
Predicting Credit Losses & Managing the Provision for Loan Losses

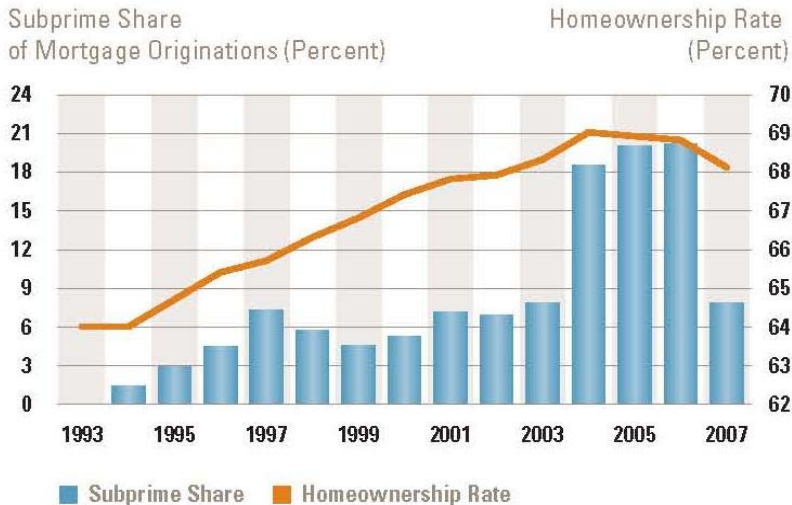
What Happened?

- New and untested products
- Unprecedented risk layering
- Erosion of underwriting with focus on volume and growth
- Over-reliance of automation regardless of product type
- Rosy view of the future and house price appreciation
- Credit Modeling and governance issues are at the heart of the current crisis

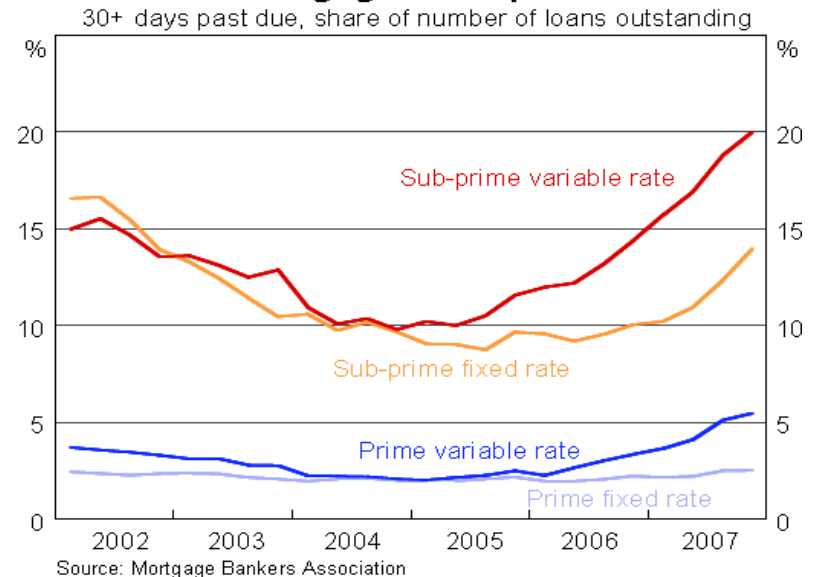
The Result

With a lack of performance history, internal credit models became less effective as risk-mitigation tools and compensating processes and controls were insufficient to compete with conflicting demand for earnings and market share.

The National Homeownership Rate Peaked Before Subprime Lending Took Off



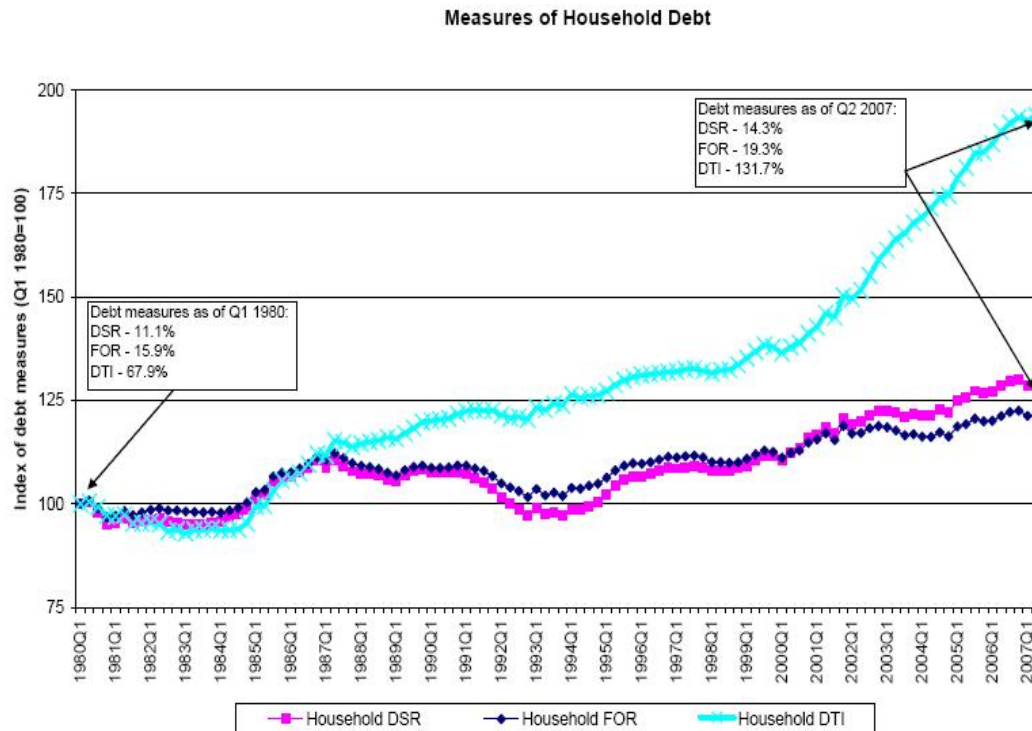
US Mortgage Delinquencies



- Basic elements for predicting credit loss may not change
- However, the correlation between assumptions and the relative weight given to each will certainly change.
- Factors at the forefront of credit analytics are:
 - Over-reliance on FICO;
 - Debt-to-Income (under-rated);
 - LTV and CLTV (piggybacks);
 - Investor status (speculator loans);
 - Documentation standards;
 - House price appreciation;
 - Delinquency transition; and
 - Re-evaluation of our “worse-case” scenarios.

