

Disclaimer



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Current Issues & Regulatory Environment



Questions?

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Profitable Production Management



- Profitability defined – what does it mean to today's mortgage banker?
- What are the main sources of income?
- What are the expenses associated with origination?
- How do we measure profitability?
- What emerging opportunities exist that will improve production and contain costs?

Profitability Overview

Profitability – Defined



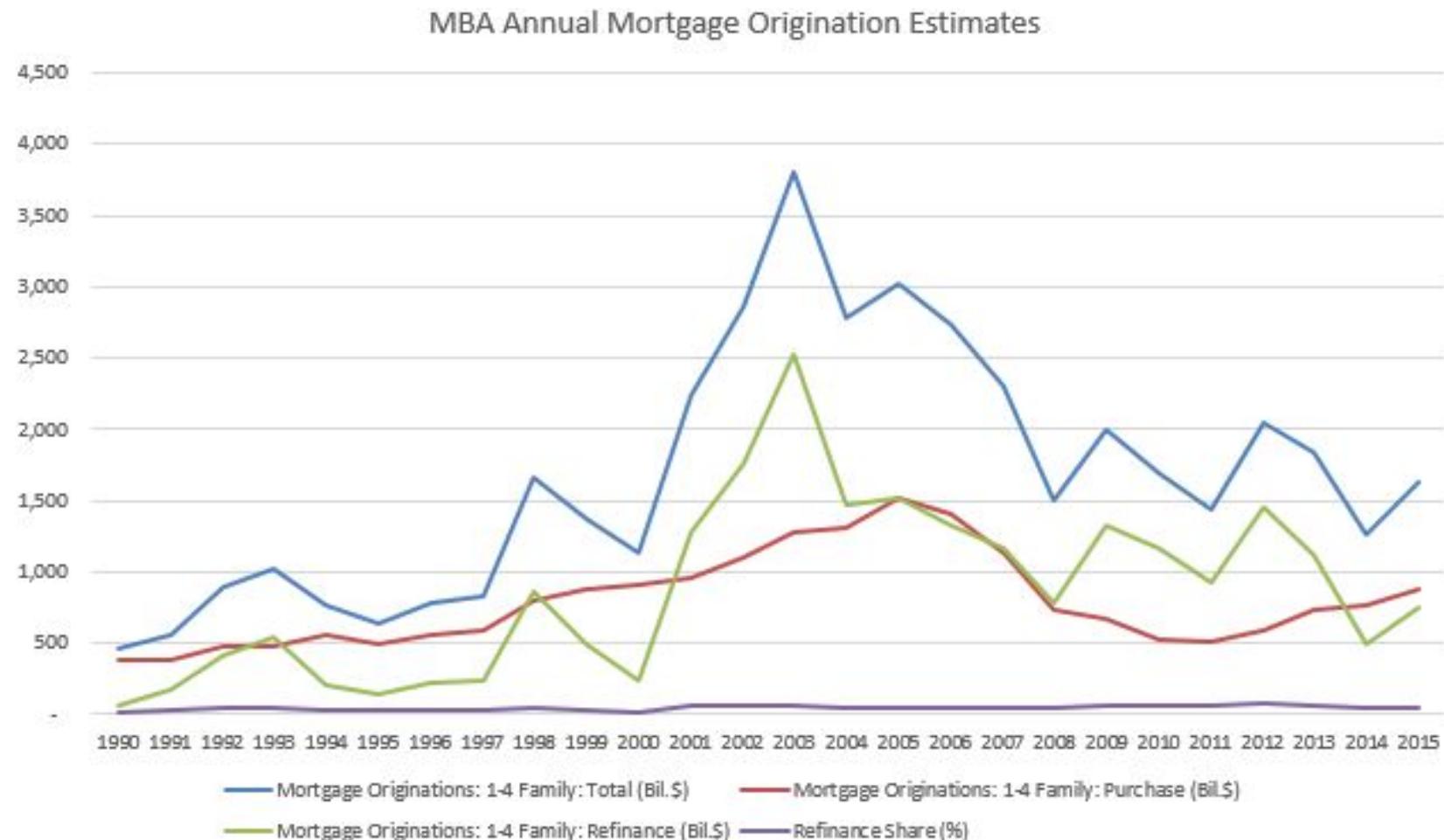
- Top line growth!
- Expense reduction
- Bottom Line

History and Trends



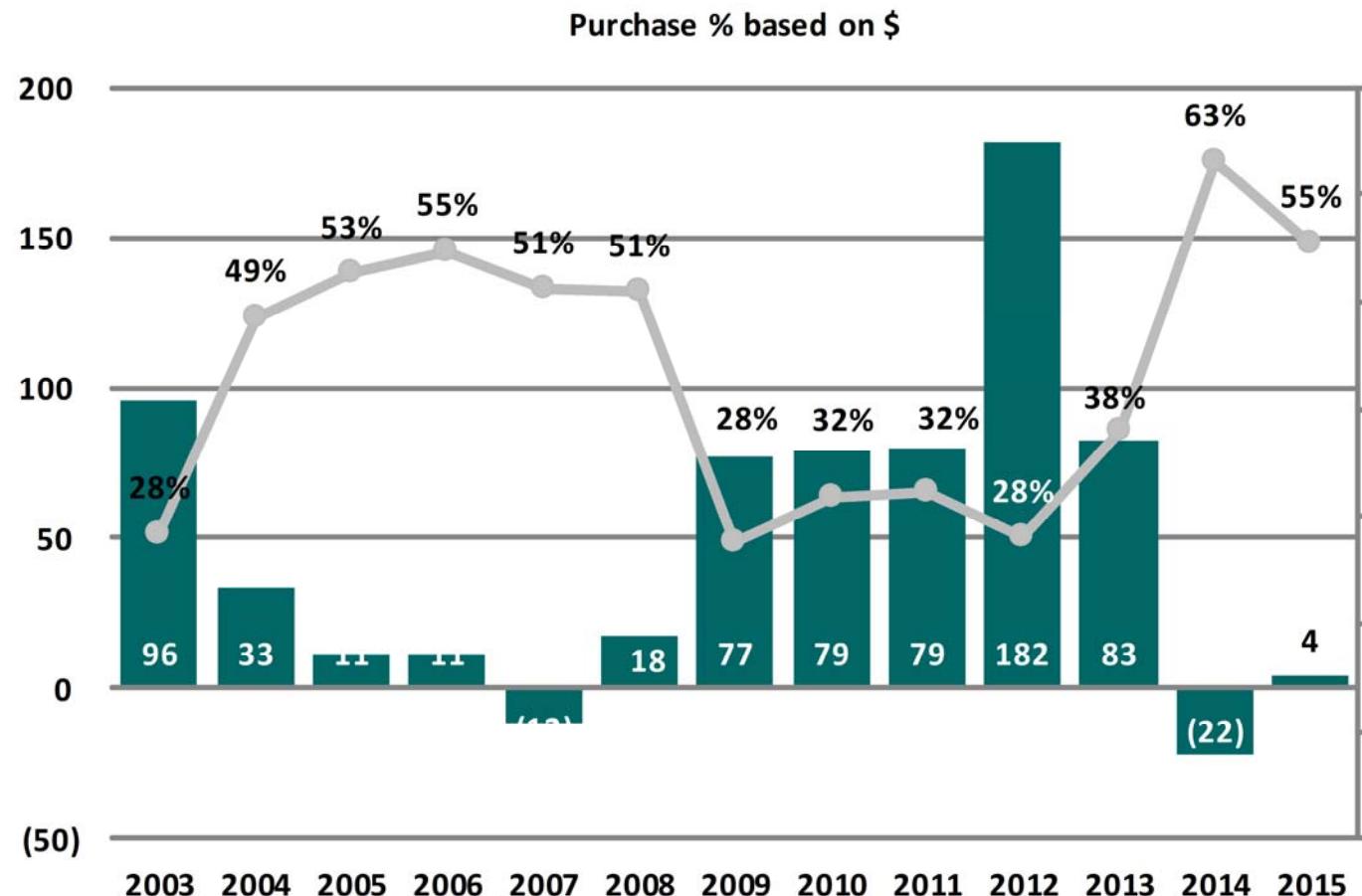
1-4 Single-Family Originations

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Source: MBA – February 2016 MBA Quarterly Origination Estimates
<http://mba.org/ResearchandForecasts/ForecastsandCommentary>

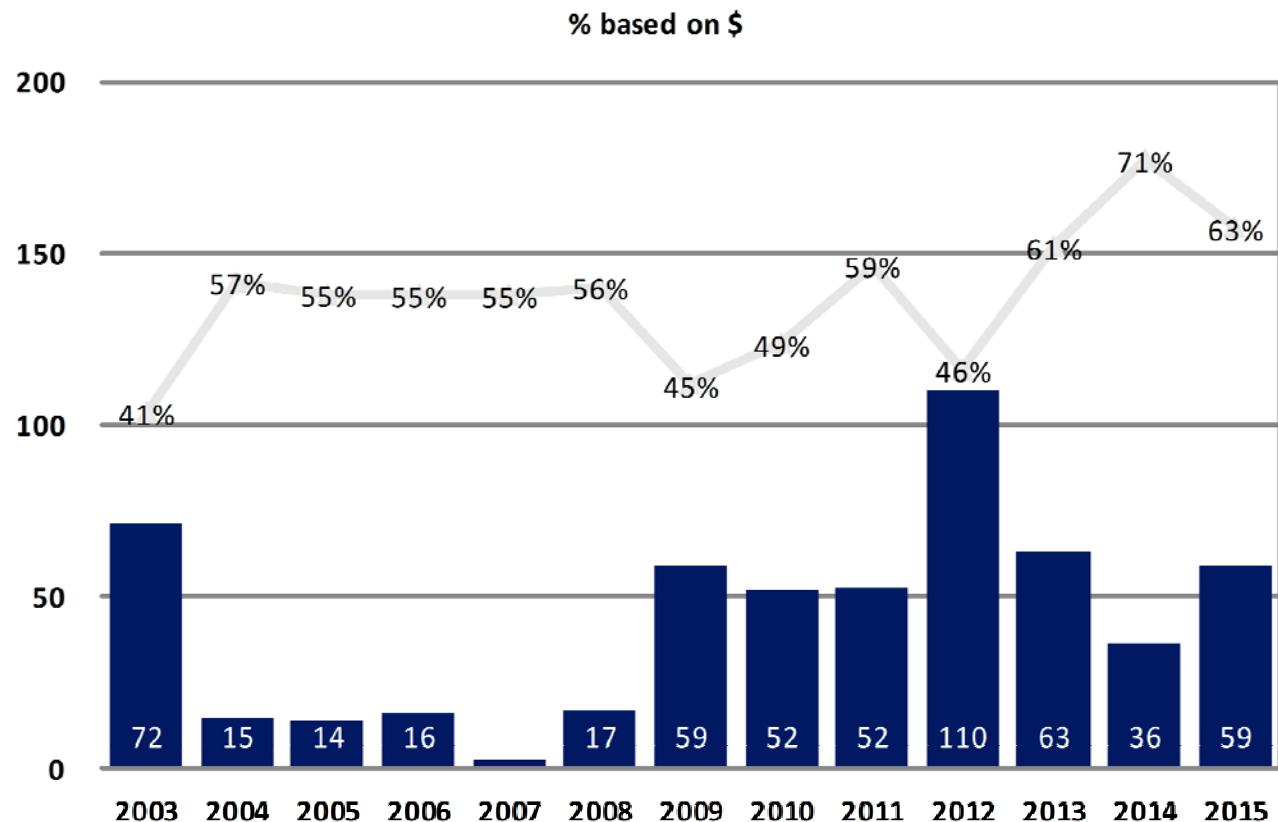
Overall Profitability Trends: Large Banks (bps)



Source: MBA and STRATMOR Peer Group Roundtables (PGR)

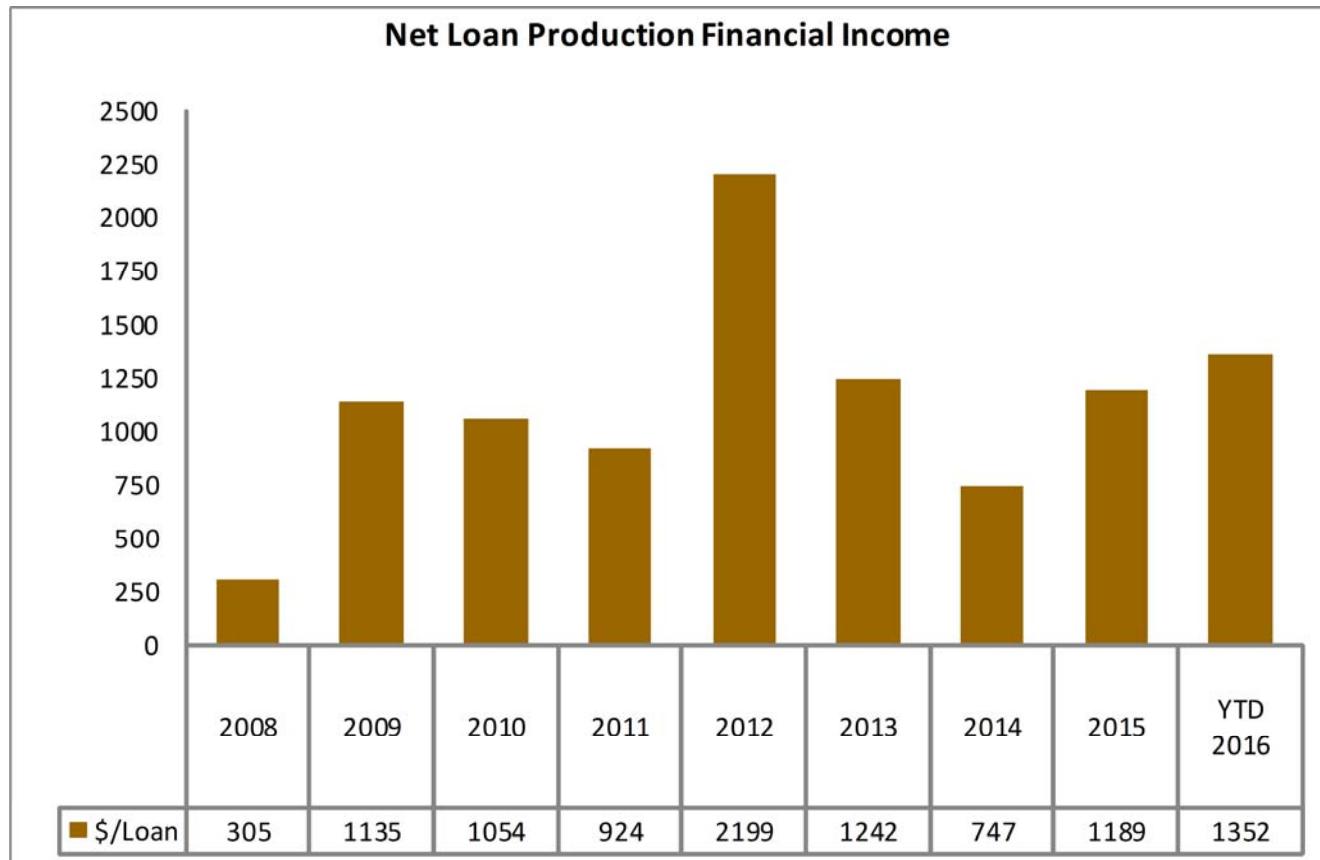
Overall Profitability Trends: Independents, All Sizes (bps)

