-ops/Condos, the numbers could be 20% higher
3. The foreclosure numbers quoted by the MBA are much higher than these estimates since they count multiple foreclosures on a given home

# Foreclosed Homes Trade at a Discount and Have a Significant Overlap with Regular Properties

- ◆ Foreclosed homes trade at a discount partly due to self-selection, but also due to time pressures faced by servicers / brokers
- ◆ There is fair geographic between potential foreclosures and other properties

**Foreclosures Trade at a Discount<sup>(1)</sup>**



**Geographic Overlap of Subprime<sup>(2)</sup>**

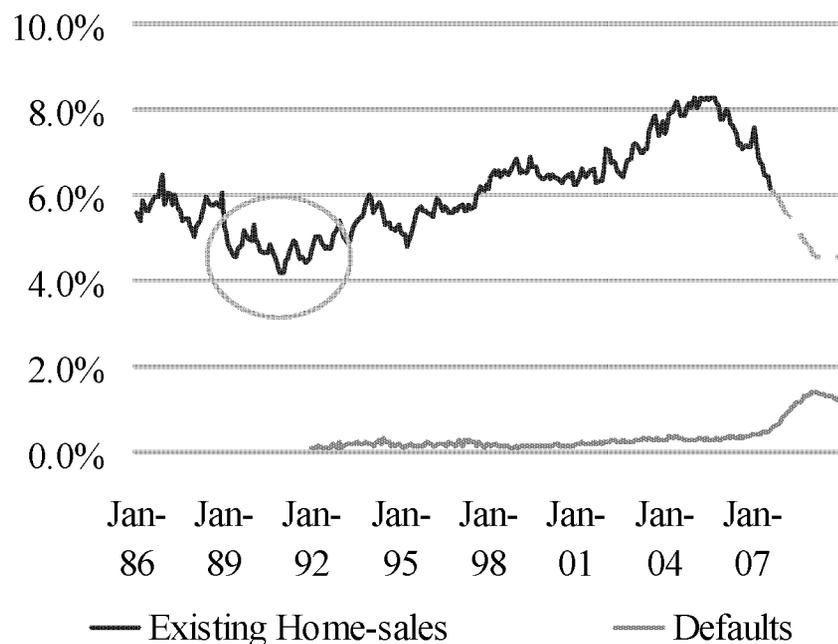
	% of Zip Codes	% Loan Balance
<\$200K	41%	55%
\$200–400K	62%	91%
\$400–600K	30%	70%
>\$600K	8%	9%
All	55%	57%

1. The distribution of terminal / original price of 04/05 originations going through REO sales. The 'other' distribution is based on MSA level HPA.  
 2. We show the % of zip codes where the share of subprime borrowers is between 25 and 75%.

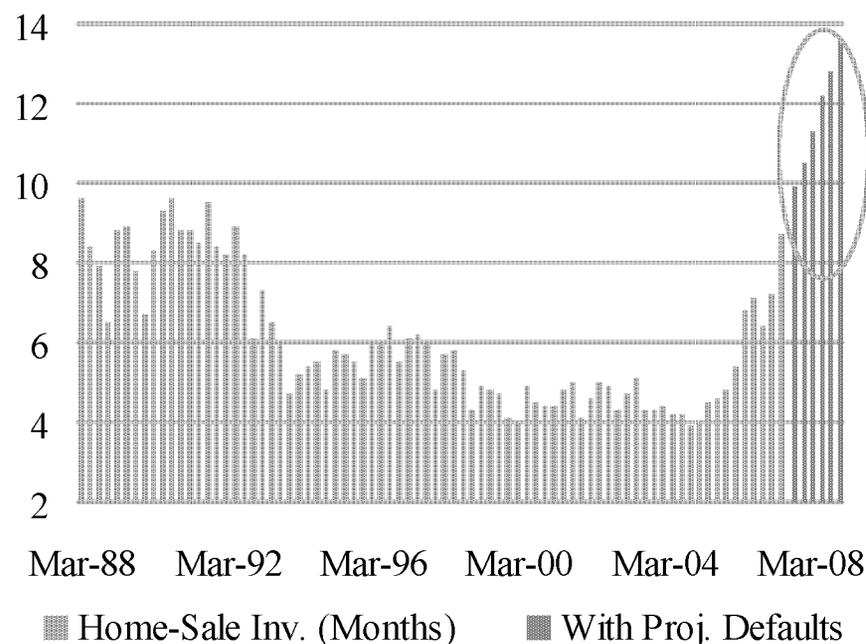
# This Can Put Additional Pressure on Home-Sales

- ◆ In the early 90s, home-sales dropped to 4% of the outstanding stock
- ◆ Assuming we see a similar drop, it could take 12-14m on average to clear inventories
- ◆ California in the early 90s had similar inventories at the peak (HPA = -6%)

Home-sales and Defaults as % of Stock<sup>1</sup>



Existing Inventories (Months of Sales)<sup>2</sup>



1. Existing home-sales and inventories based on data from the National Association of Realtors. Stock of homes from US census  
 2. We assume that EHS drops as shown in the panel on the left.