Changing Consumer Behavior

- Consumer behavior was changing, in part, while our models and correlation assumptions were not adjusted.
- Federal Reserve Board data shows a demonstrable increase in household Debt-to-Income levels over the period 1980 to 2007.
- Future consideration will also include debt service coverage as well.



Source: Federal Reserve Board.

Over-reliance on high FICOs

- Data in Table below suggests that a large percentage (33%) of borrowers were given loans with little or no down payment and more than half of such loans were further layered with stated documentation.
- Layered risk was thought to be compensated by higher FICO scores, yet the highest FICO (655) underperformed every other category.

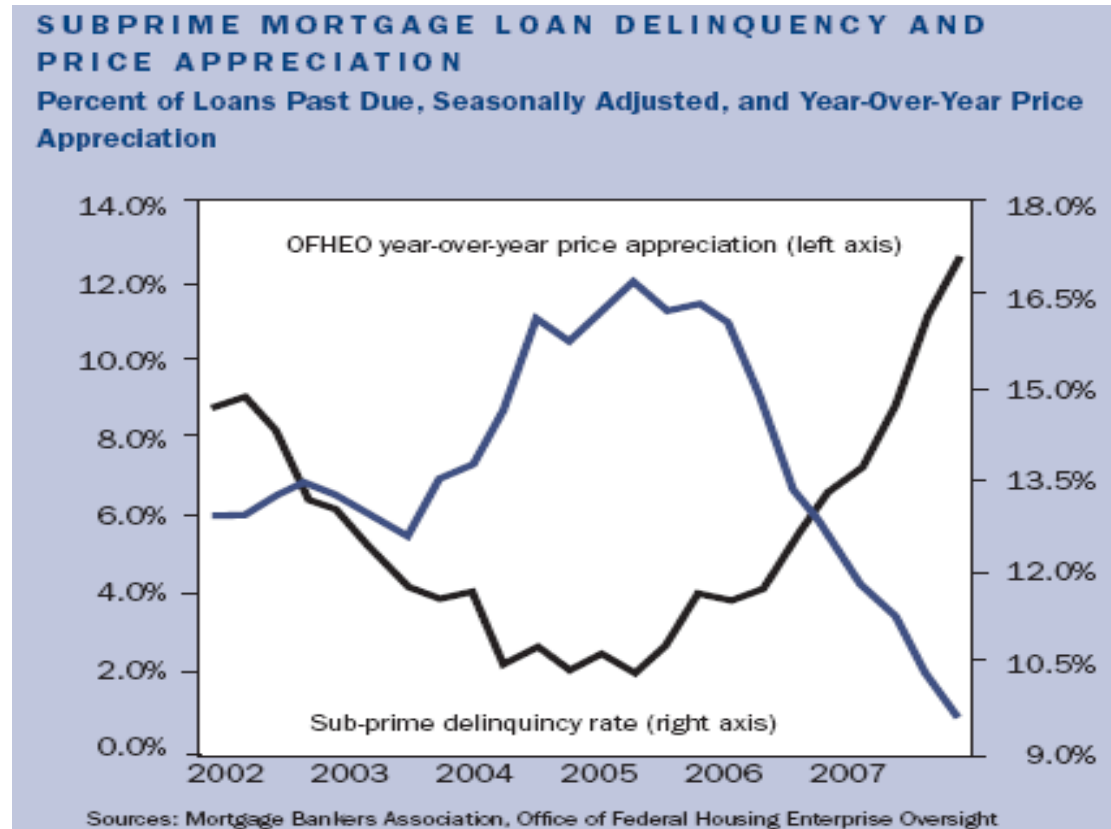
Segmenting 2006 Subprime Originations

Comb. Loan-to-Value Ratio	Loan Purpose	Balance (%)	Avg. FICO	Avg. CLTV	% Stated Doc.	%60+ DQ. @ WALA 12
CLTV > 90	Purchase	33%	655	99	52%	16.6
CLTV <= 90	Purchase	11%	638	83	54%	13.5
CLTV > 90	Refinance	11%	643	97	37%	13.2
CLTV <= 90	Refinance	45%	606	77	38%	9.3

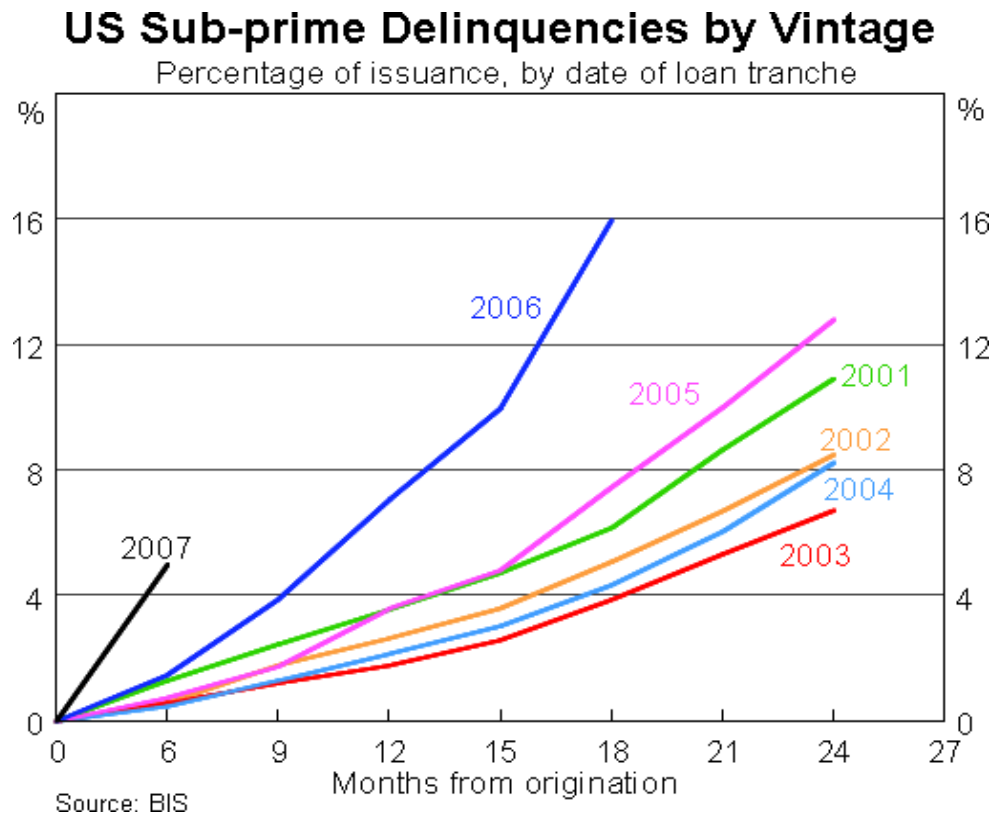
Source: LPS

HPA – Biggest Miss?