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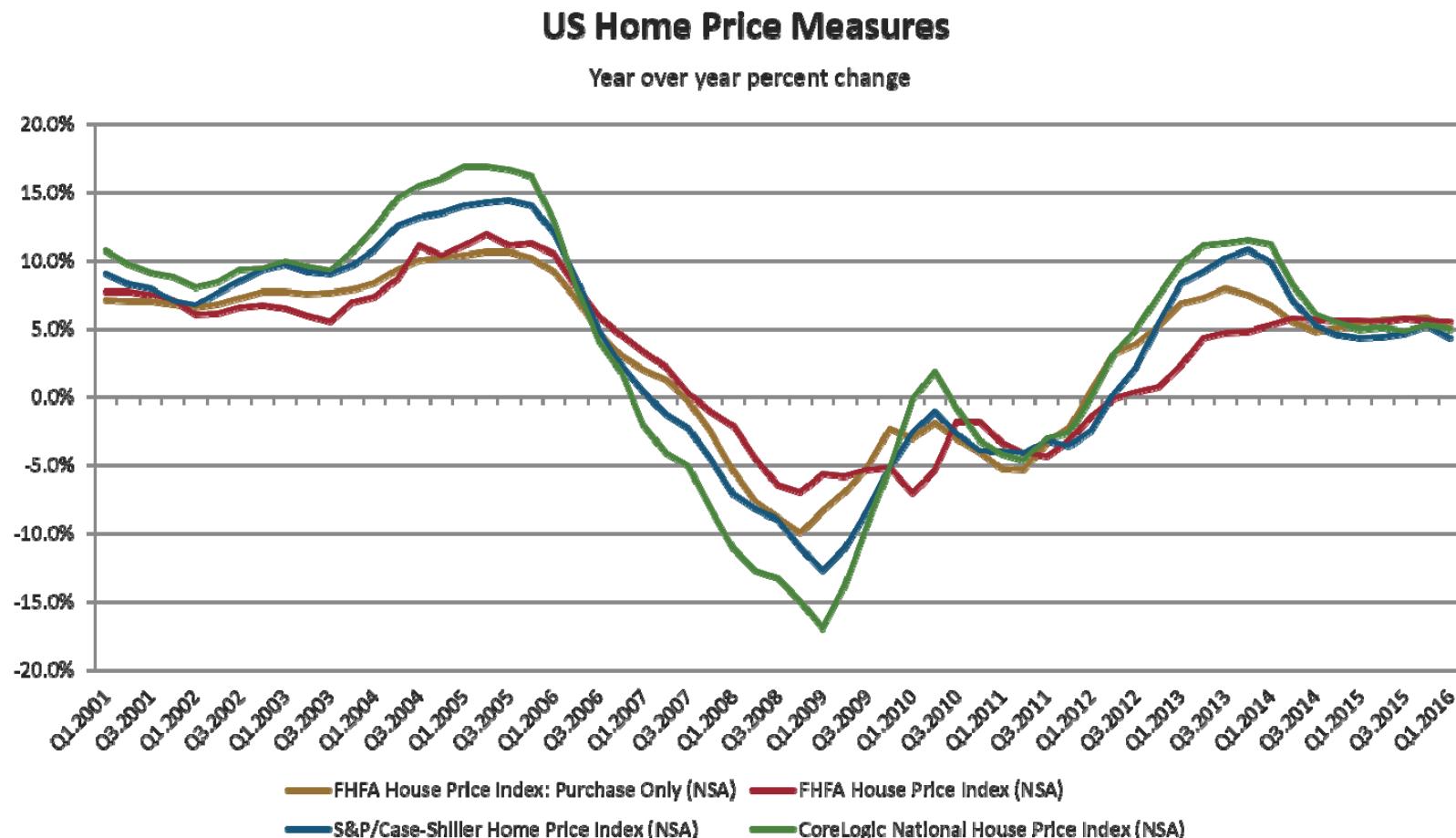


Source: MBA and STRATMOR Peer Group Roundtables (PGR)

Net Profitability Trends (\$ per loan): Small and Mid-Size Independents and Subs of Banks

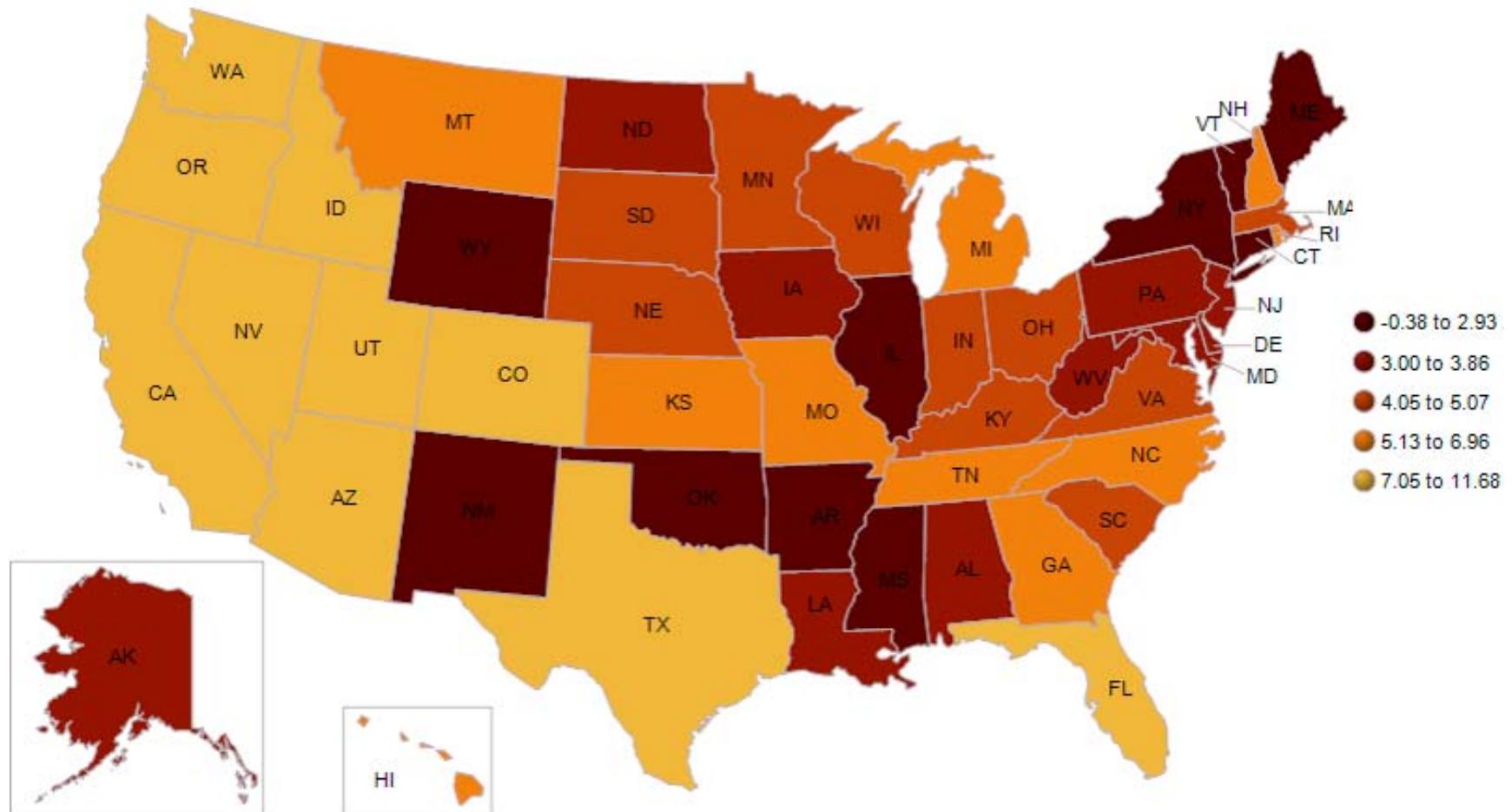


Source: MBA Mortgage Banker Performance Report. For more information, visit:
<http://www.mba.org/performancereport>



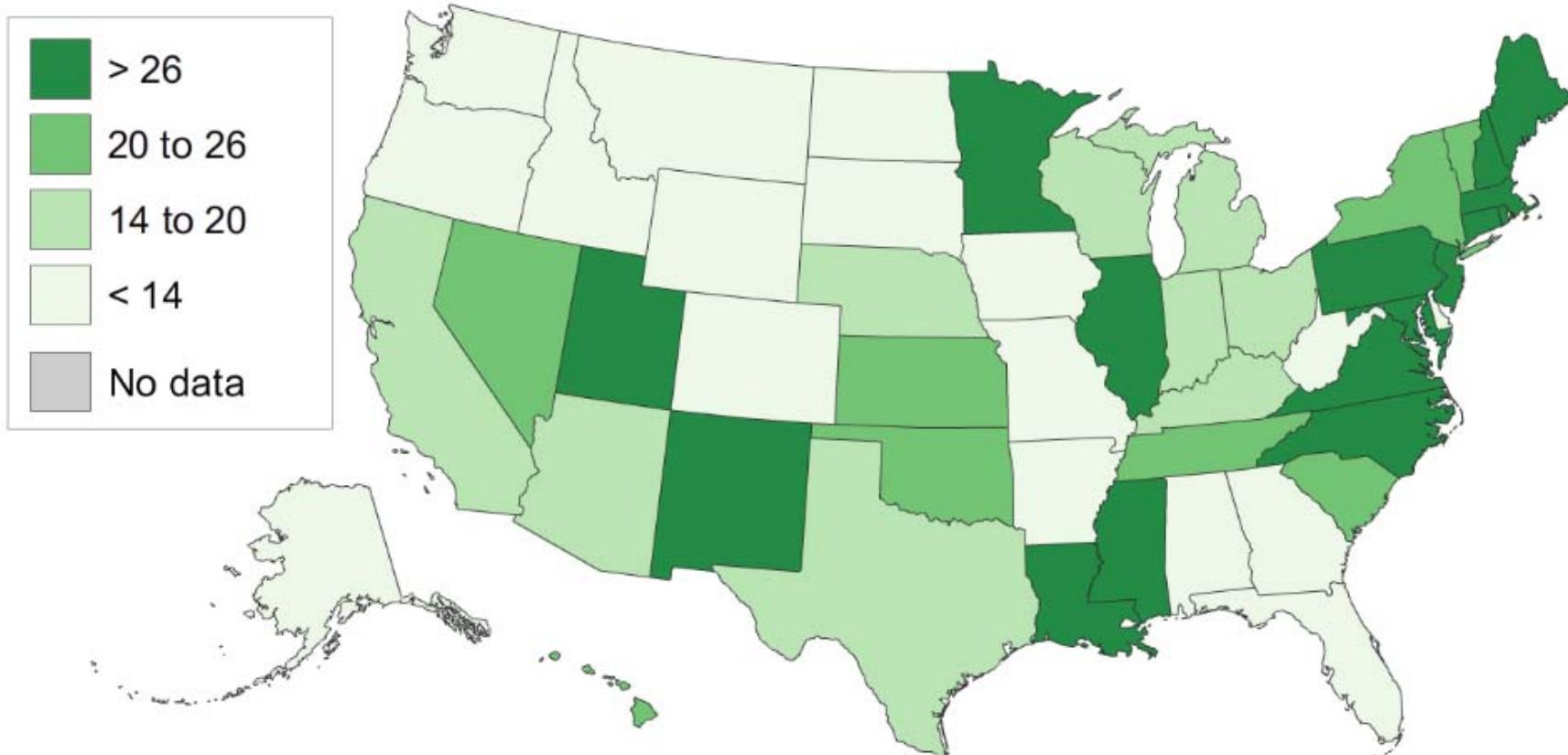
Source: CoreLogic, FHFA, S&P

US Home Prices - (Y/Y Change, Q2-2016)



Source: FHFA - Purchase-Only Home Price Index, YoY % Change (Index 1991Q1 = 100, SA)

Change in Quarterly Purchase Applications (%, NSA) as of Q1 2016



Source: MBA – Weekly Applications Survey

MBA Mortgage Finance Forecast



- Please see handout for current data
- Available through www.mba.org (Research and Forecasts)

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- Please see handout for current data
 - Available through www.mba.org (Research and Forecasts)

Income



- Fees Negotiated at Origination
- Interest Income
- Gain on Sale of Loans
- SRP (Servicing Release Premiums)
- Servicing Income

Fees Negotiated at Origination



- Loan fee
- Discount points
- Processing fee
- Administration fee
- Lock fee
- Underwriting fee
- Flood Cert fee
- Tax Service fee
- Lender Inspection fee
- Courier fee
- Doc Prep fee
- Warehouse fee
- ????