# Expectations of Housing and Loss Severity Rates

- ◆ Expect HPA to be -6% (annual) in 2008/2009 and revert to 4% by 2012
- ◆ Loss severities should be much higher than seen on the 2000/2001 vintage

## Loss Severities Across Housing Scenarios

### 2006 Vintage Projections

	2000/01 Vintage	Optimistic	Base-case	Stress
HPA <sup>(1)</sup>	8%	0%	-6%	-10% to -12%
Loss Terminations (% of defaults)	49%	64%	80%	98%
Severities on Loss Terminations	46%	49%	53%	55%
Total Severities	23%	31%	42%	53%

1. We assume that HPA is  $x\%$  a year in 2008/2009 and gets back to +4% (linearly) by 2012.

2. Loss severities shown are for subprime loans. Prime severities could be significantly lower

# Putting All of This Together – What Can Losses Be?

## Loss Expectations Across Sectors and Scenarios

Sector	Delinquency Performance		Loss Projections (bp)				AAA Support	
	CNP at 15 WALA	As a % of Subprime	0% HPA	-6% HPA	Stress	As a % of Subprime	Credit Enhancement	Loss Coverage Multiple
Jumbo	0.4%	3%	18	28	75	2.4%	3.3	4.0
Alt-A Fixed	2.5%	17%	108	153	300	15.0%	6.8	2.3
Alt-A Hybrid	3.3%	23%	168	315	460	23.0%	8.0	1.7
Negam ARMs	2.3%	16%	205	350	490	24.5%	12.0 + XS	3.0
Alt-B	7.8%	53%	428	630	1,010	50.5%	10.0 + XS	1.3
Subprime	14.7%	100%	980	1,550	2,000	100.0%	24.0 + XS	1.4

*Note: CNP is cumulative non-performers. It is the sum of 60-day+ delinquencies (OTS) and any defaults seen to date. We show numbers for the 2006 vintage (which is worse than recent originations).*

*We assume HPA stays at the level shown for 2 years and then gradually reverts back to 4% (annualized) from years 3 to 4 and stays at 4%.*

# Agenda

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Can Subprime Losses Top 20%?

The Technicals Landscape

- ◆ The risk of a large failure
- ◆ Concerns around ABCP vehicles

*Who is the Marginal Buyer of Mortgages?*

Relative Value and Trade Recommendations

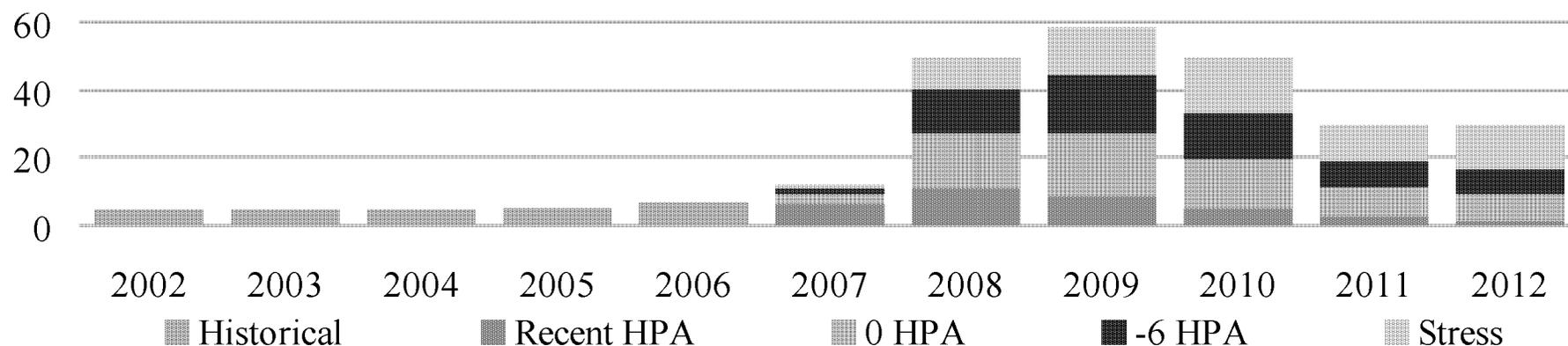
# Aggregate Residential Mortgage Losses Can be as Much as \$250bn in Stress Scenarios ...

## This Appears Manageable in Itself

Expected Losses Across Housing Scenarios (\$bn)

	Size	Recent	0 HPA	-6 HPA	Stress
Agency	4,250	7.9	13.6	21.8	28.6
Prime	2,350	2.7	6.0	10.0	13.9
Alt-A	1,200	4.9	11.6	19.6	27.9
Subprime	1,200	22.8	77.8	122.5	171.3
Total	9,000	38.3	109.0	174.0	241.7