- Underestimate of the covariance of home price trends across regions and geographic diversity would mitigate risk.
- Stress tests were not adequate where “worse case” scenarios held HPA flat and down turns were rarely modeled.



- Improving surveillance – a process that measures performance relative to expectations – is a key focus of every credit investor in the country.
- Tighter feedback loop for untested products and risk layering critical.



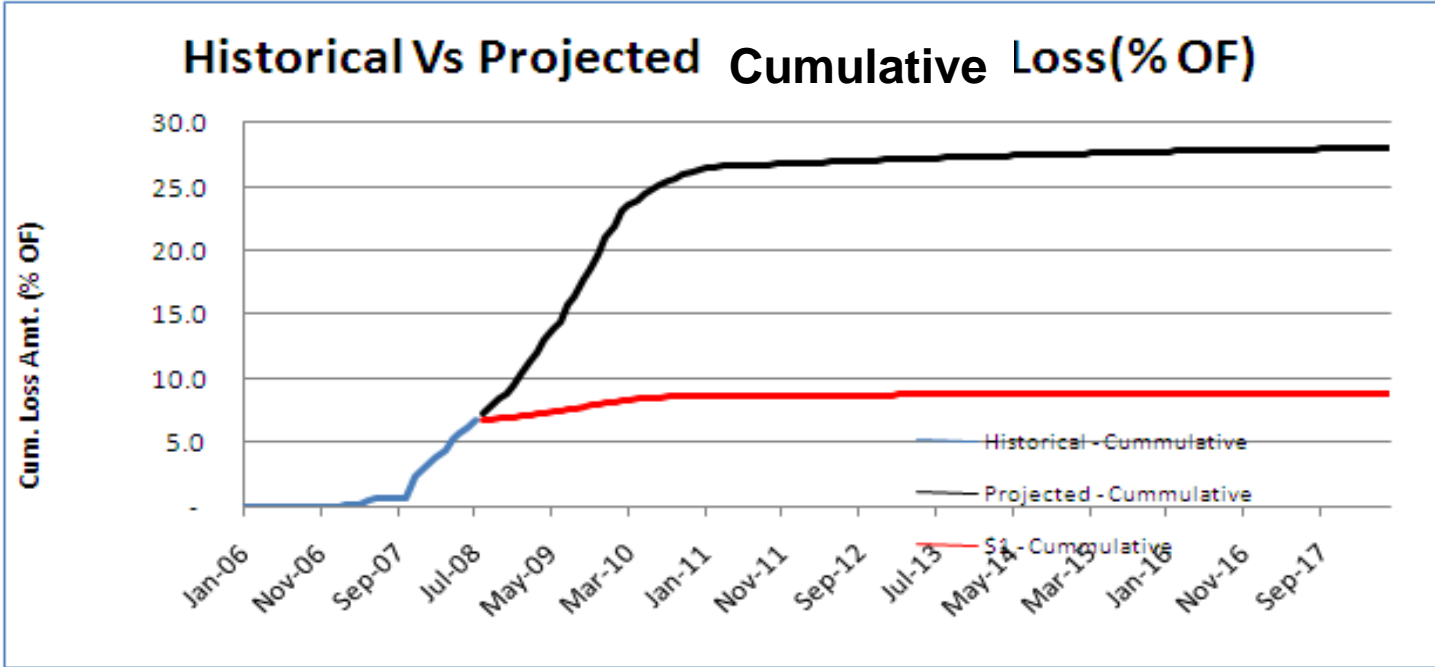
Loan Level Analysis a Necessity

- New and improved surveillance processes include evaluation of complex and inter-related risks at the loan level.
- Loan level characteristics, risk segmentation and risk reporting more critical than ever .
- Credit investors must go further in evaluating individual collateral and loans where the “drill-down” process should be creative and analytical.

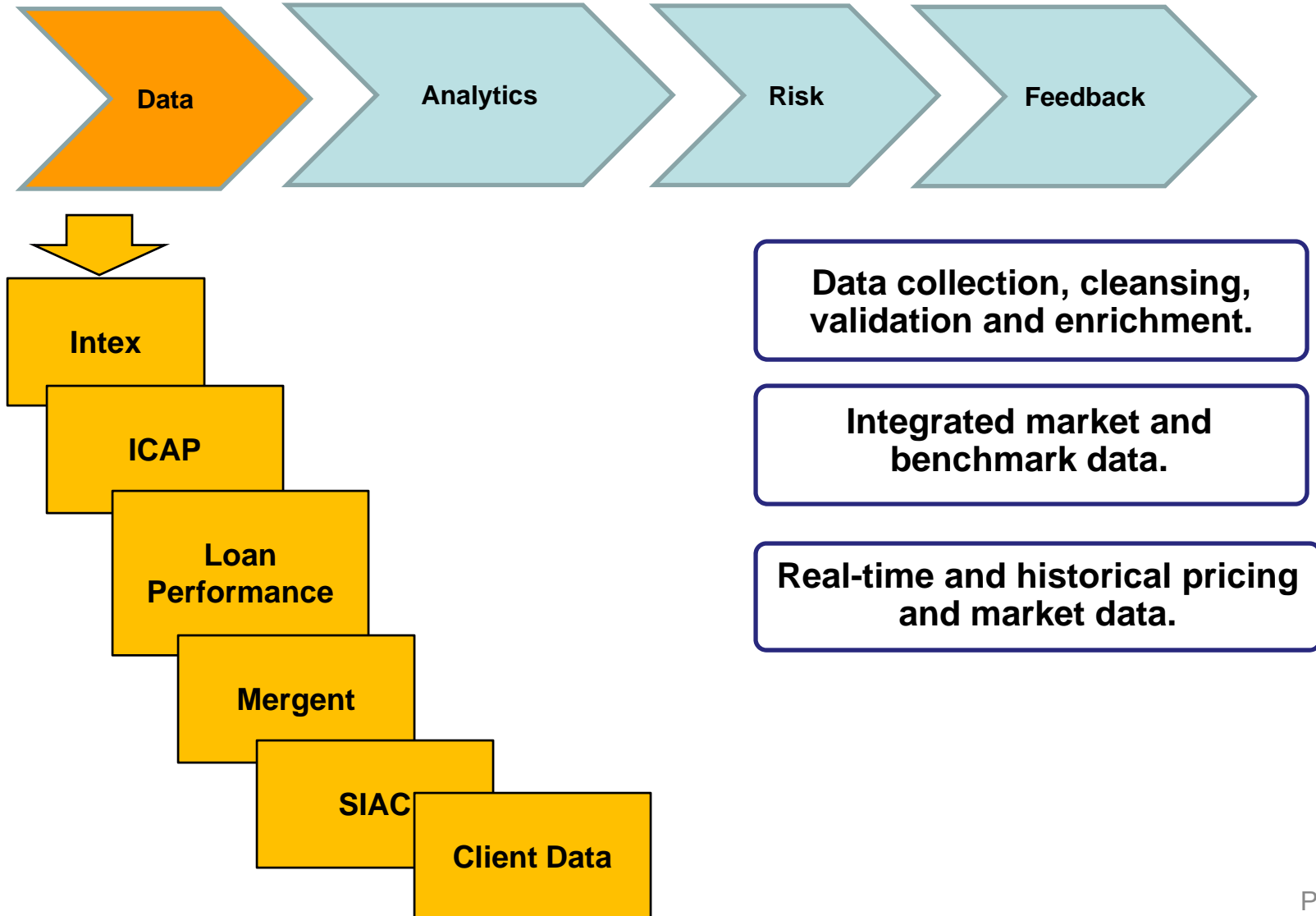
- Among RiskSpan standard risk reports are the following segmentation analyses:
 - ✓ Product type segmentation
 - ✓ Originator/ issuer performance
 - ✓ Insurance coverage and counterparty exposure (mortgage insurers)
 - ✓ Original FICO and Current FICO
 - ✓ Original LTV and Current LTV and combined LTV
 - ✓ Debt to Income Ratios
 - ✓ Vintage analysis and year of origination
 - ✓ Primary, vacation, investor and number of properties owned
 - ✓ State of origination
 - ✓ Home price changes by MSA – currently (monthly) updates
 - ✓ Impact of volatility should be incorporated
 - ✓ Channel of Origination
 - ✓ Analysis of Appraisal (type, name of AVM company, confidence score)