➤ Be aware of regulatory changes that may impact allowable fees.

– **Loan Originator Compensation Rule**

- CFPB states: *At this time, the Bureau is not prohibiting payments to and receipt of payments by loan originators when a consumer pays upfront points or fees in the mortgage transaction. This final rule is designed primarily to protect consumers by reducing incentives for loan originators to steer consumers into loans with particular terms and by ensuring that loan originators are adequately qualified.*

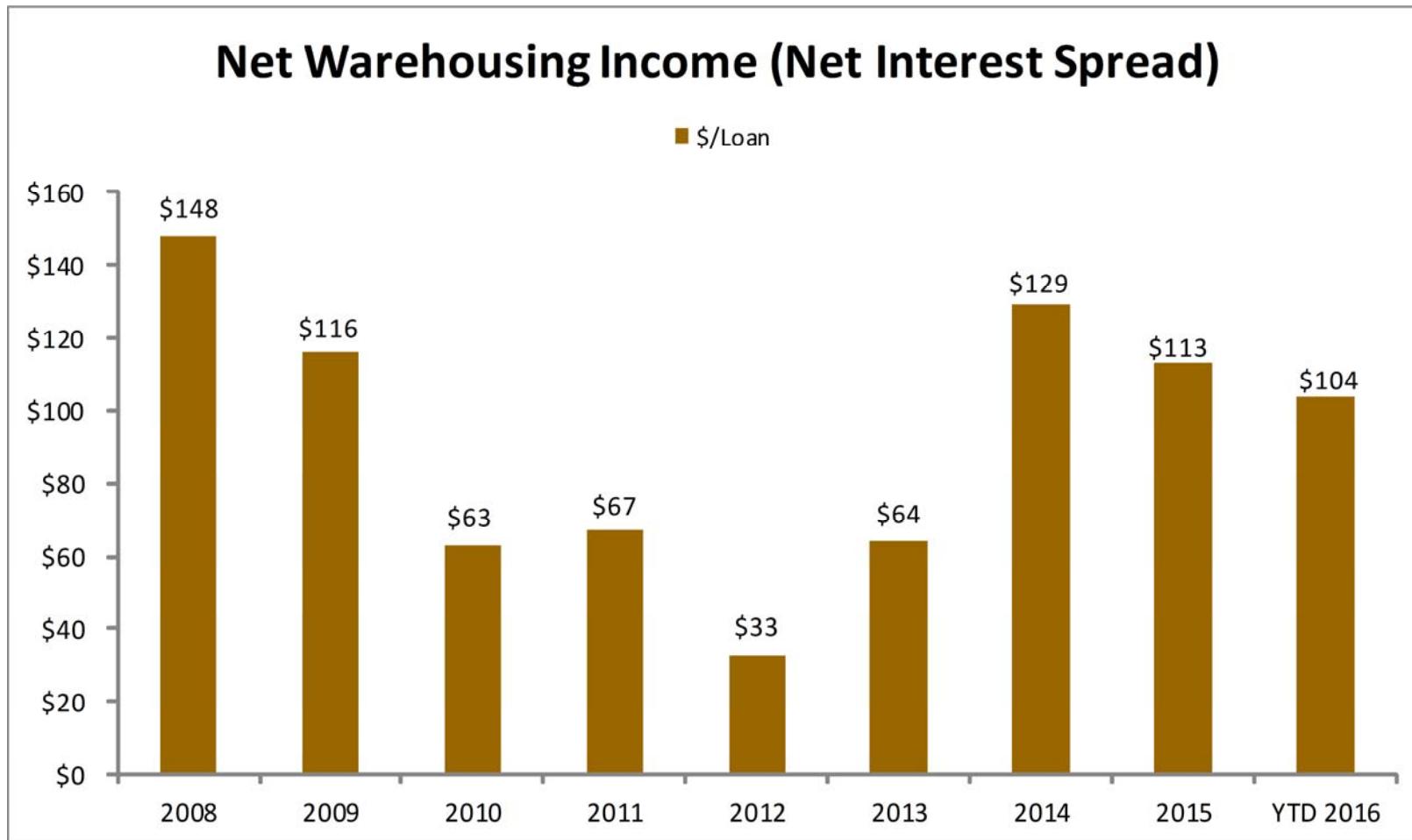
– **Qualified Mortgage Rule (QM)**

- For a loan to be a QM, the points and fees may not exceed the points-and-fees caps. The points-and-fees caps are higher for smaller loans. For loans > \$100,000 the limit is 3% of the total loan amount.

- Note Rate
- Warehouse Rate
- Administration fees
- Wire fees

Net Warehousing Income (\$ per loan) - Small and Mid-Size Independents and Subs of Banks

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Source: MBA's Quarterly and Annual Mortgage Bankers Performance Report.
For more information, visit: <http://www.mba.org/PerformanceReport>

➤ Methods

- Whole Loan Sale
 - Retained
 - Released
- Bulk sale
- Best efforts
- Co-issue

➤ Structures

- Assignment of Trade
- MBS

➤ Hedge Gain/Loss

- Negotiable
- Level SRP
 - All states
 - All loan amounts
- State
 - Average loan amount
 - Average credit score

Generally

- Fixed = .25
- ARM = .375
- FHA/VA = .44

Other Opportunities

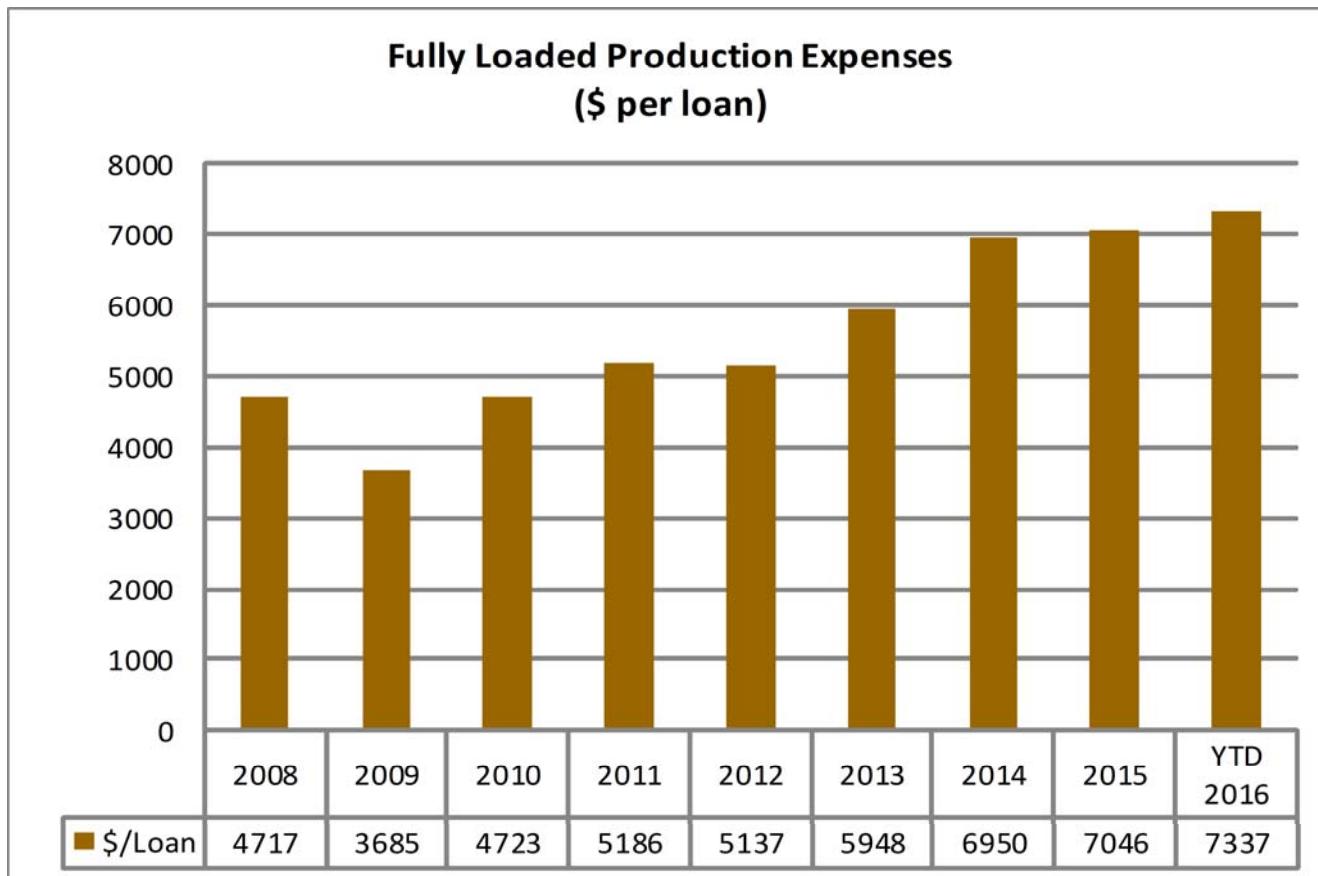
- Late fees
- Carry
- Ancillary

Expenses



- Channels
 - Size
 - Location
- Training
- Insurance
- Available working capital
- Employee expense
- Risk management
- Available staffing pool and experience
- Technology
- Marketing

Fully Loaded Production Expenses (\$ per Loan) Small & Mid-Size Independents & Subs of Banks



Source: MBA's Quarterly and Annual Mortgage Bankers Performance Report. For more information, visit:
<http://www.mbaa.org/ResearchandForecasts/ProductsandSurveys/PerformanceReport.htm>

How do you reduce or manage expenses?

- Technology
- Training
- Focus
- Employee selection – choose the best people!
- Vendor Management – the regulators are watching
 - Due diligence in selection
 - Review process followed regularly
 - The bigger the institution, the more elaborate the process and required documents
 - Financials, SAS 70 Approvals, etc.

Going Forward



- Technology?
- Product Development?
- Cost containment?
- Consolidation?
- Available capital?
- Stability?
- Emerging Opportunities?

- Economic and Industry Shifts
 - Interest rate hikes
 - Major increase/decrease in refinance originations
- Demographic and Cultural Shifts
 - Growth in immigrant population
 - Overall growth among minorities
- Specific events in your market area

Emerging Opportunities, cont.



- Local economy
- Income groups
- Small/large business focus
- Real estate sales and valuation changes
- Other?

Studies show that homeownership is good for children:

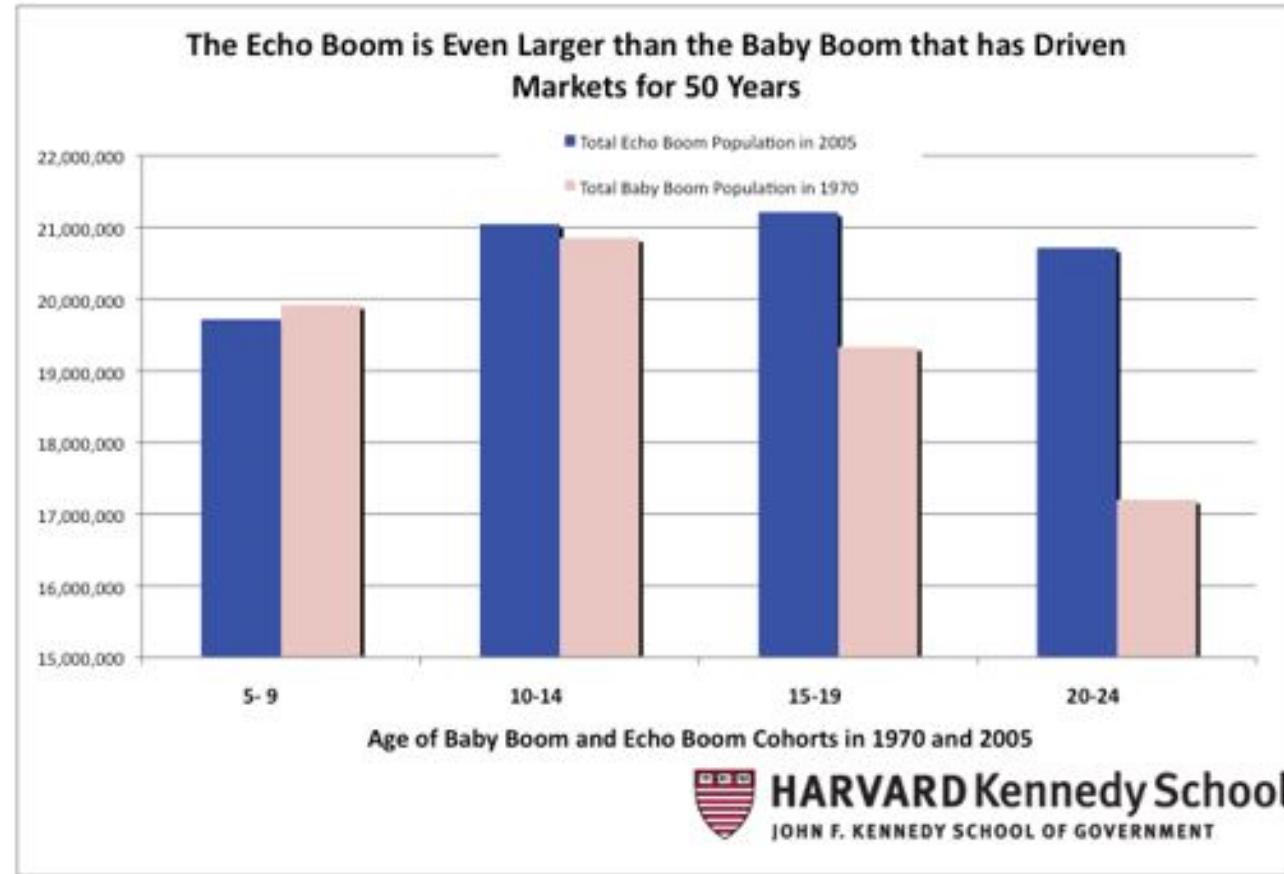
"Our findings reaffirm the idea that homeownership, in and of itself, predicts positive outcomes for children. This result applies to the likelihood both of children remaining in school, and girls not bearing children as teenagers. This result survives adding controls for LTV ratio, for financial wealth, for state, region and time fixed effects, and, with possibly one exception, for dollar amount of down payment. Our results suggest that homeowners' children have better outcomes than renters' children, except for children of homeowners who made no down payment at all."