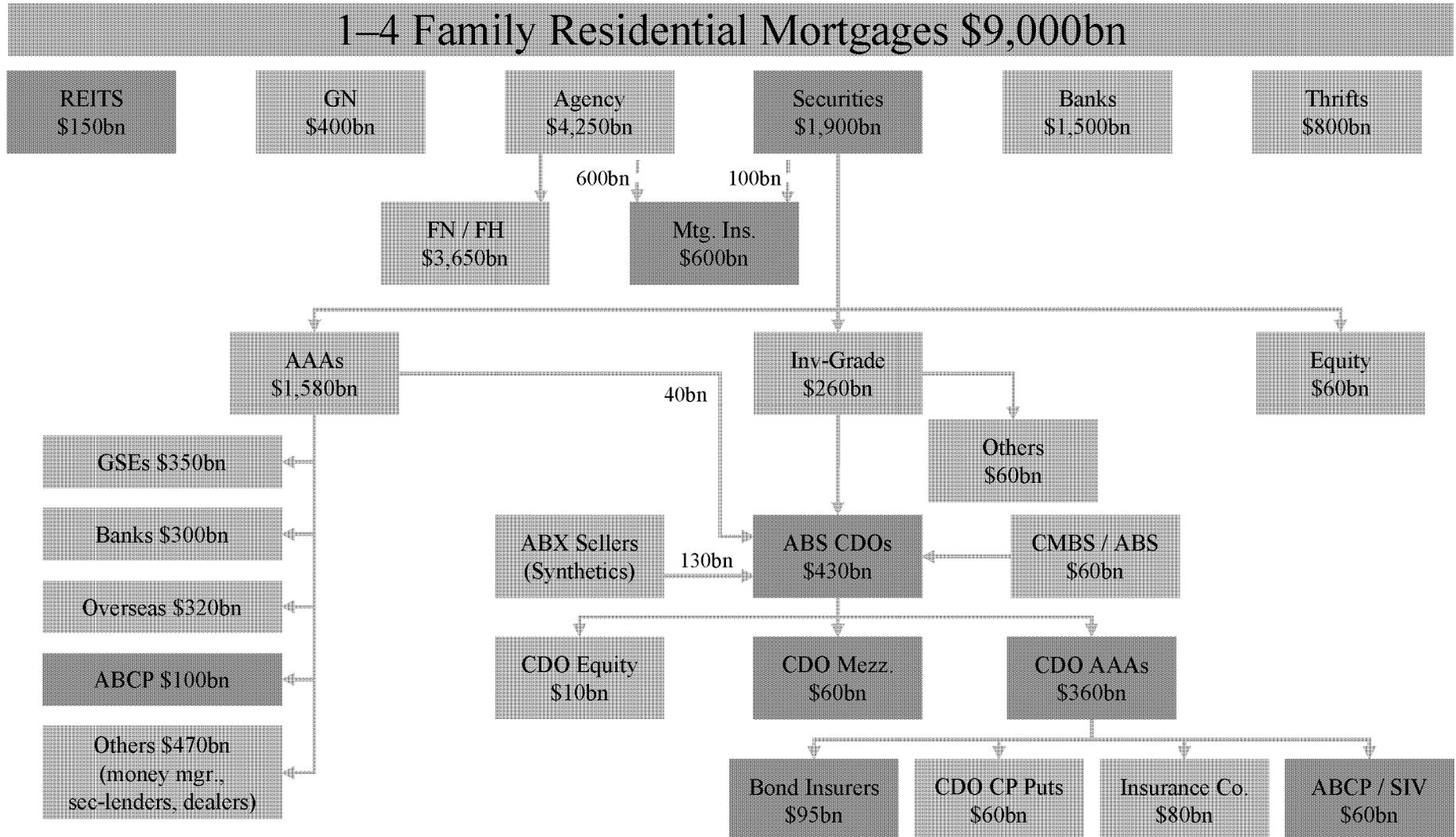
The Timing of Losses on Residential Mortgages (\$bn)



Source: Lehman Brothers Estimates.

# ... the Risk Is that Large Holders of Credit Exposure Are Not Sufficiently Capitalized

## Who Owns Residential Credit Exposure?



# The Largest Loan Holders Look Okay Except for MI Providers

- ◆ The GSEs and commercial banks are rather well capitalized vs. loss expectations
- ◆ MI companies look susceptible – there are some offsets from slowing speeds
- ◆ Securitizations house most of the losses in residential mortgage

## Projected Losses Across Major Sectors

(\$bn)	Portfolio Size	Capital <sup>(2)</sup>	Annual Revs. <sup>(3)</sup>	Losses Across HPA Scenarios			
				10 HPA	0 HPA	-6 HPA	Stress
GSEs	3,650	45	8.0	2.9	4.7	7.4	9.5
Banks	1,500	1,050	37.5	5.3	16.9	27.5	38.7
Thrifts	800	230	20.0	2.1	5.8	9.6	13.5
MI Companies	700	25	5.2	5.7	10.2	16.6	22.3
Securities <sup>(1)</sup>	1,800	300	33.3	21.5	68.3	107.9	150.7
Others	550	–	–	0.9	3.0	4.9	6.9
Total	9,000	1,650	104.0	38.3	109.0	174.0	241.7

1. Includes non-agency and subprime deals. Excludes any deals consolidated on balance sheets to avoid double-counting.

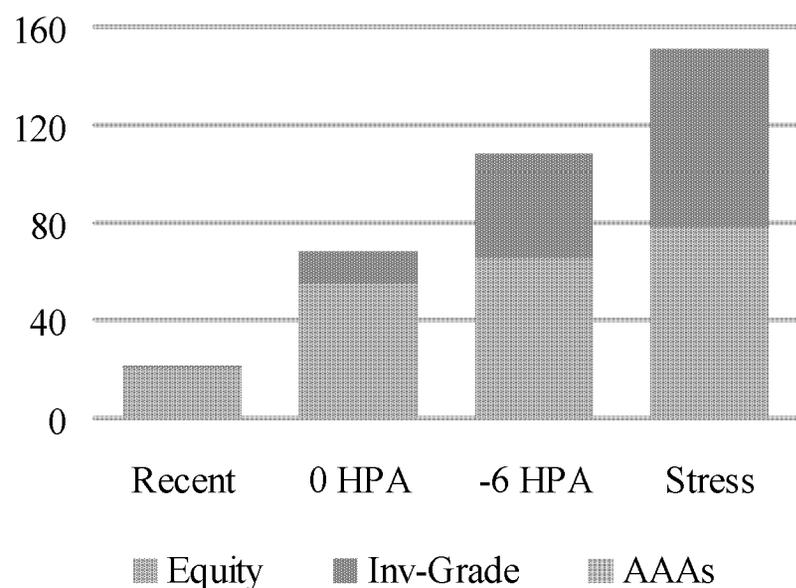
2. Is the book value of equity for all entities except securities. For securities, we show the size of subordinates and equity pieces.

3. 2006 estimates of net revenues associated with just their mortgage portfolio.