Drivers of Loss, Reserves and Impairment

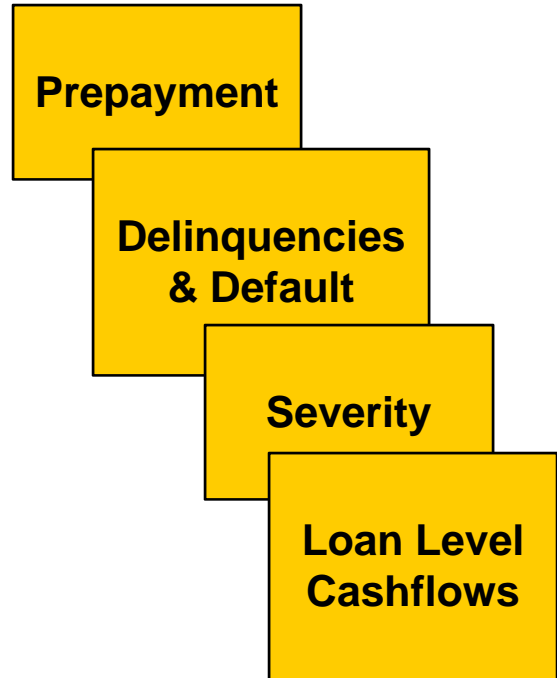
- Loan level characteristics will drive performance, delinquencies and roll rates (the percentage of loans that move from one stage of delinquency to another).
- Roll rates drive estimates of the percentage of delinquency and foreclosure or charge-off.
- Conventional spreadsheets are not up to this task; estimating the effects of impairment at this level requires sophisticated financial modeling.



Loan Level Data is a must



Modeling calibration



Loss Forecasts are based on:

- Home Price Index
- Interest Rates
- Roll Rates
- Severity
- Prepayment rates

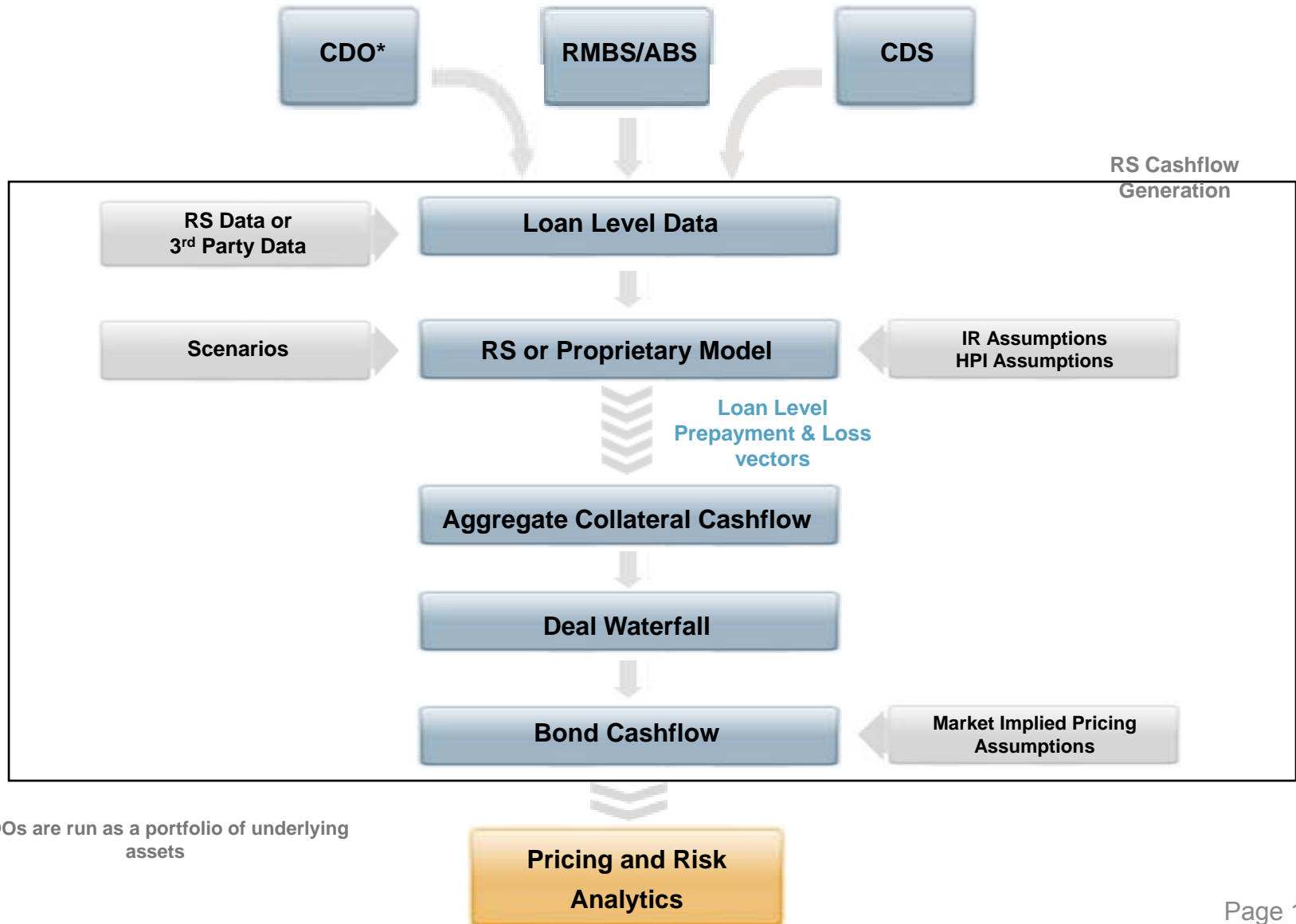
Drivers of Risk



- Risk Analysis and Reporting
- Portfolio Segmentation
- Loan Level Analysis

- LTV and CLTV
- Geography
- Documentation
- DTI
- Origination Channel

RS Valuation and Loss Analysis



* CDOs are run as a portfolio of underlying assets

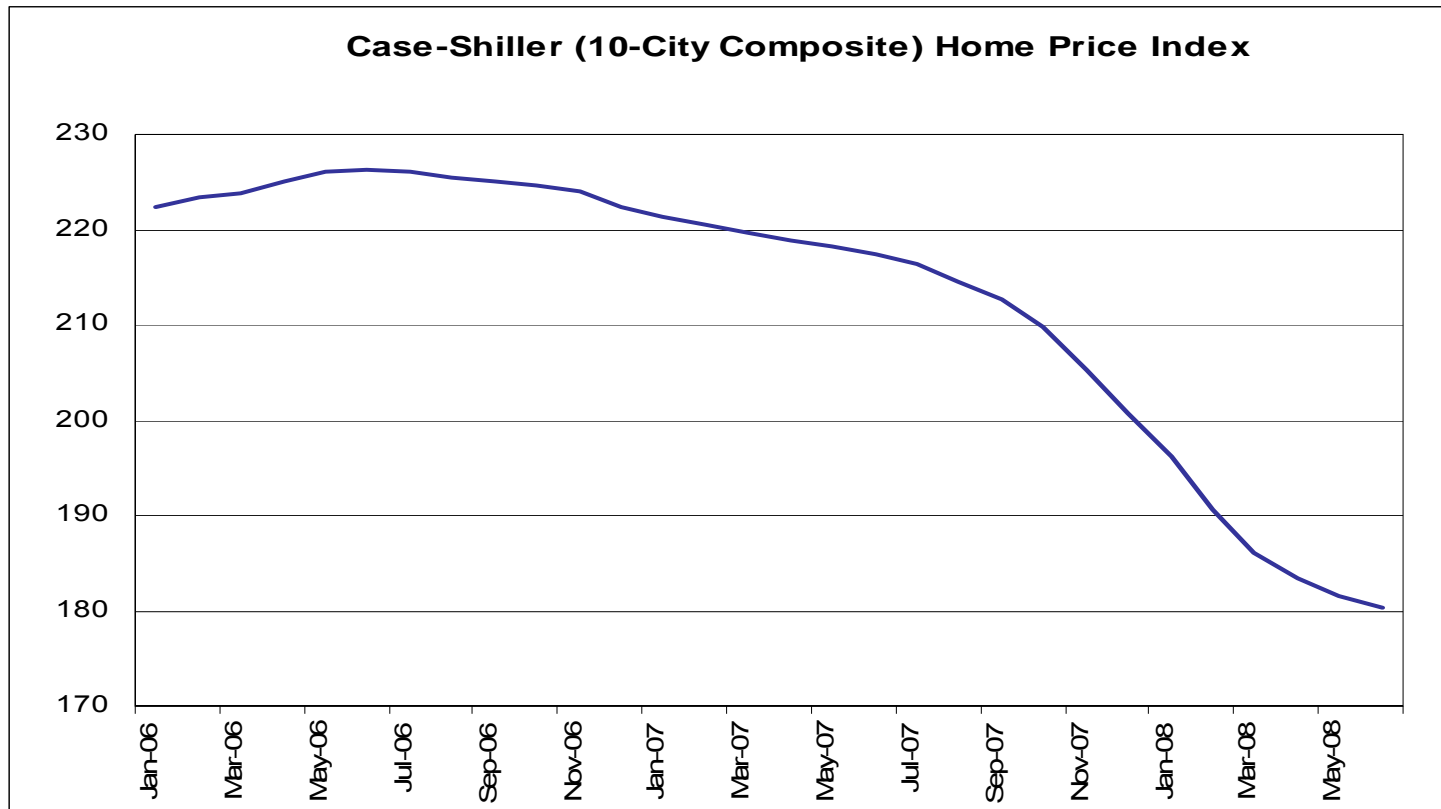
- Effective communication regarding model results and scenarios
- Underlying assumptions and defensible methodology
- Establish auditable processes and procedures
- Approach must “make sense”

Allowance & Valuation Issues

- Sharp rise in delinquencies in subprime loans
2/28 & 3/27 ARMs that reset at substantially higher rates
- Several hundreds of billions of subprime ARMs re-pricing or set to re-price
- Declining real estate prices, exacerbated by foreclosures
- Resulting increase in credit losses, fear by investors that it will only get worse
- Markets dried up
- Fear spread to other credit markets