Source: Research Institute for Housing America Special Report Measuring the Benefits of Homeowning: Effects on Children Redux. Richard K. Green, Gary D. Painter (University of Southern California) and Michelle White (University of California at San Diego). <http://www.housingamerica.org/Publications/MeasuringtheBenefitsofHomeowning:EffectsonChildrenRedux.htm>

The Power of Home Ownership

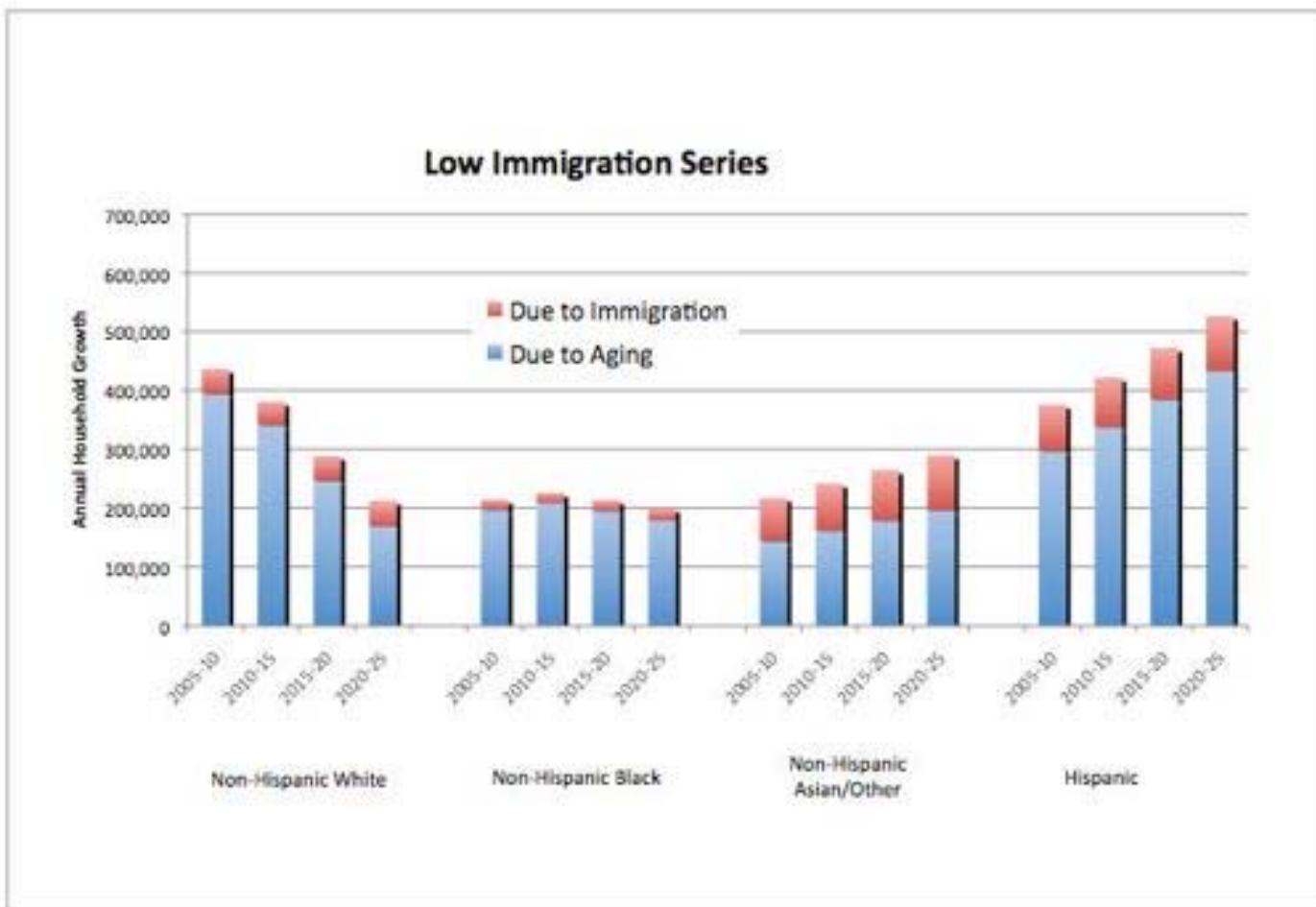


- Homework: please watch the following inspirational video about the power of homeownership and its role in the American Dream:
- Mitch Kider "*The Power of Home Ownership*" <http://vimeo.com/41520285>



Source: Harvard - Kennedy School. Information from U.S. Census Estimates.
<http://www.census.gov/ipc/www/idb/idbsprd.html>

Future Home Buyers, cont.



Source: Harvard - Kennedy School. Information from U.S. Census Estimates. <http://www.census.gov/ipc/www/idb/idbsprd.html>

Studies show immigrants represent a motivated and growing segment of home buyers:

- In the 2010-2020 decade immigrants are projected to account for 35.7% of growth in homeowner households.
- Foreign-born residents living in the US are a substantial source of demand for owner-occupied housing because their homeownership rates rise markedly the longer they reside here.
- In the coming decade both native-born and foreign-born components of demand will be strong suggesting a brighter outlook and indicating substantially greater growth in demand for owner-occupied housing.

Source: Research Institute for Housing America Special Report Immigrant Contributions to Housing Demand in the United States. Professors Dowell Myers and John Pitkin at USC.

<http://www.housingamerica.org/Publications/ImmigrantContributionstoHousingDemandintheUnitedStates:AComparisonofRecentDecadesandProjectionssto2020fortheStatesandNation.htm>

What Keeps Renters From Buying?



- Four “gaps” for expanding homeownership:
 - Information
 - Affordability
 - Credit
 - Confidence
- Education is the key to making renters homeowners!

Profitable Production Management Practice



Wrapping it all up!



- Identify the highest component of origination costs and methods for managing that cost
- Identify 4 areas of economic value of a loan
- Outline the differences in structure of retail vs. wholesale production
- Identify the opportunities that exist in the local markets

Review



- Profitability defined – what does it mean to today's mortgage banker?
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Secondary Marketing Revisited



- The rise and role of the secondary market
- SRPs and the secondary market
- Rates and pricing
- Secondary marketing risks
- Terminology

Rise and Role of the Secondary Market



Banks needed liquidity/Investors wanted higher-yielding assets

- 30-year mortgages tied-up bank's capital, limiting the amount of loans (and customers) that could be served.
- Banks wanted to sell mortgages to release capital so they could make new loans, but they also wanted to keep the servicing relationship with the customers.

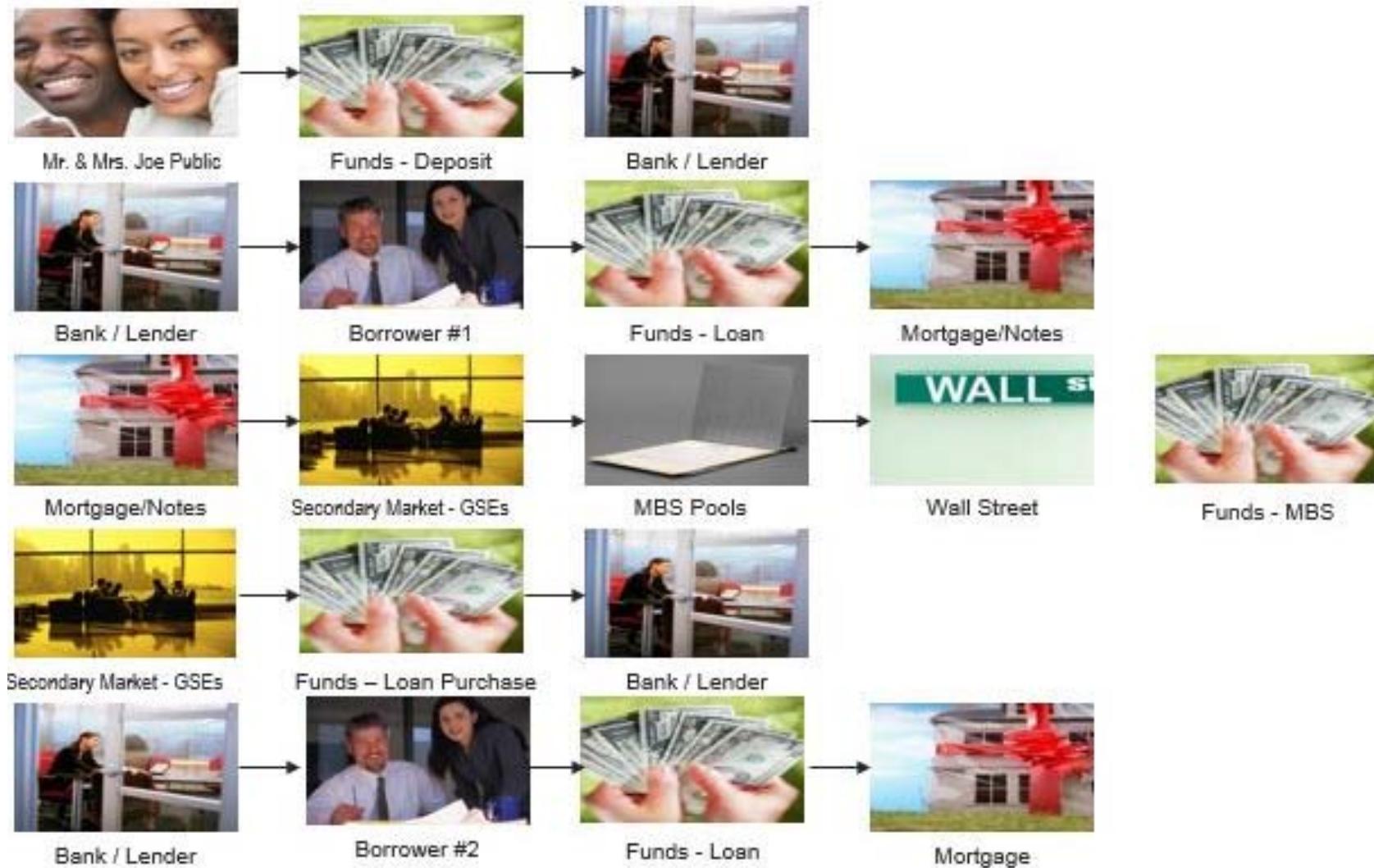
Primary/Secondary Market

The primary market is where mortgages are originated. Borrowers who wish to get a loan come to mortgage lenders

The secondary market is where lenders, GSEs and investors buy and sell existing mortgages



Exchange of Funds



SRPs and the Secondary Market



Servicing Released/Servicing Retained Sales



- Servicing *released* sales pass the right to service the loans from the selling lender to the new buyer
 - Net result is a *higher* price paid because future servicing income is included
- Servicing *retained* sales retain an ongoing relationship between the lender and the borrower
 - Opportunity for cross-selling additional bank products and services

SRP – Servicing Release Premium



Conventional Fixed Rate

St	State	0 - 29,999	30,000 - 59,999	60,000 99,999	100,000 199,999
AK	Alaska	0.00	1.16	1.35	1.57
AL	Alabama	0.00	1.05	1.24	1.47
AR	Arkansas	0.00	1.12	1.31	1.57
AZ	Arizona	0.00	0.88	1.07	1.22
CA	California	0.00	0.77	0.97	1.22
CO	Colorado	0.00	0.81	1.01	1.14
CT	Connecticut	0.00	0.95	1.14	1.37
DC	Dist. of Columbia	0.00	0.88	1.07	1.40
DE	Delaware	0.00	0.98	1.17	1.37
FL	Florida	0.00	1.13	1.32	1.57
GA	Georgia	0.00	1.03	1.22	1.37
HI	Hawaii	0.00	0.98	1.17	1.37
IA	Iowa	0.00	1.04	1.23	1.37
ID	Idaho	0.00	1.01	1.20	1.37