# In Securitizations, AAA CDO Holders Have Significant Loss Exposure

- ◆ Investment-grade subordinates take significant losses
- ◆ CDOs have absorbed most cash subordinates created and sold synthetic protection as well
- ◆ Expected losses on CDOs are hence higher than those on residential subordinates

Losses on Non-Agency /Subprime Securities



Losses on ABS CDOs (\$bn) <sup>1</sup>

	Recent	0 HPA	-6 HPA	Stress
<b>High Grade CDOs</b>				
AAA Sen	–	–	–	9.4
Mezz	–	–	5.8	18.2
Equity	–	–	1.0	1.4
<b>Total</b>	–	–	6.8	29.1
<b>Mezzanine CDOs</b>				
AAA Sen	–	8.7	56.5	76.9
Mezz	–	8.3	39.5	39.5
Equity	1.7	9.5	9.5	9.5
<b>Total</b>	1.7	44.0	105.5	125.9
<b>All CDOs</b>	1.7	44.0	112.3	155.0

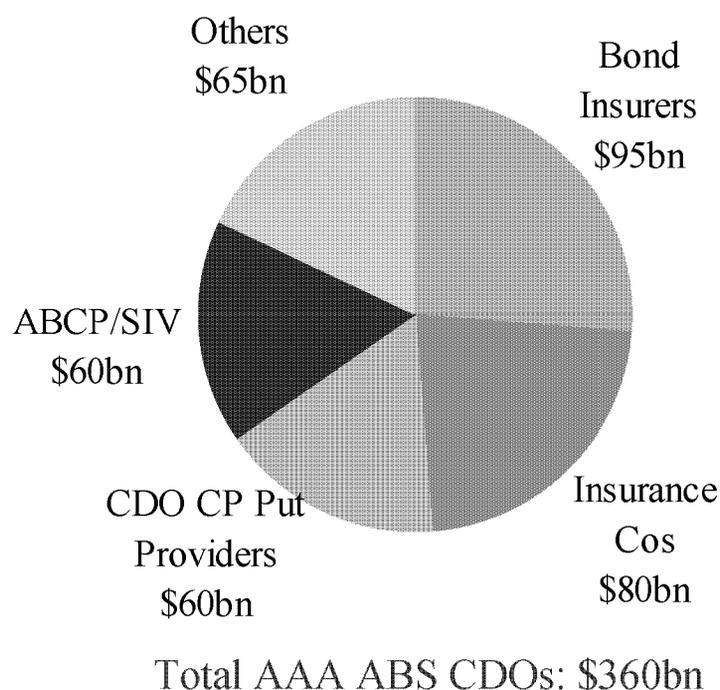
1. We assume that they pay sequentially. This understates the losses on AAAs. In addition, a significant part of Mezz liabilities in CDOs have been absorbed by high-grade CDOs. These AAAs can have more significant losses.

# Of the AAA CDO Holders, Bond Insurers Have the Greatest Exposure vs. Their Capital. A Potential Bond Insurer Event is Much More Important in the Public Finance / Corporate World ...

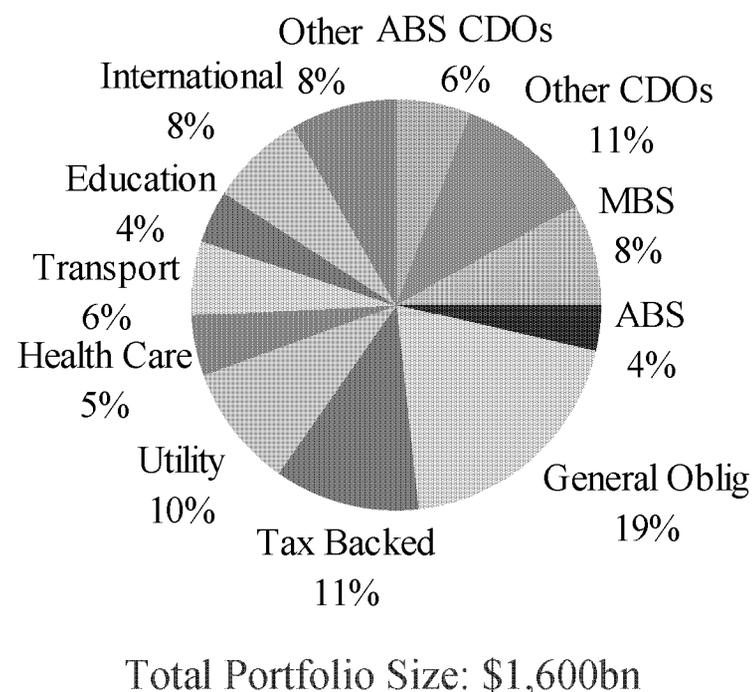
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- ◆ The largest holders of AAAs are bond insurers
- ◆ Their loss exposures in stress scenarios could be high in relation to capitalization<sup>(1)</sup>

Estimated Holdings of AAA CDOs



Composition of Bond Insurer Portfolios



Source: Based on 10-Qs of AMBAC, MBIA, ACA, XLCA, FGIC and rating agency reports on bond insurers.

1. The total capitalization of the bond insurance sector is about \$18bn.

# The Risk of a Large Failure Appears Limited

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- ◆ Banks and the GSEs have a significant capital cushion
- ◆ MI providers have significant exposure, but some offsets from the increasing value of their premium streams.
- ◆ In the securitized markets, most of losses are in AAA ABS CDOs
- ◆ Bond insurers have significant exposure to AAA CDOs. Given their viable public finance / corporate businesses, they could see capital infusion in events of stress
- ◆ Overall, the risk of a large failure seems limited ...