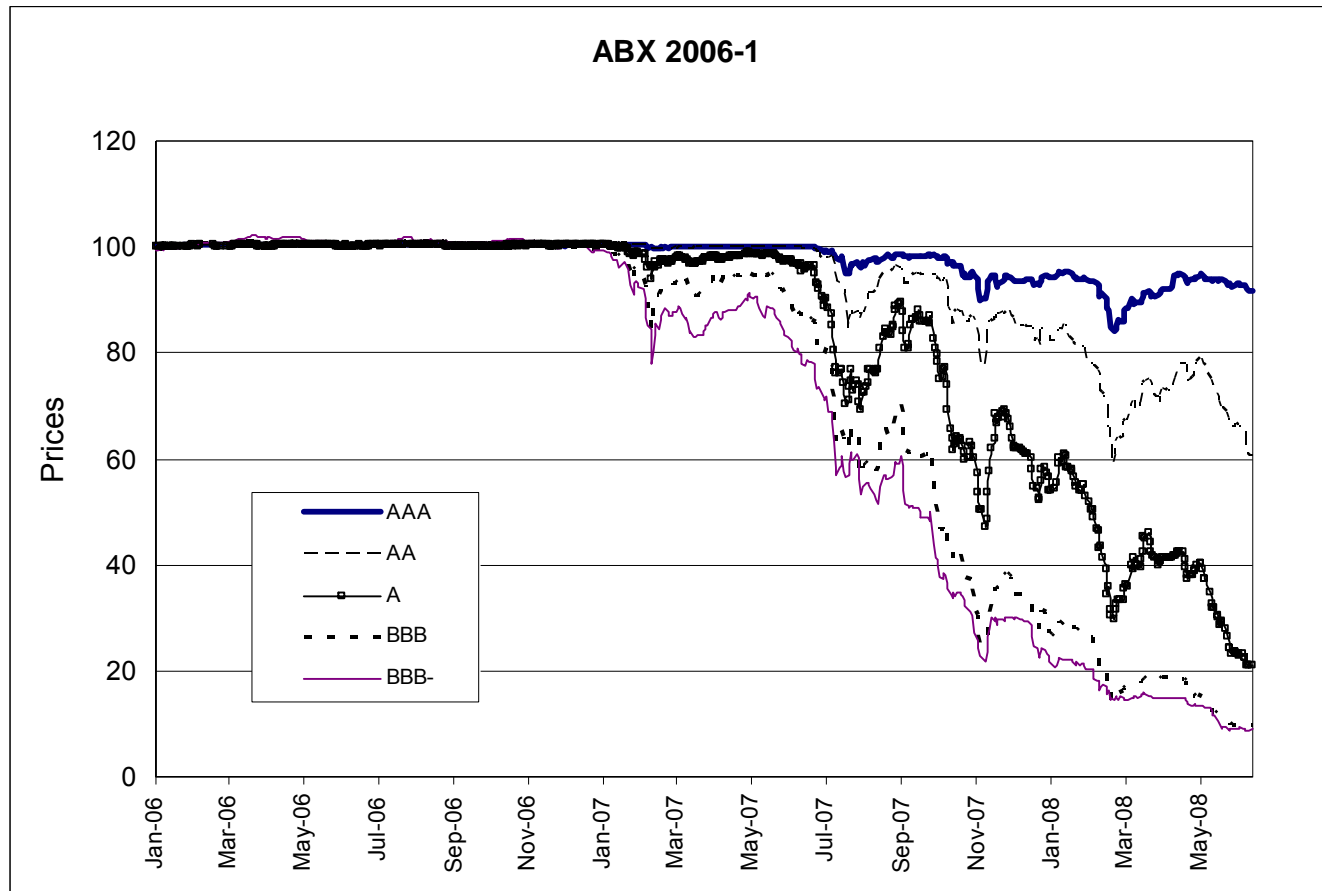
Home Price Collapse

- 40+ point decline from spring 2006.
- Direct relationship to increasing delinquencies