Primary Factors

- Loan type
- Geography
- Loan size
- Prepayments
- Escrows

Rates and Pricing

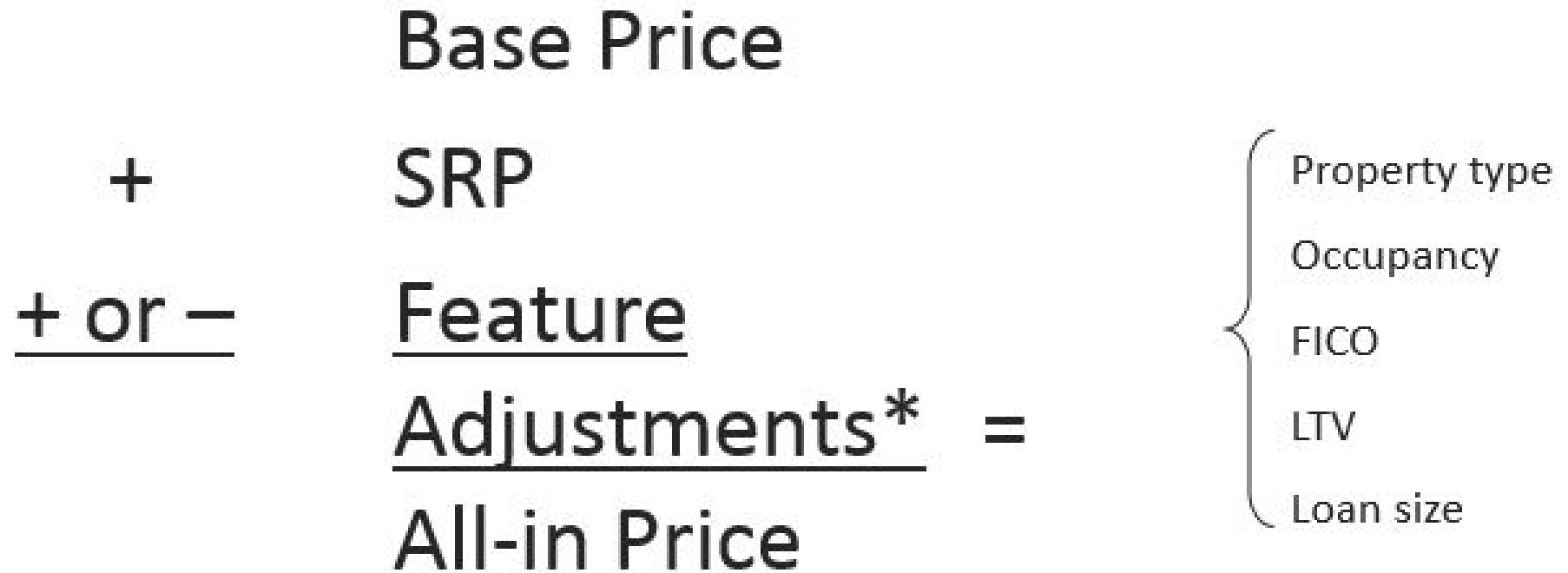


Price Discovery: Whole Loan Pricing



Note: Price is expressed as % of Principal Balance

AGENCY FIXED 30YR					
Rate	15-Day	30-Day	45-Day	60-Day	75-Day
3.875	98.204	98.141	98.079	98.016	97.954
4.000	98.656	98.593	98.531	98.468	98.406
4.125	99.301	99.238	99.176	99.113	99.051
4.250	99.715	99.652	99.590	99.527	99.465
4.375	100.173	100.110	99.048	99.985	99.923
4.500	100.421	100.359	100.296	100.234	100.171
4.625	100.778	100.715	100.653	100.590	100.528
4.750	101.109	100.046	100.984	100.921	100.859
4.875	101.580	101.517	101.455	101.392	101.330



* Risk-based pricing

Rate	Price	
4.125%	99.176%	
4.250%	99.590%	
4.375%	100.000%	← Par
4.500%	100.296%	
4.625%	100.653%	

Basis Point (bps)

What Do Borrowers Pay?



Interest Rate:

- “Percentage paid for the use of money for a specified period of time, usually expressed as an annual percentage.”

Interest Rate - Format

- Interest Rate - Format
- For a specified period of time

Interest Rate Determinants

- Supply of funds
- Demand for funds
- Inflation
- Risk (default, prepayment, liquidity)
- Taxes
- Appetite for specific product

➤ Inflation Expectation Indicators

- Employment
- CPI & PPI

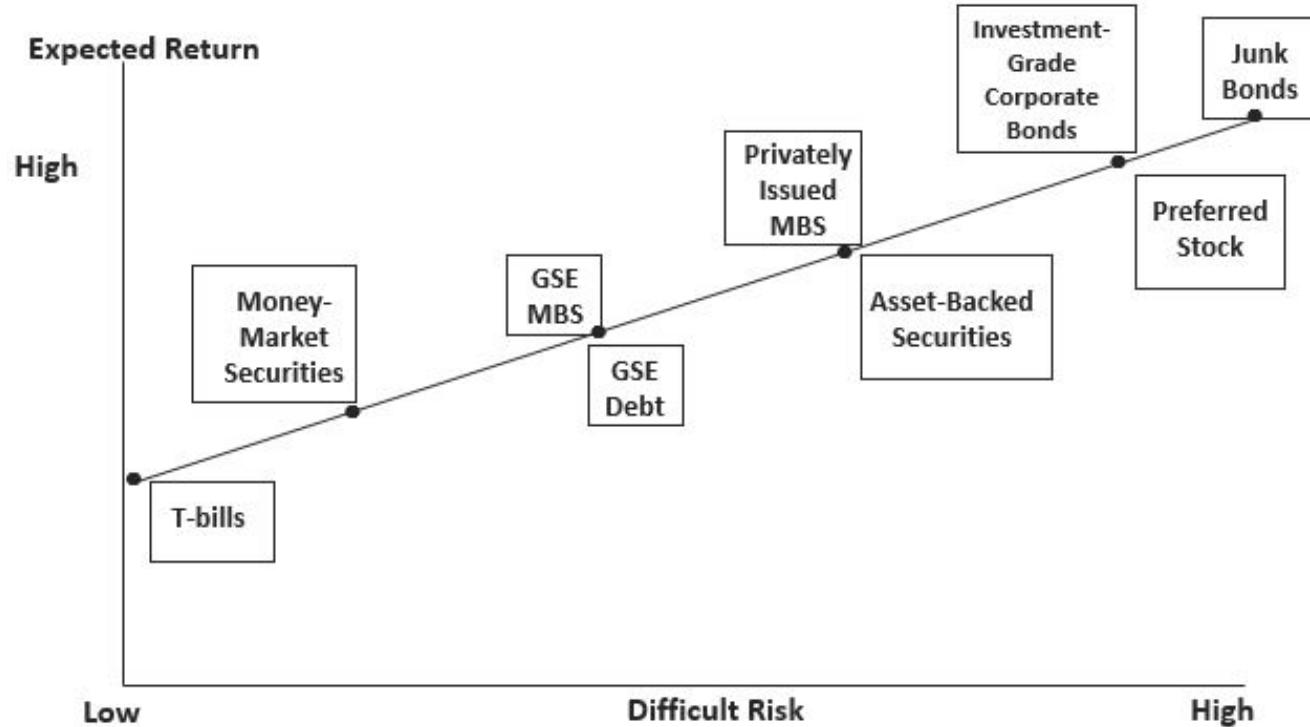
➤ Business Indicators

- Leading indicators
- Housing starts
- Capacity utilization

Secondary Marketing Risks



Risk Continuum



Compared with risk-free Treasury securities, all other bond market instruments bear greater risks and, therefore, should bring higher returns.

Terminology



Key Terminology



- Basis point
- Par
- Discount
- Premium
- SRP
- Net pricing

Key Terminology, cont.



- Tick
- Security rate/coupon
- Note rate
- Guaranty fee (G fee)
- Servicing fee
- Buy up/Buy down
- Excess servicing
- Risk-based pricing adjustment

Review



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MBSs & CMOS



- Definitions
- Secondary Market Chronology
- Risks in fixed income investment
- The yield curve
- Derivatives
- Collateralized mortgage obligations
 - CMOs
 - REMICSS
 - Tranches

Definitions



Mortgage-backed security (MBS):

- An investment security representing an undivided interest in a pool of mortgages.

Pass-through security:

- An investment vehicle in which the cash-flow is “passed through” to the investor (i.e., the holder of the security) as it is received.

GNMA security:

- A fully modified pass-through security which is backed by the full faith and credit of the United States government.

Credit enhancement:

- Third-party protection designed to protect the security holder by reducing cash flow risk and increasing marketability.

Security:

- A financial instrument that provides evidence of debt or of rights to share in earnings or the distribution of property.

Payment delay:

- Time lag between the receipt of mortgage payments from borrowers and the remittance of moneys payable to MBS investors.

Private label security:

- A security issued by a private entity. The issuer's balance sheet guarantees the security.

FNMA MBS:

- A pass-through security which guarantees the timely payment of principal and interest and is backed by Fannie Mae's U.S. Agency (GSE) status.

FHLMC PC:

- A pass-through security which guarantees the timely payment of principal and interest and is backed by Freddie Mac's U.S. Agency (GSE) status.

Secondary Market Chronology



Secondary Market Chronology



- 1934 – Federal Housing Administration (FHA) created to insure U.S. home mortgages
- 1938 – Federal National Mortgage Association (FNMA) created to purchase FHA-insured mortgages
- 1944 – Veteran's Administration (VA) program established to guarantee mortgages for veterans of military service
- 1948 – Fannie Mae begins purchasing VA mortgages
- 1957 – Federal Home Loan Bank Board (FHLBB) permits sale and purchase of participation interest in mortgages

Secondary Market Chronology, cont.



- 1968 – Fannie Mae converted to a private corporation. Its mortgage-guarantee program through the Department of Housing and Urban Development is assumed by the newly formed Government National Mortgage Association (GNMA or Ginnie Mae)
- 1970 – Federal Home Loan Mortgage Corporation (FHLMC) created to develop a secondary market for conventional mortgages
 - Ginnie Mae issues first publicly traded pass-through certificate backed by FHA & VA mortgages

Secondary Market Chronology, cont.



- 1973 – Fannie Mae and Freddie Mac introduce standard mortgage application and appraisal reports for the lending industry
- 1977 – Bank of America issues the first publicly traded pass-through certificate that does not rely on government backing
- 1981 – Freddie Mac introduces a mortgage swap program by which lenders can trade loans for interest in participation certificates

Secondary Market Chronology, cont.



- 1987 – First Collateralized Debt Obligation (CDO) issued by Imperial Savings Association. During the '90s, they become the fastest growing sector of the securities market.
- 1987 – Fannie Mae issued the first Real Estate Mortgage Investment Conduit (REMIC)
- 1990 – Traditional mortgage powers like Citibank and Countrywide, along with corporate giants like Merrill Lynch and Sears became more active in the secondary market, bypassing the traditional process of Fannie Mae and Freddie Mac and creating what would become known as “Private Label Securities.”

Secondary Market Chronology, cont.



- 1991 – Secondary market for conventional mortgages exceeds \$800 billion.
About \$3 trillion in mortgage securities are traded worldwide.
- 1997 – The first Credit Default Swap (CDS) is introduced by JP Morgan.
- 1998 – Originations topped \$1 trillion for the first time.
- 2001 – Originations topped \$2 trillion
- 2003 – Originations peak at \$3.8 trillion

Secondary Market Chronology, cont.



- 2006 — Home values in most areas peak and start to decline.
- 2007 – Delinquencies in subprime market begin to increase and large subprime lenders begin to fail, triggering a loss of confidence in the MBS market. Fear spreads and capital begins to freeze.
- 2008 – Credit markets are in turmoil. The market for private label securities dries up, along with many mortgage products. Fannie Mae, Freddie Mac and the US government programs for FHA loans became the main outlet for mortgages.

Secondary Market Chronology, cont.



- 2008 – Originations = \$1.5 trillion
- September 8, 2008 – The US Government placed Fannie Mae and Freddie Mac under government conservatorship, making the government responsible for the \$6 trillion in mortgages that the agencies owned or guaranteed.
- 2009 – Present
 - Origination has held consistently around 1.3 trillion
 - Discussion and activity has focused on two themes:
 - What should become of the GSEs
 - How to bring private capital back into the secondary mortgage market

Risks in Fixed-Income Investment



Types of Fixed Income Risk

Interest rate	• As rates go up, prices go down.
Credit	• Will the issuer repay?
Inflation	• How much will \$1 buy in 1 or more years?
Reinvestment	• At what rate will you reinvest interim cash flows
Call/prepayment	• Will debt be retired before maturity date?
Liquidity	• How quickly can you sell the security?
Payment delay	• How long does it take for security holder to receive P&I payments from issuer?