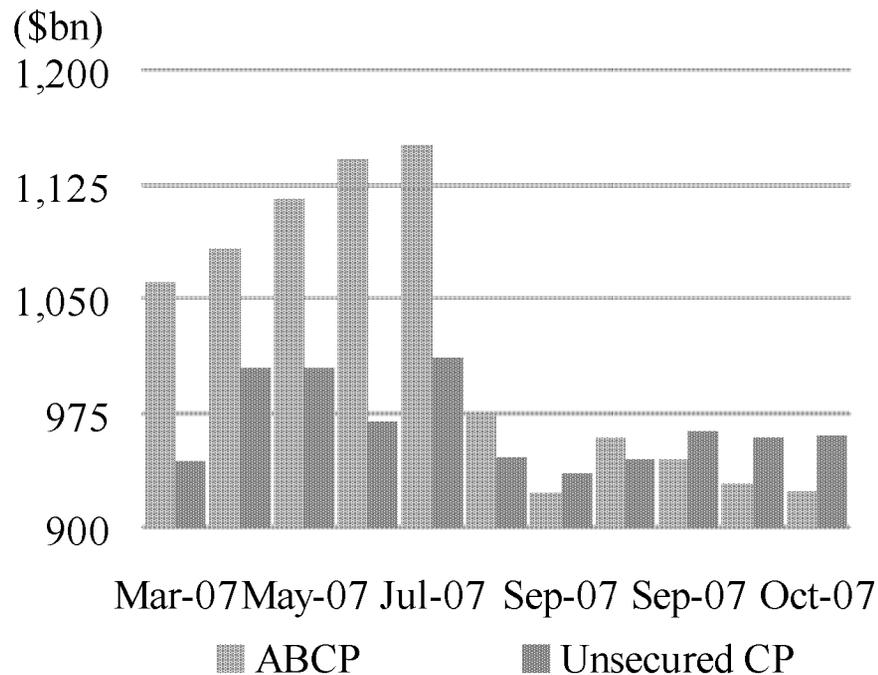
Is there risk of asset sales from conduits?

# Should We Be Concerned About Asset Sales from ABCP Conduits?

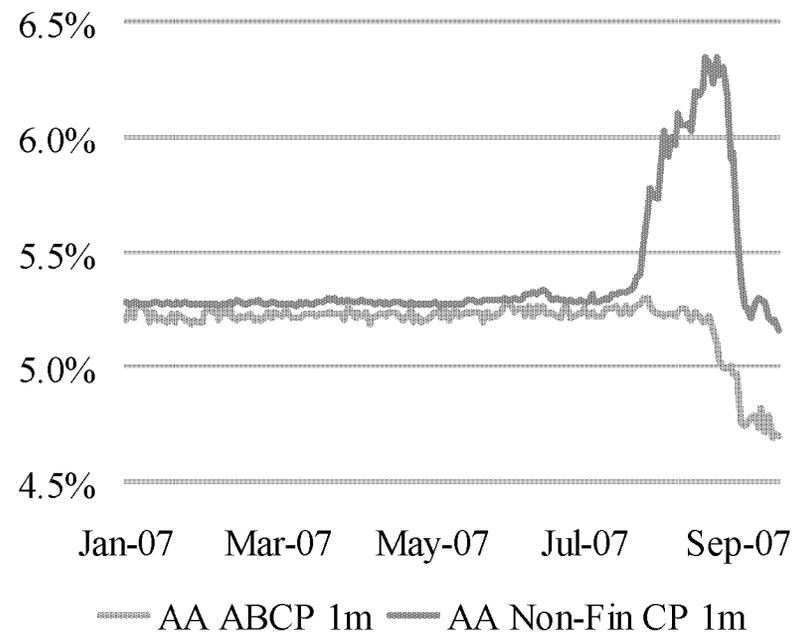
Two key questions

- ◆ Will CP roll in coming months?
- ◆ In the event CP doesn't roll, is there risk of asset sales?

**Outstanding Balance of ABCP**



**Commercial Paper Rates**



Source: Federal Reserve. We quote the non-seasonally adjusted balance.

# The Various Flavors of ABCP Conduits

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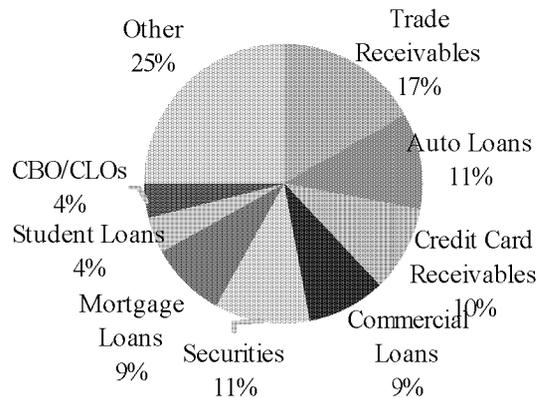
- ◆ Multi-seller and single-seller vehicles are loan conduits
- ◆ In ABS CDOs about \$60bn in AAAs are financed as ABCP

	Multi-Seller Conduits	Single-Seller Conduits	Sec-Arb. Conduits	Structured Inv. Vehicles (SIVs)
Type of Assets	Loans	Loans	Securities	Securities
Total Assets (\$bn)	680	190	195	350
Total CP Issued (\$bn)	650	175	180	100 <sup>(1)</sup>
Mark-to-Market?	No	No	Yes	Yes
US Residential Assets (\$bn)	68	72	60	18
Liquidity Protection	Put Provider (Usually a AA bank)	Extendible, Market value swap	Put Provider (Usually a AA bank)	Liquidity Provision (Usually a bank line)

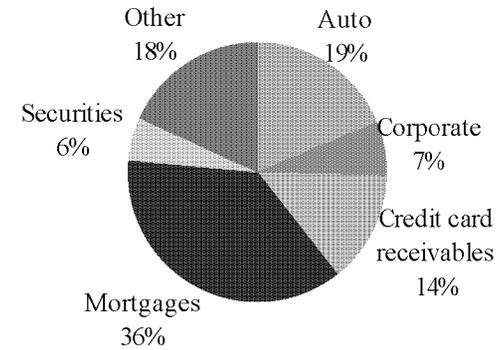
*Source: Based on Moody's and S&P reports on ABCP conduits / SIVs. As of August 6, 2007*  
*1. SIVs have 100bn in ABCP and 250bn in MTNs*