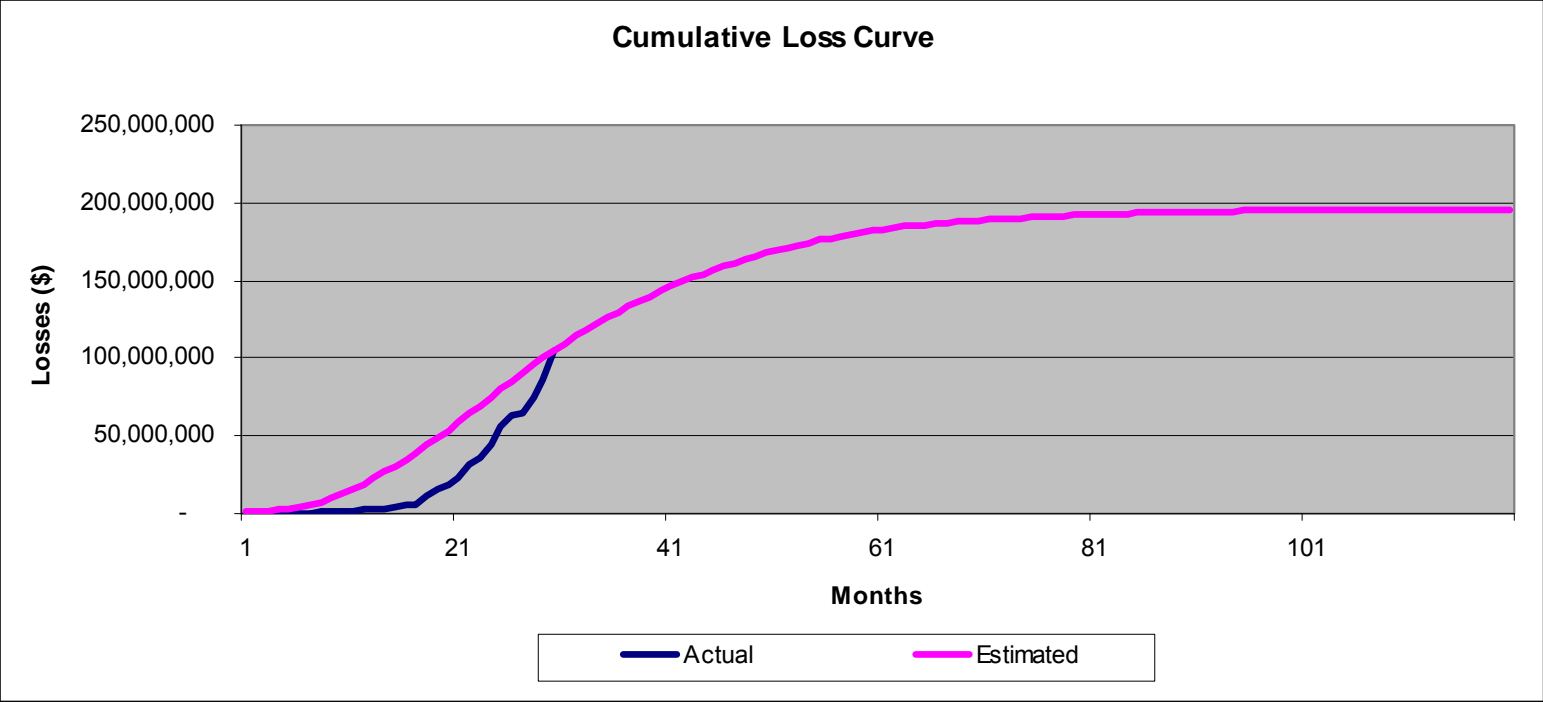


ABX Volatility

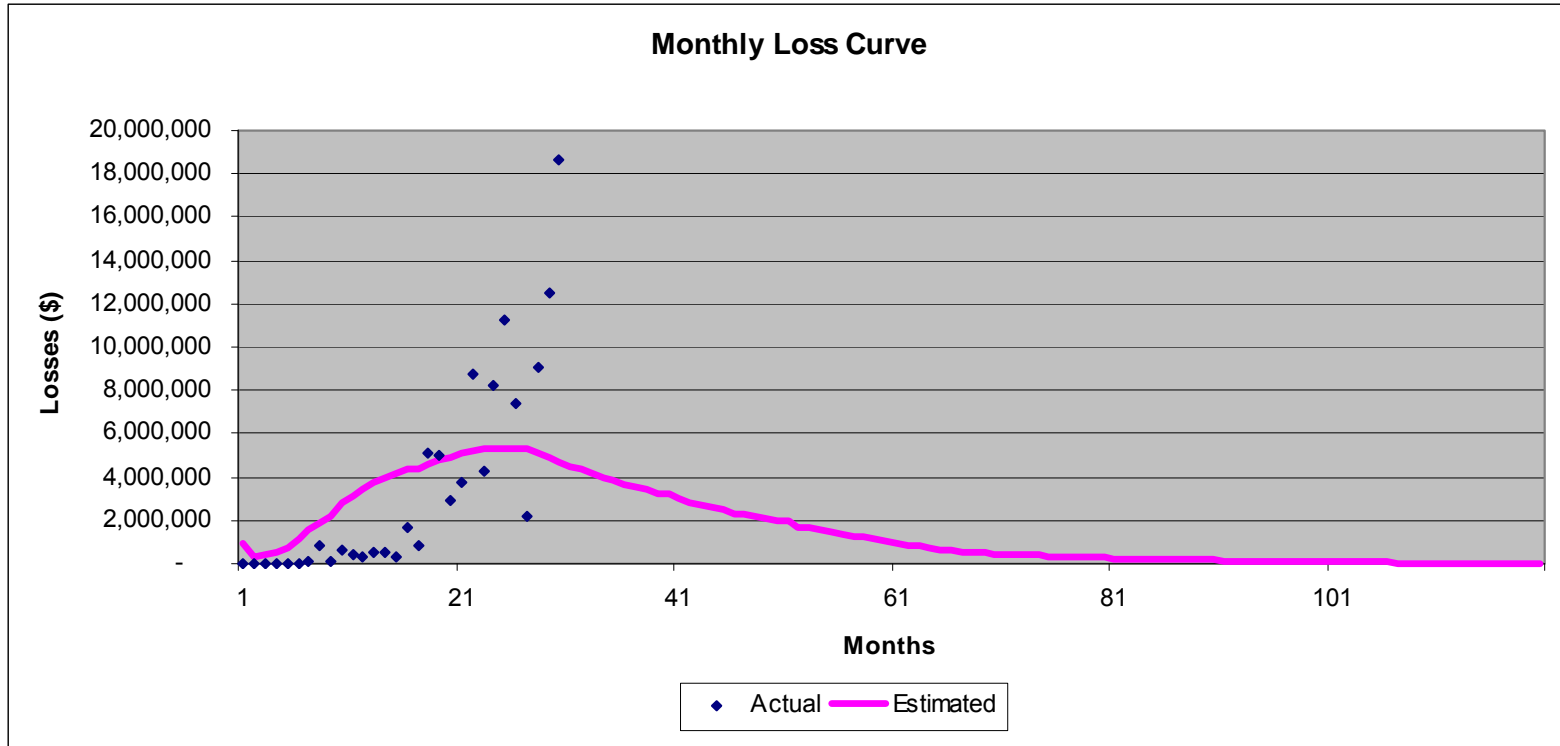
- Severe drop beginning in July 2007.
- Not only did the ABX experience a decline, but the index became more volatile.