The Yield Curve

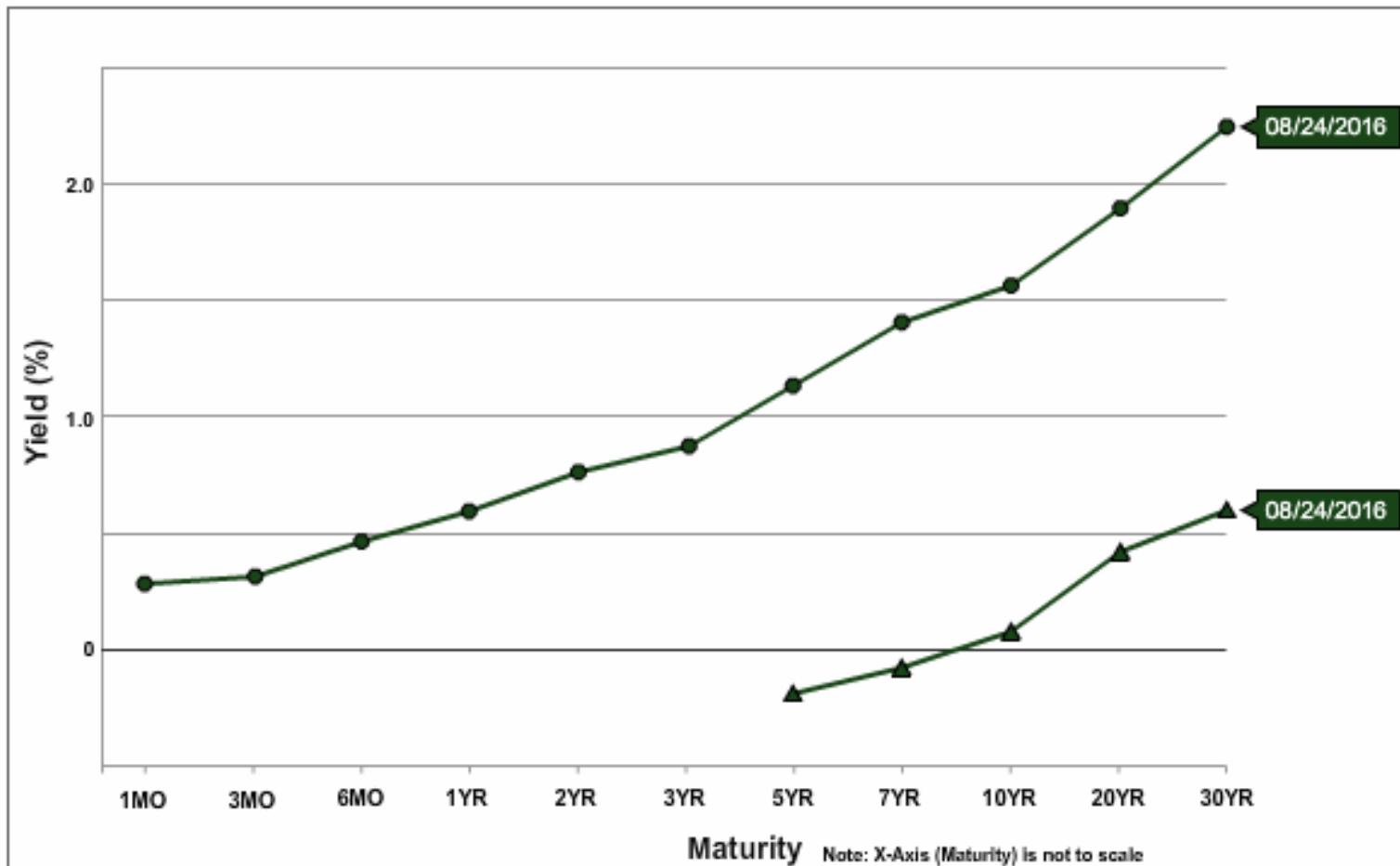


The Yield Curve



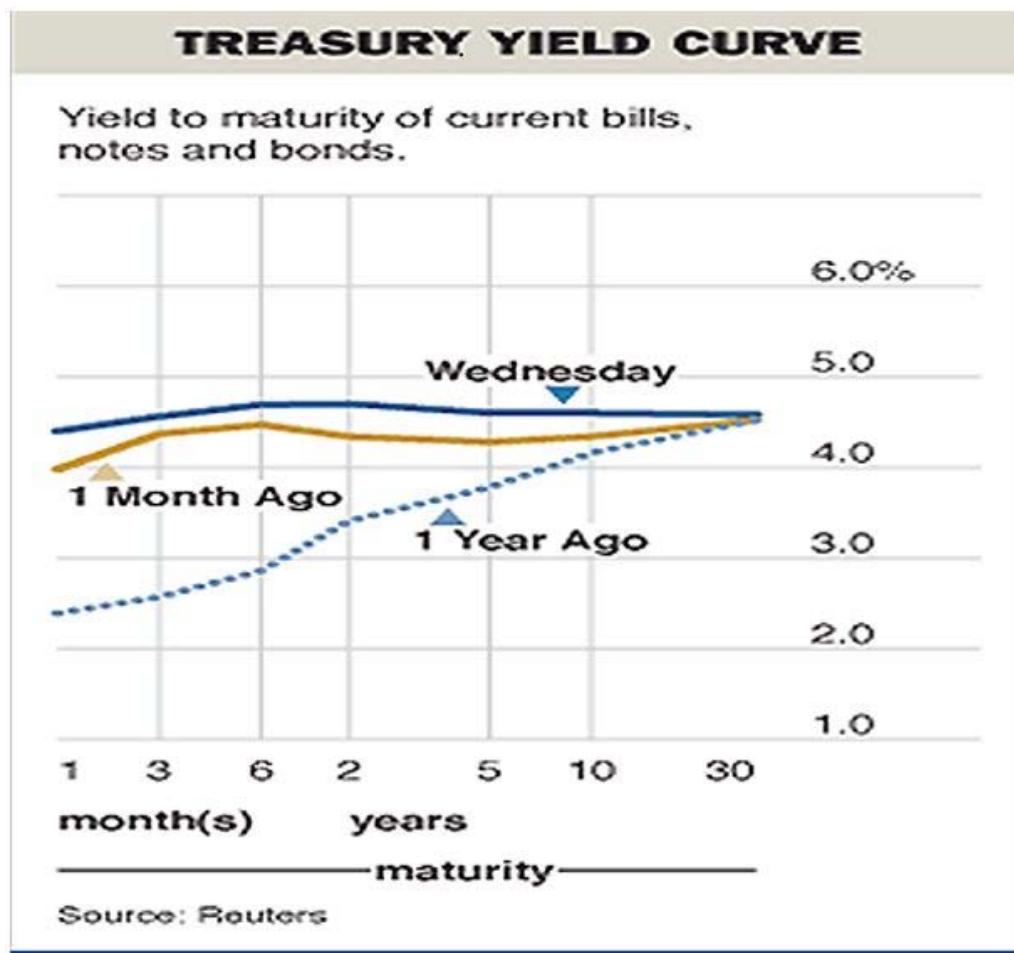
- What is it?
- Relationship to mortgage-backed securities
- What do we mean by a flat or inverted yield curve?

Treasury Yield Curve



Source: <http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/Historic-Yield-Data-Visualization.aspx>

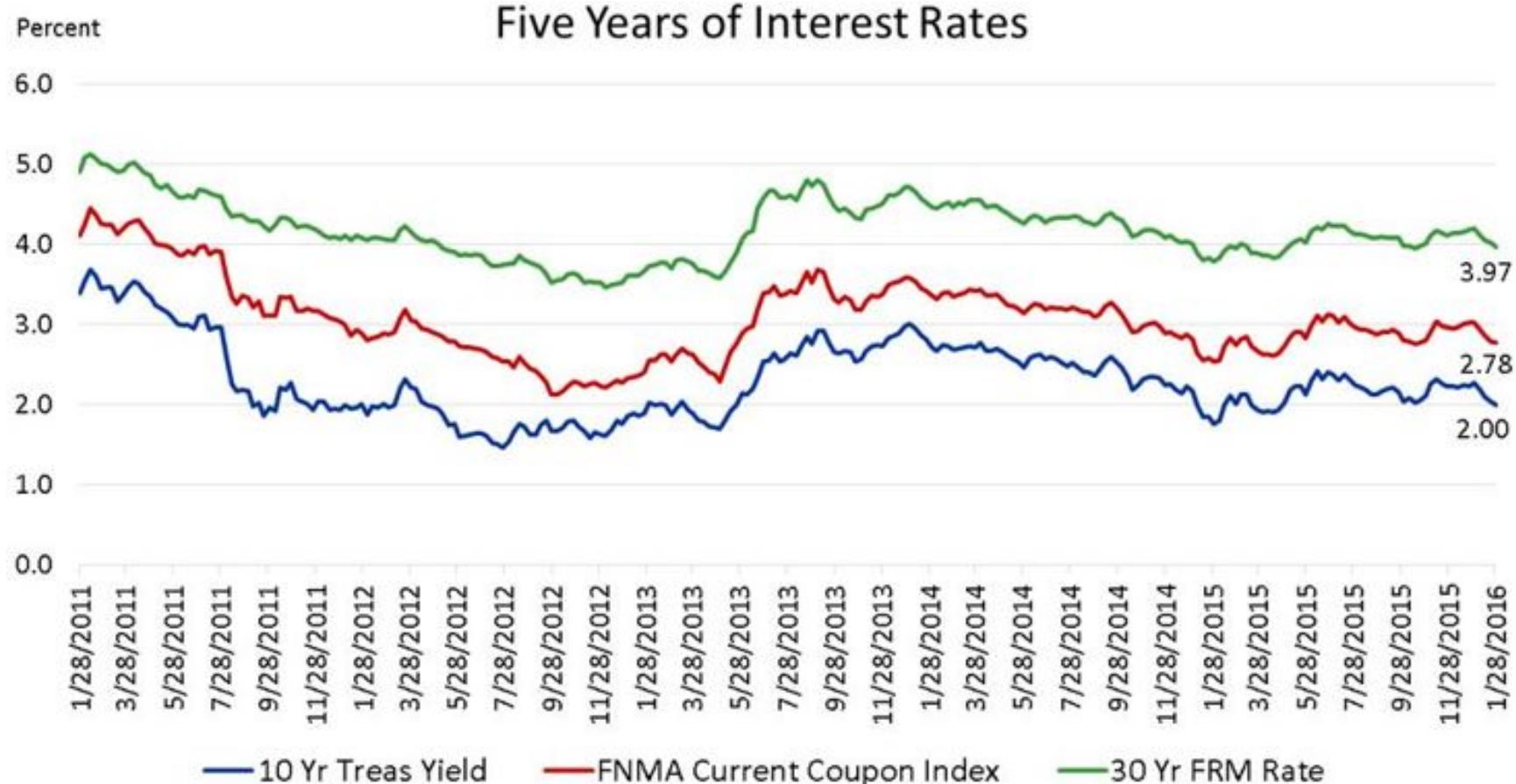
Treasury Yield Curve: Inverted



Source: <http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/Historic-Yield-Data-Visualization.aspx>

Spread between Mortgage Market and Treasury Rates

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Source: MBA Chart of the Week

Derivatives



- A derivative is a financial contract whose payment terms are derived from the performance of some underlying asset or group of assets.

Collateralized Mortgage Obligations

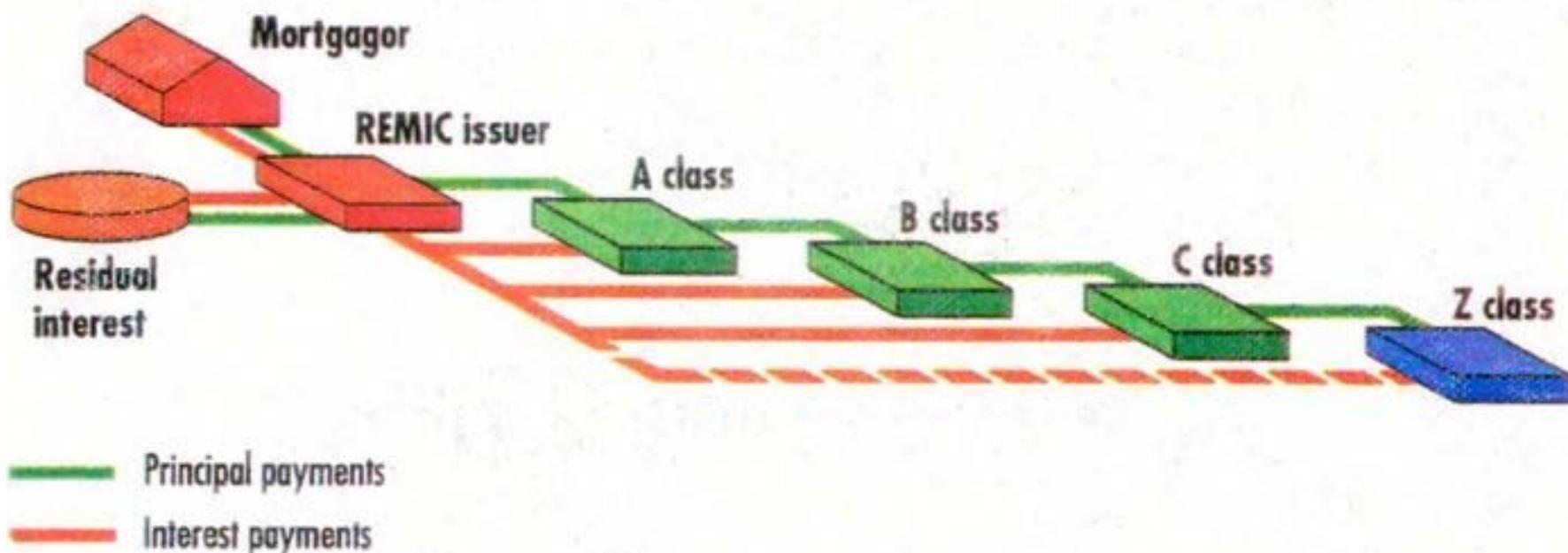


Collateralized Mortgage Obligation (CMO)



- Pooling of mortgages
- Credit enhancement
- CMOs versus REMICs
- Tranches

EXHIBIT 1
Basic REMIC structure

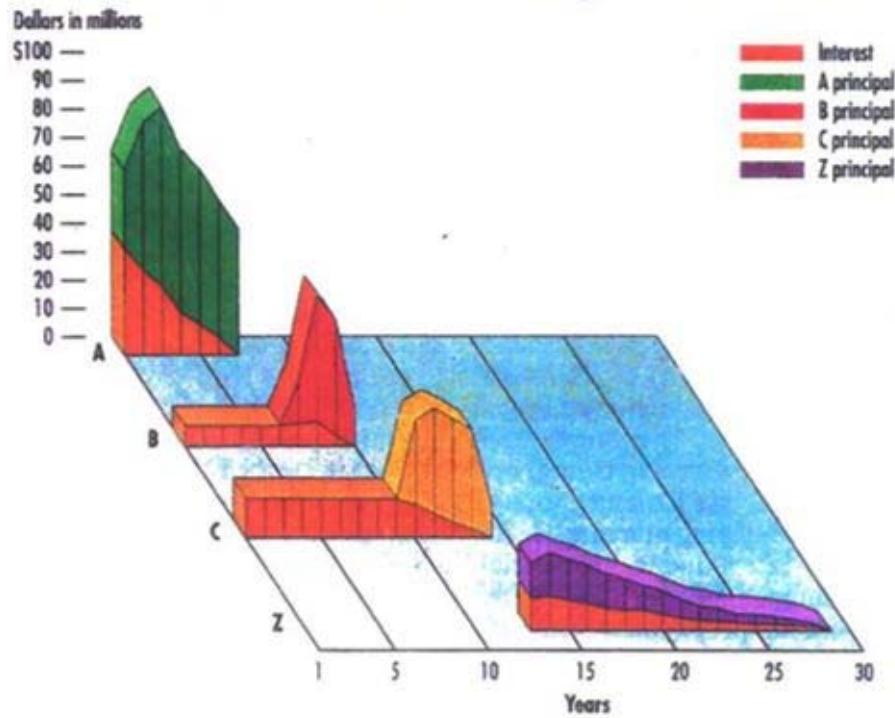


Exhibits 1 through 5 are reprinted with permission from *Investing in REMIC Securities*, Fannie Mae, 1990.