# What Exactly Do ABCP Vehicles Hold?

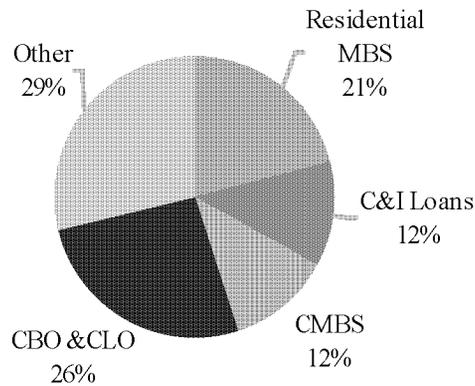
## Multi-Seller Conduits (680bn)



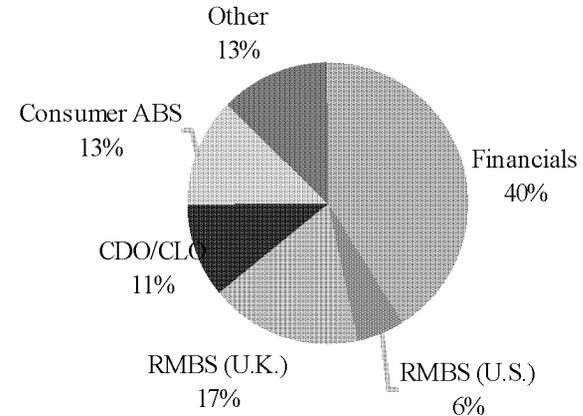
## Single-Seller Conduits (190bn)



## Sec-Arb Conduits (195bn)



## SIVs (350bn)



Source: Based on Moody's and S&P reports on ABCP conduits / SIVs. As of August 6, 2007. SIVs have 100bn in ABCP and 250bn in MTNs

# ABCP Roll Problems – Concentrated in Vehicles with Heavy Mortgage Exposure So Far

- ◆ Problems have so far been concentrated in single-seller and sec-arb conduits
- ◆ These vehicles have the greatest concentration of mortgages and ABS CDOs

## Outstanding Balance in ABCP and the Liquidity Provisions

	% Mortgage Assets	Outstanding Balance <sup>(1)</sup>			Type of Liquidity Provision		
		Jul-31	Oct-3	Change	Extendable	Put Provider	Liquidity Provision
Multi-seller	10	650	625	-25	–	100%	–
Single-seller	38	175	80	-95	100%	–	–
Sec-arbitrage	31	180	135	-45	10%	90%	–
SIVs	5	100	85	-15	–	–	100%
CDOs with CP	90	45	0	-45	–	100%	–
Total	18	1,150	925	-225	94	740	85

1. Based on data from rating agency reports on ABCP conduits and the Federal Reserve. The change in balance across sectors are estimates from Lehman Brothers.
2. Extendable vehicles usually have a market value swap provider who assumes the market risk of current loans.

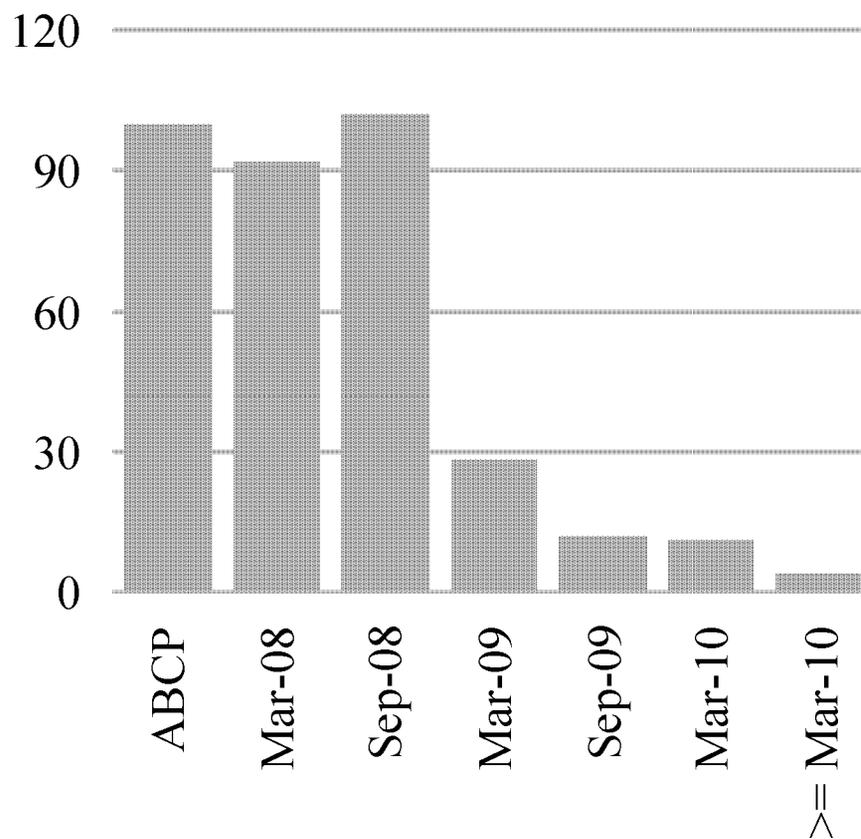
# ... SIVs Are the Wild Card

Asset Distribution of SIVs<sup>(1)</sup>

Asset Class	Share of Balance (%)				MTM
	AAA	AA	A	Total	Losses (%)
Financials	8.4	24.7	7.8	41.0	-1.36
RMBS (US)	5.2	0.4	0.1	5.7	-4.70
RMBS (UK)	15.7	1.3	0.1	17.2	-1.27
CDO / CLO	10.2	0.4	0.1	10.7	-3.50
Cons. ABS	12.3	0.1	0.2	12.7	-0.95
Other	10.8	1.2	0.6	12.7	-0.60
<b>Total</b>	<b>62.7</b>	<b>28.1</b>	<b>8.9</b>	<b>100.0</b>	<b>-1.70</b>