Cumulative Losses

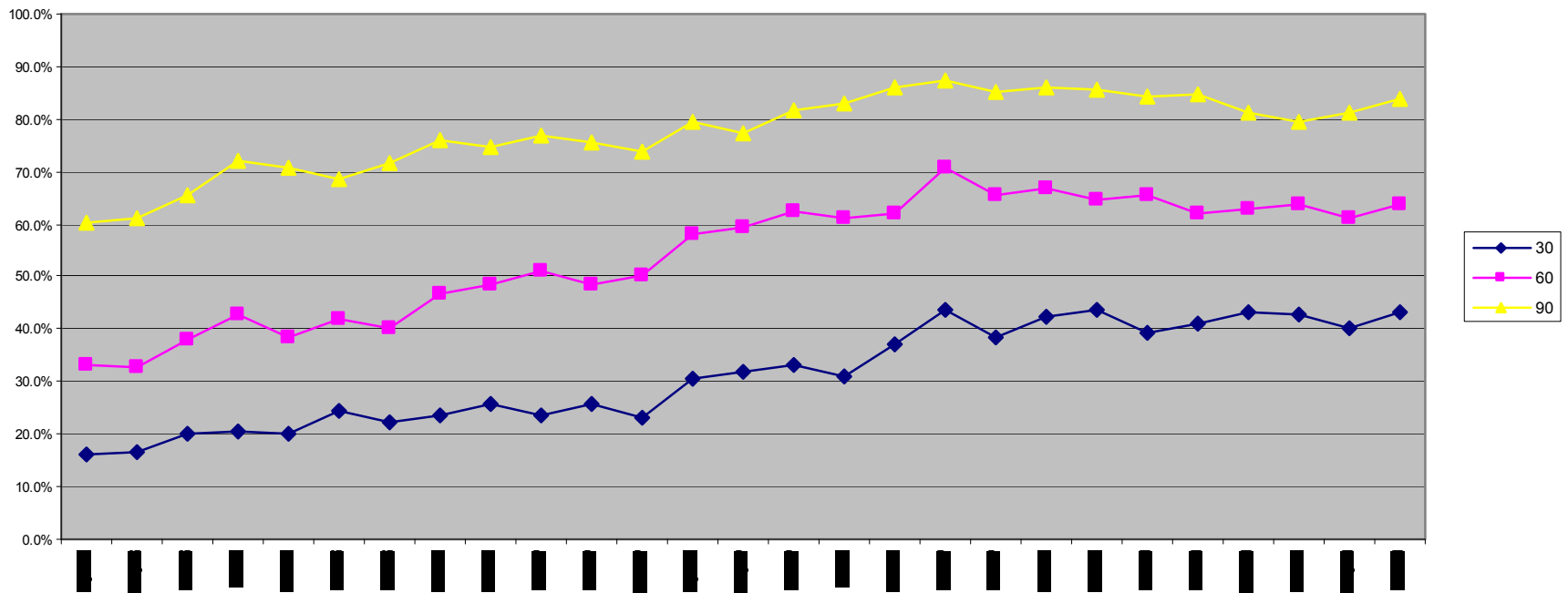


Monthly Losses



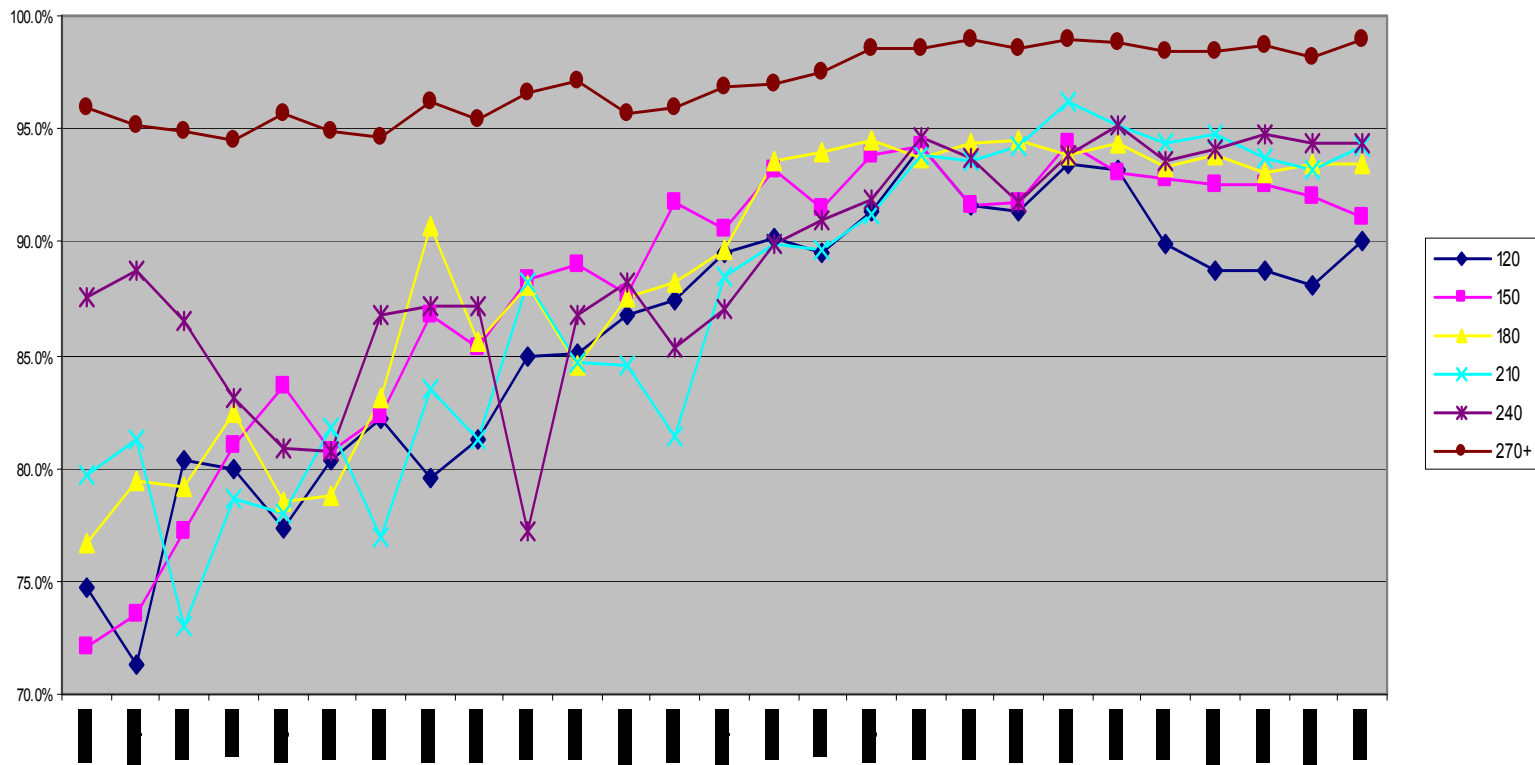
Roll Rates – 90+ Days

< 90 Days Delinquent Roll Rates



Roll Rates – 120+ Days

120+ Days Delinquent Roll Rates



- 1) Calculate historical losses
- 2) Calculate lifetime losses
- 3) Calculate roll rate percentages
- 4) Analyze results
- 5) Estimate future monthly losses
- 6) Calculate a portfolio allowance or credit loss curve to use in fair values

- Validation should include the following elements:
 - Internal control policies
 - Independent party from reserving and approval process
 - Methodology and approach fully documented
 - Summary conclusions documented

- Economically correlated risks
- Frequencies and severities can be strongly correlated in adverse markets
- Economic conditions over the next couple years critical
- Capturing emerging trends:
 - Recent past experience not indicative of future
 - Home price appreciation (HPA) is the critical factor

— Rising Delinquencies

- Larger loss estimates
- More volatility

— Frequencies and severities have risen sharply

- 2006 and 2007 origination years
- Regions (Florida, CA, etc.)
- Products (I/O, pay-options, high CLTV, Low doc, Hybrid ARMs)

- **OTTI – lack of written/robust analysis, documentation and policies**
 - Is it temporary or other-than-temporary?
 - Target percentages
 - Intent and ability to hold to recovery

- **SFAS 159 adoption issues**
 - Can allow unrealized losses to by-pass the income statement and be recorded directly in retained earnings
 - Significant measurement disclosures

- Assumptions used in valuation
- Market illiquidity is a factor -- Level I might move to Level II or even III
- What are “active markets” -- *Quoted prices in active markets*
- Illiquid market ≠ non-orderly transaction
- Institutions Unable to obtain quotes
- Large bid / ask spreads

Q & A