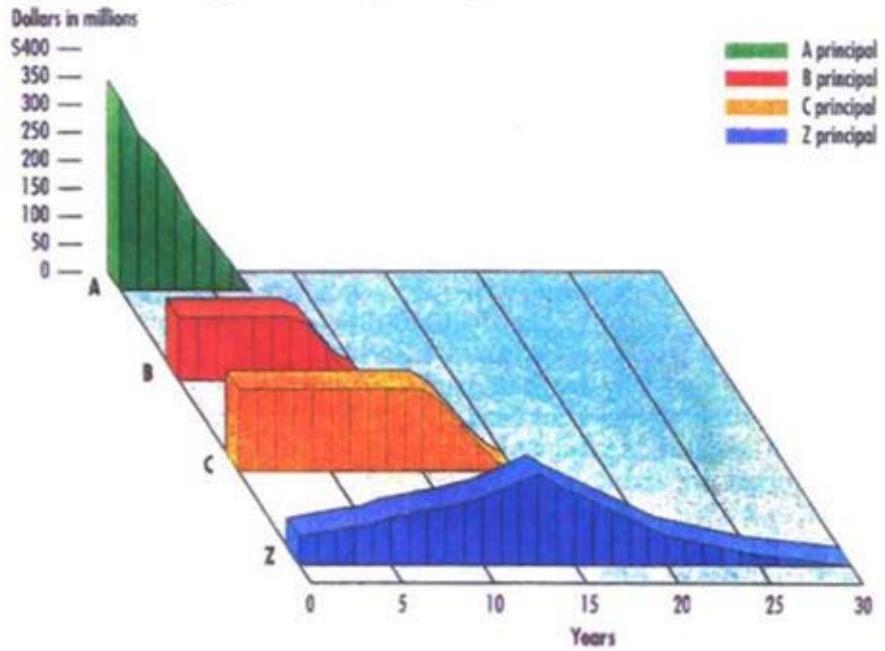
Allocation of Cash Flows Among REMIC Classes

EXHIBIT 2

Allocation of cash flows among REMIC classes



Outstanding REMIC principal balances



Building a PAC-principal Cash Flows

EXHIBIT 3
Building a PAC—principal cash flows

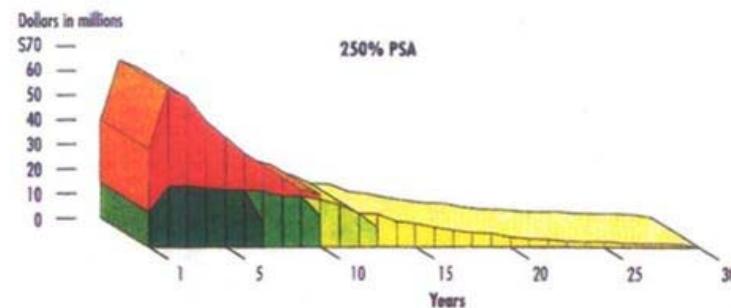
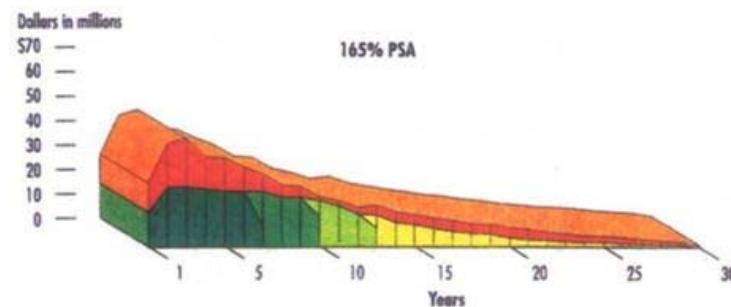
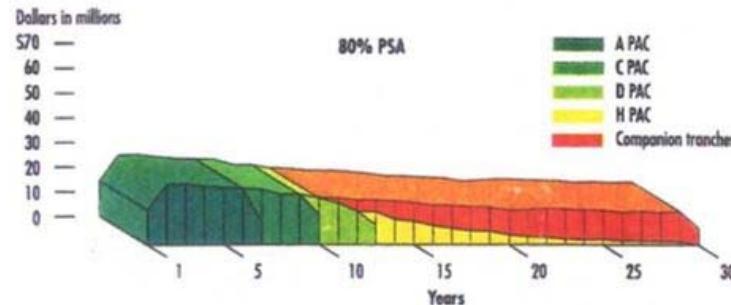


EXHIBIT 4
TAC REMIC structure—principal cash flows

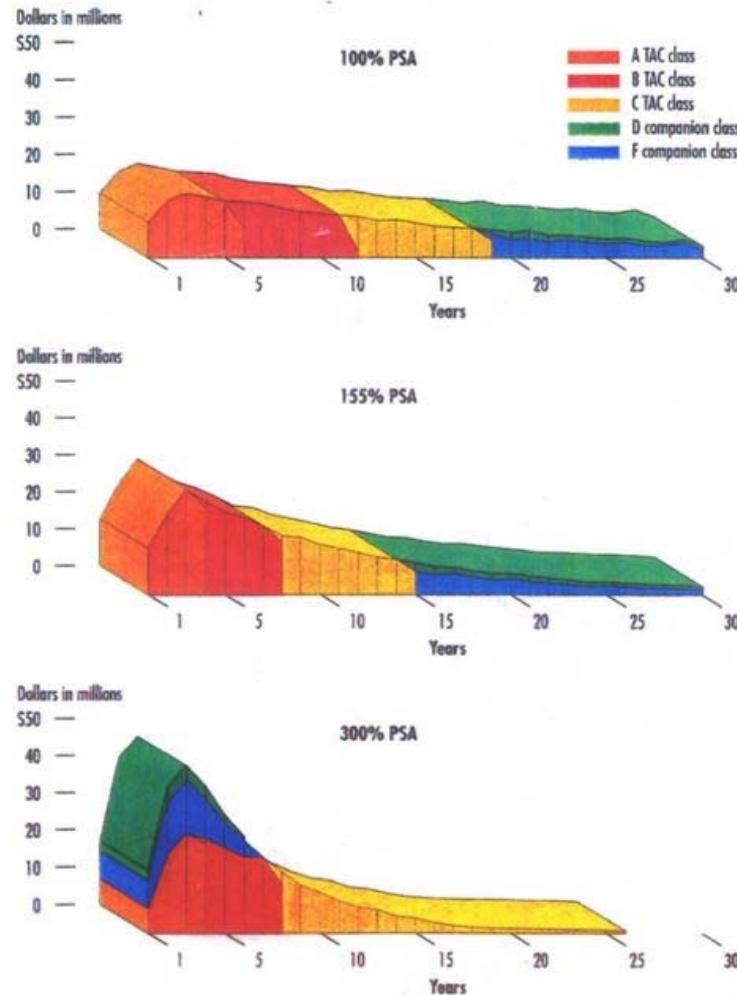
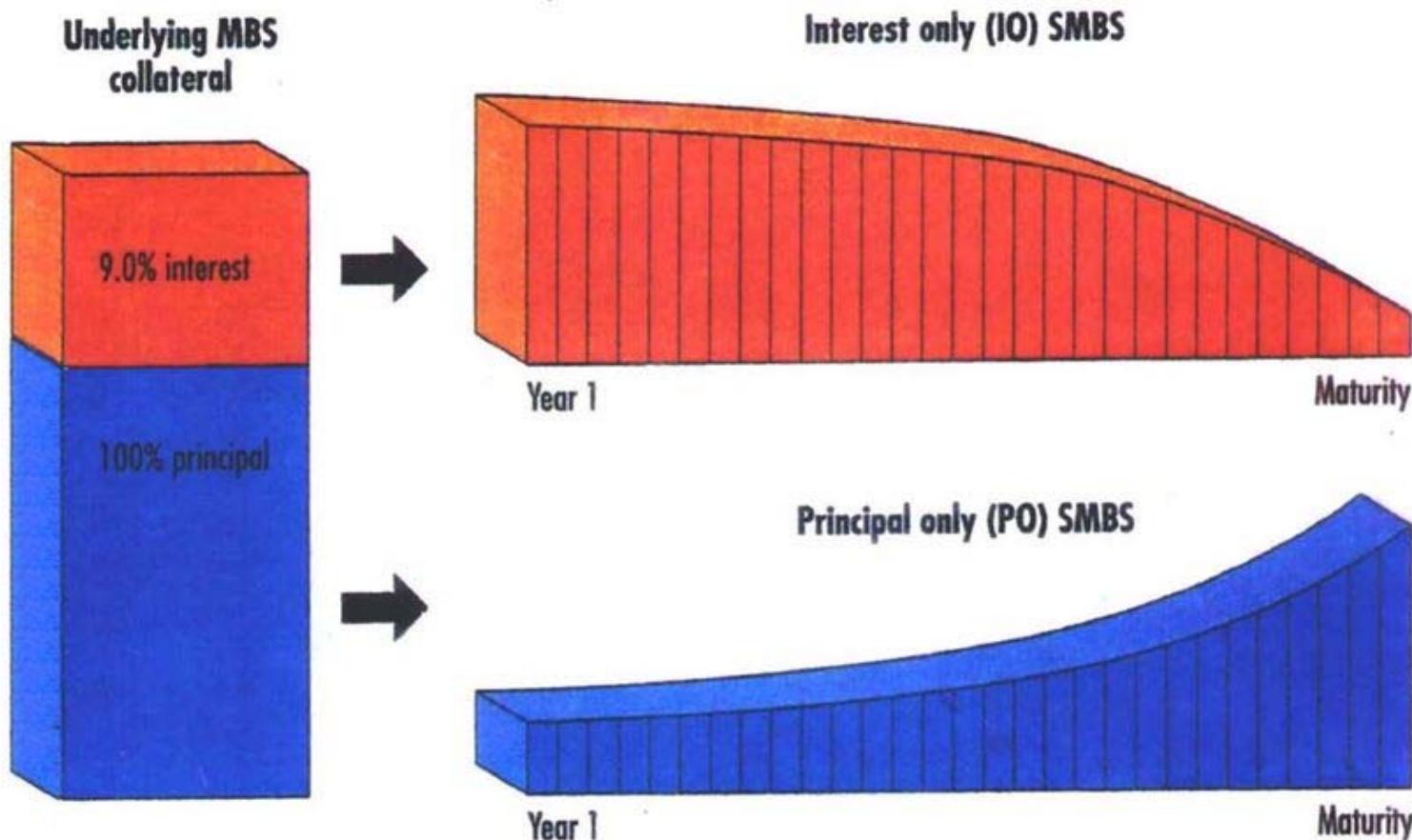


EXHIBIT 5

Stripped MBS (SMBS)