Total Assets: \$350bn

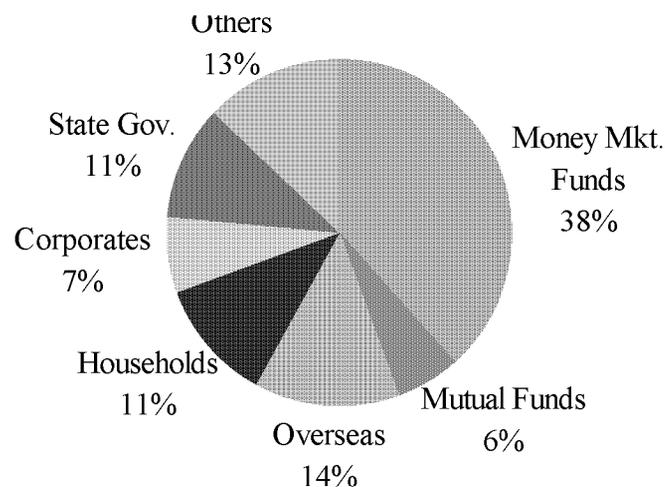
Estimated Maturity of Liabilities<sup>(1)</sup>



1. Based on rating agency reports. MTM losses are based on spread changes from 6/30 to 10/05.

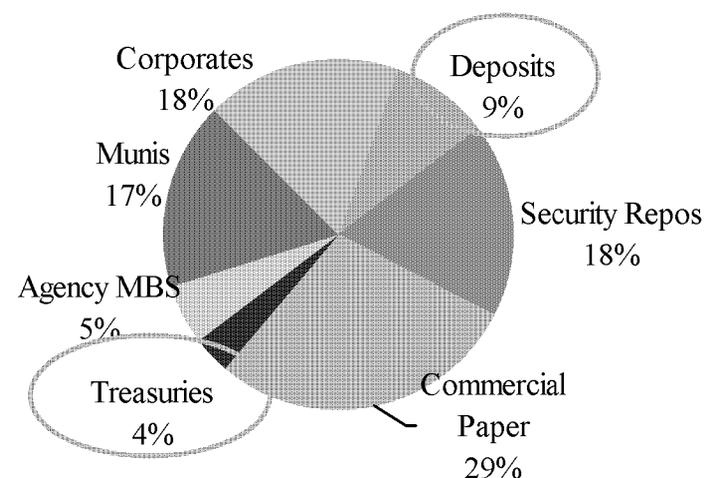
# How Does the ABCP Situation Get Resolved? ABCP Investors will Potentially Move into Bank Deposits ...

## Who Owns ABCP Assets?<sup>1</sup>



Total: 1,200bn

## Assets of Money Market Funds<sup>1,2</sup>



Total: \$2,400bn

## Estimated Rates Across Products

	Jul 31	Aug 31	Sep 28	Oct 4
Bank CDs	5.33	5.68	5.23	5.24
6m T-Bills	4.99	4.22	4.08	4.15
Unsecured CP	5.23	5.22	4.72	4.70
ABCP	5.32	6.18	5.28	5.16

1. Based on data from the Fed's Flow of Funds. Data as of 6/30/2007

2. 'Commercial Paper' includes ABCP and non-secured CP as well. We estimate that the split is 65(ABCP):35

## ... Which Should Help Finance ABCP Consolidating on Bank Balance Sheets

- ◆ ABCP assets are ending up on bank balance sheets
- ◆ So far they have financed these assets through FHLB advances / retail deposits

### Evolution of Balance Sheets of US Commercial Banks (Illustration)

	Jul 2007	Sep 2007	Change	Worst-case	Change
Assets	10,410	10,560	150	10,810	400
ABCP Puts (off Bal. Sheet)	400	250	-150	—	-400
Deposits	6,865	6,945	80	7,165	300
FHLB	354	424	70	454	100
Other Borrowings	2,141	2,141	—	2,141	—
Equity	1,050	1,050	—	1,050	—
Total Liabilities	10,410	10,560	150	10,810	400

# Who Will be the Marginal Source of Demand for Mortgage Securities? Let us Start with Who has Been Buying ...

## Estimated Growth in Holdings of Non-Agency Securities (Dec'03 to Dec'06)

Total Market				AAA Holdings				
	2003	2006	Change		2003	2006	Change	
AAAs	560	1,580	1,020	→	GSEs	150	360	210
Inv-Grade	72	260	189		Banks / Thrifts	120	300	180
Equity	19	60	41		Overseas	70	320	250
Total	650	1,900	1,250		ABCP Conduits	20	100	80
					Money Mgr/Oth <sup>(1)</sup>	200	470	270
					Total	560	1,580	1,020

Equity Holdings				Investment-Grade Holdings				
	2003	2006	Change		2003	2006	Change	
REITs	4	18	14		ABS CDOs	10	200	190
Originators	5	25	20		Others	62	60	-2
Dealers / Oth	10	17	7		Total	72	260	189
Total	19	60	41					

Source: The Fed flow of Funds, Moody's / S&P reports on ABCP conduits, TIC survey of overseas holdings, FDIC and Lehman Brothers.  
 1. This includes mutual funds, security lenders, dealers and insurance companies in order of importance

# AAA Buyers – Both the GSEs and Banks Have Portfolio Constraints, But this Will Change Over a 6-month Horizon

- ◆ Returns on AAA non-agencies look rather attractive to both banks and the GSEs
- ◆ The GSEs can add 35bn currently, but over 600bn<sup>(1)</sup> when they become current on filings
- ◆ Banks have low tier-1 capital ratios due to ABCP consolidation currently

## Return Profile of AAA Assets

	Non-agency AAAs		Agency TBAs	
	Banks	GSEs	Banks	GSEs
	LOAS, bp	50	50	0
Financing (L+xbp)	0	-15	0	-15
Equity <sup>(1)</sup>	2.0%	2.75%	2.0%	2.75%
Return on Equity	30.0	28.6	5.0	10.5

## Tier-1 Capital Ratios of Banks

	Dec 1998	Dec 2001	Dec 2004	Today
Risk Weighted Assets \$bn	4,218	5,074	6,292	8,107
<b>Tier-1 Capital <sup>(2)</sup></b>				
Historical	9.50%	9.90%	10.00%	9.58%
All ABCP on Balance Sheet;				9.50%
5% Losses on ABCP				9.29%
With earnings over 6 months				9.77%

1. Banks have 20% risk weight for AAA assets. We assume the GSEs maintain 10% excess capital post Q1 08 when they become current
2. Tier-1 capital equals book value of equity minus intangible assets like goodwill.

# There is Greater Uncertainty Around the New Credit Buyers

- ◆ ABS CDOs / REITs / Originators are out. FAS 140 will limit dealers' ability to hold credit
- ◆ Given the drop in leverage and increase in financing cost, non-agency credit investors will not be able to compete with banks
- ◆ Expect non-agency issuance to be muted for some time

## Comparing Non-agency Credit Investors with Banks

	Bank Retention <sup>(1)</sup>				Non-Agency Securitization <sup>(2,3)</sup>			
	Prime Loan		Non-prime Loan		Prime Loan		Non-prime Loan	
	Jun-07	2008	Jun-07	2008	Jun-07	2008	Jun-07	2008
Funding (L+xbp)	-10	0	-10	0	18	50	20	70
Equity (%)	4%	5%	8%	10%	2%	5%	3%	10%
Credit OAS (bp)	30	75	60	125	30	75	60	125
Returns (%)	15.0	20.0	13.8	17.5	11.0	10.0	18.3	10.5

1. Banks assign a 50% risk weight to a <80 LTV loan and 100% risk weight to a >80 LTV loan. We assume the equity required increases due to an increase in FHLB financing (where they need to post more equity)
2. The leverage available through securitizations is lower because a) rating agency levels are higher and b) inability to place BBB or lower-rated subordinates. There is also a drop in leverage available through repo financing which we don't consider
3. We assume that AAA, AA and A spreads return to 50, 150 and 400bp by 2008

# Relative Value and Trade Recommendations

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## Mortgage Basis

- ◆ Sell Mortgages versus swaps
- ◆ Own agency hybrid ARMs over agency TBAs

## Non-Agencies

- ◆ Own non-agency AAAs versus agencies / AAA CLOs
- ◆ Own alt-A fixed-rate AAAs over jumbo AAAs

## Credit

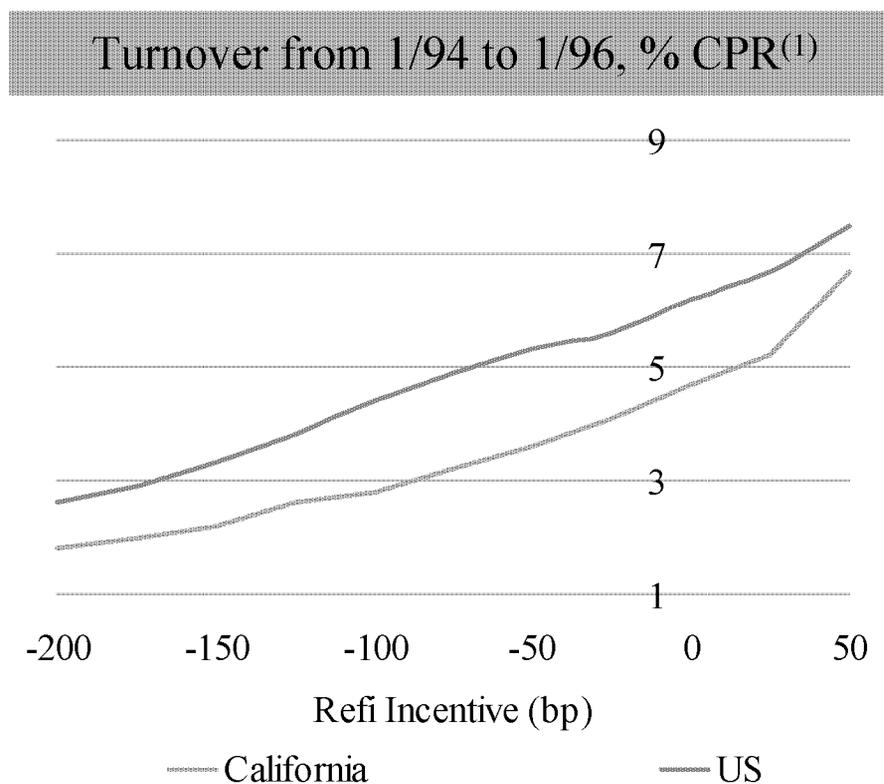
- ◆ Combine trust IOs with ABX single As
- ◆ Favor AA/A exposure in alt-A fixed-rates and neg-am ARMs
- ◆ Cautious on alt-B and alt-A hybrid exposure

# Our Top Trade: Combine IOs with the Senior Part of the Capital Structure in the ABX

## Pricing in the Trust IO and the ABX Markets is Not Consistent

- ◆ If ABX losses are 20 points, housing conditions should be worse than CA in the early 90s
- ◆ Turnover on mortgages could be 3% CPR in such scenarios – IOs should see significant repricing

Return Profile of ABX As with Trust IOs										
ABX 07-1 Collateral Loss %			23	20	16	14	10	6		
Turnover on 5.5s (% CPR)			2.5	3.0	4.0	5.0	7.0	11.0		
	Face	Price	Expected Returns %							
07-1 As	100	47.0	-44	-36	36	88	113	113		
5.5% IOs	700	27.8	17	14	9	4	-4	-25		
Combination			25.0	22.7	72.6	106.0	95.9	11.1		



1. Speeds on 12-24 WALA FN/FH pools.

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