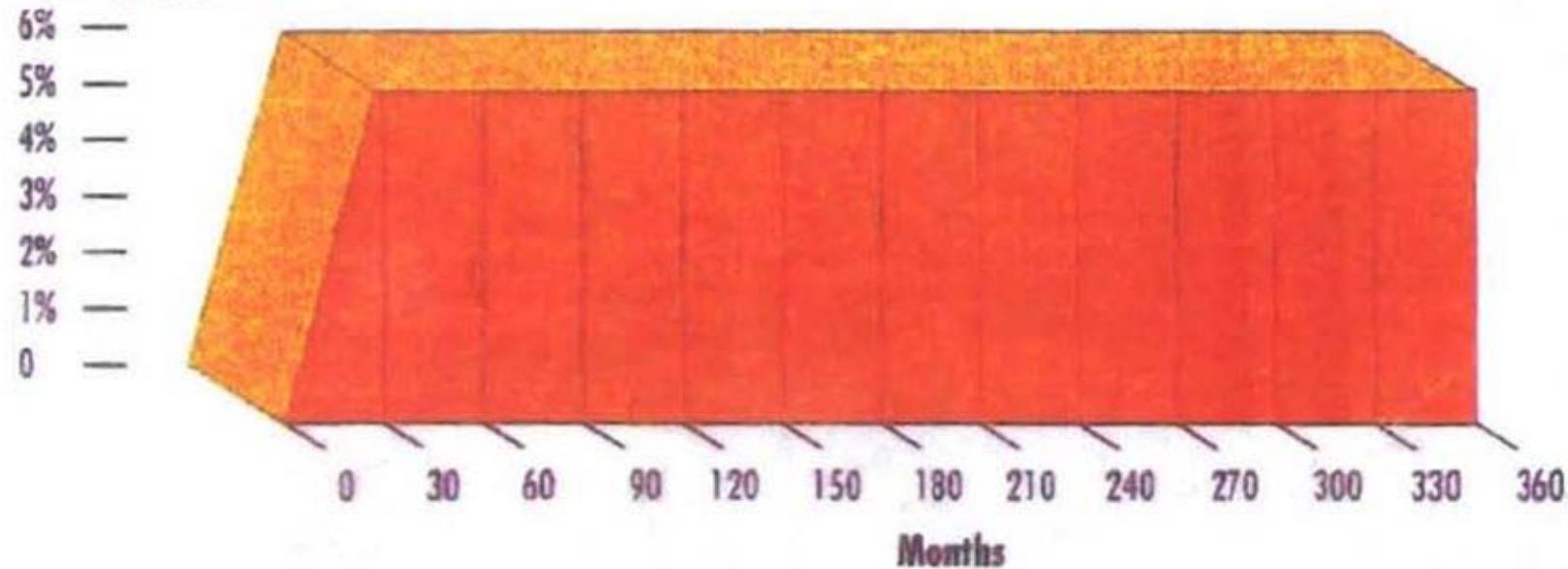


PSA PREPAYMENT SPEEDS



PSA curve

Percent prepayment



Simple REMIC



<u>Class</u>	<u>Amount</u>	<u>Expected Life</u>
A	\$10 mm	2 years
B	\$20 mm	5 years
C	\$20 mm	7 years
D	\$50 mm	10 years

<u>\$100 mm</u>		

Tranches



- Principal-only
- Interest-only
- Planned Amortization Classes (PAC)
- Floating rate class
- Accrual class
- Residuals

Participants

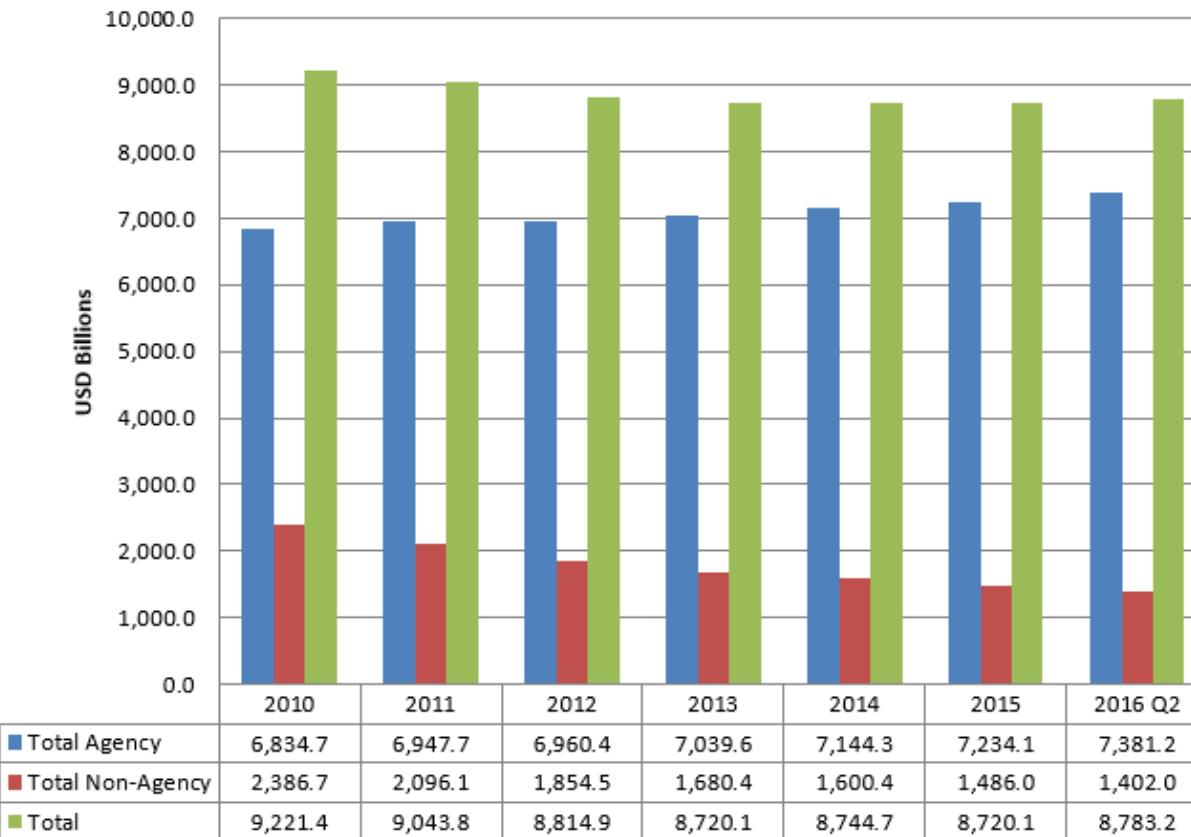


- Originators
- Issuers
- Wall Street
- Rating agencies
- Document custodians
- Trustees
- Mortgage insurers
- Banks
- Investors

U.S. Mortgage-Related Securities Outstanding

MBA
EDUCATION

US Mortgage-Related Securities Outstanding



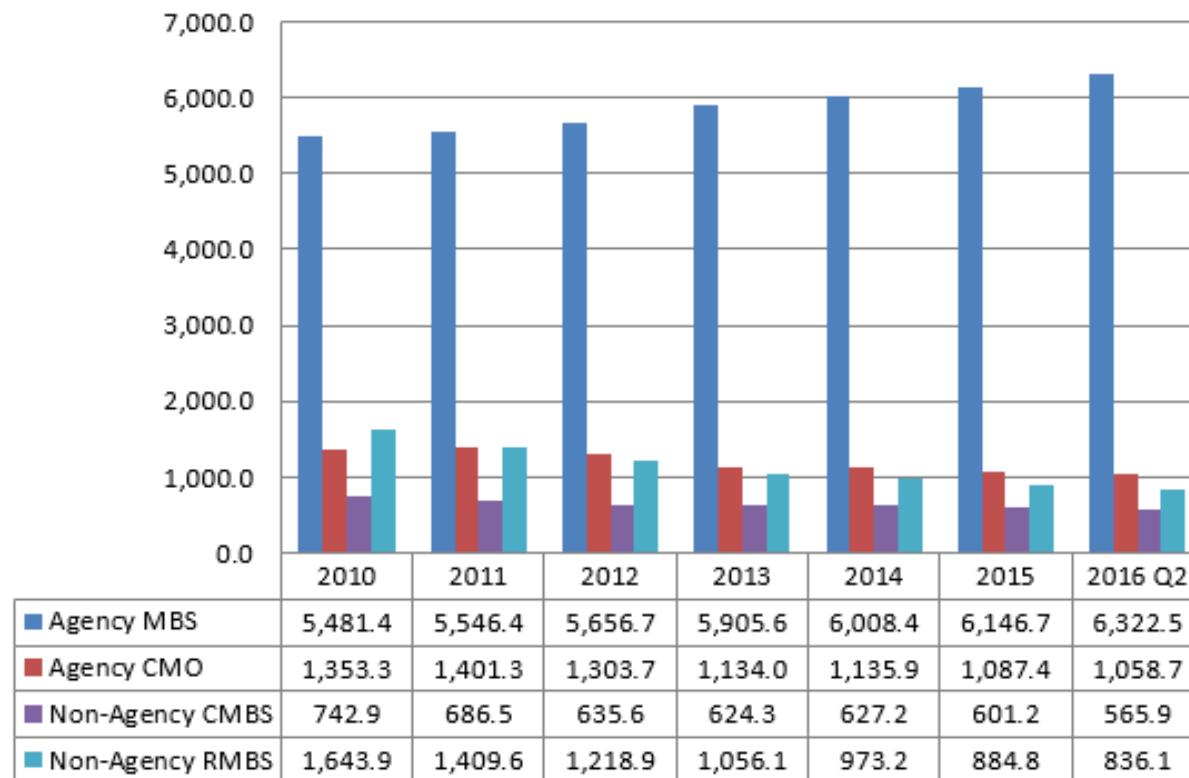
* Includes GNMA, FNMA, and FHLMC mortgage-backed securities, CMOs, and private-label MBS/CMOs.

Source: GSEs, Thomson Reuters, Bloomberg (SIFMA Securities Industry and Financial Markets Assoc.)

U.S. Mortgage-Related Securities Outstanding

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US Mortgage-Related Securities Outstanding (cont.)

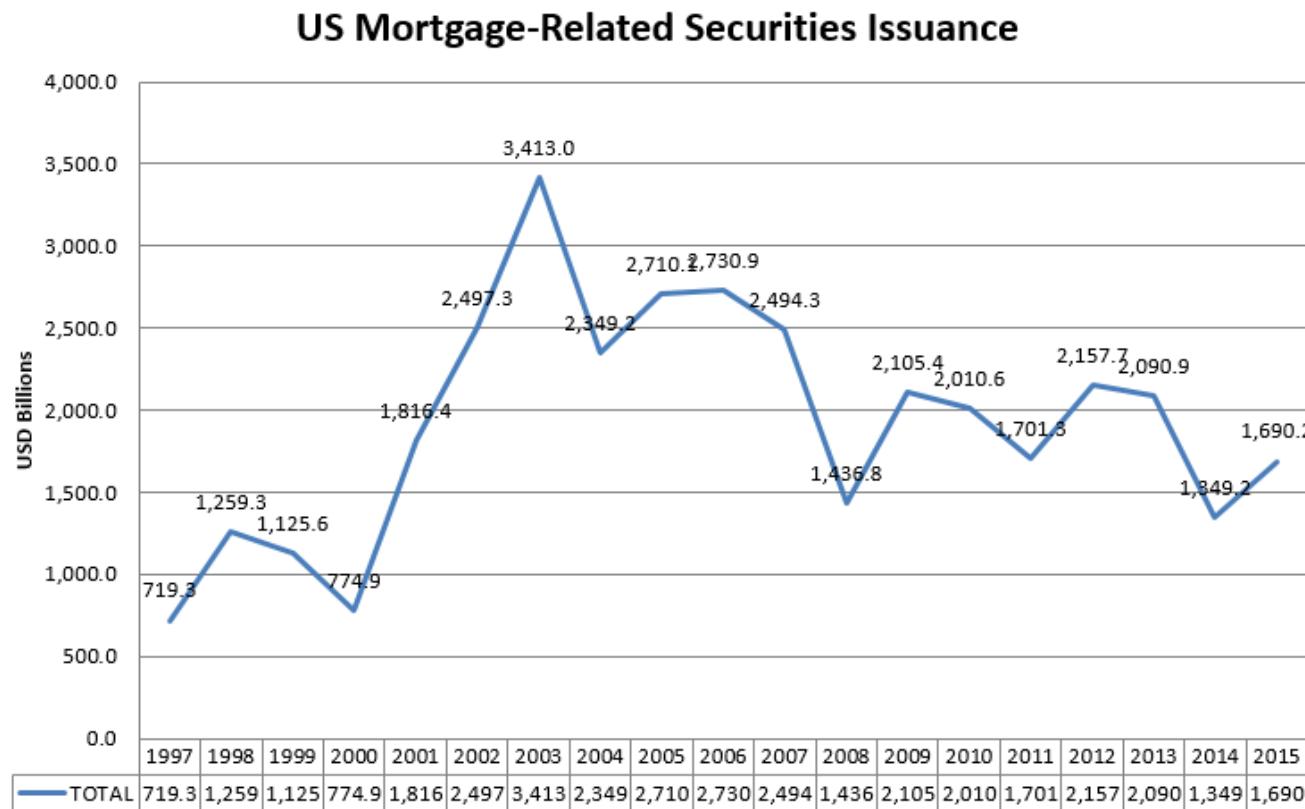


* Includes GNMA, FNMA, and FHLMC mortgage-backed securities, CMOs, and private-label MBS/CMOs.

Source: GSEs, Thomson Reuters, Bloomberg (SIFMA Securities Industry and Financial Markets Assoc.)

U.S. Mortgage-Related Securities Issuance, 1997-2015

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Source: SIFMA.org <http://www.sifma.org/research/statistics.aspx>

Advantages to the Issuer



- Increase in capital
- Better execution
- Simplicity
- Risk-based capital treatment

- High returns
- Protection from prepayment risk
- Protection from interest rate risk
- Protection from reinvestment risk
- Better hedging instruments

Advantages to the Investor



- Guaranteed investment
- Timely payment of P&I
- Geographic dispersion
- Liquidity
- Standardization

Other Structures



- CMO Replacements and Market Support – Past Perspective
- Replacements: Asset Backed Securities (“ABS”)
 - HELOCs
 - Non-prime
 - Credit cards
- Market Support: Supply and demand for structured cash flows; demand for mortgage credit

- Specialty pools are coming back
- Dealers quoted payups
 - Low WAC Pools: Gross WAC (weighted average coupon) 25 bps over pool coupon
 - Low Loan Balance: Loan amounts less than or equal to \$85K
 - Moderate Loan Balance: Loan amounts 85K to \$110K
 - High LTV, expanded approvals
 - CRA pools: scrubbed for geographic and income levels to qualify for CRA
 - Geographic-specific pools
 - Trade as swap for pickups or outright

Advantages

- Pricing is based on loan level characteristics and performance data
- Can be added to other products to increase deal size
- Pricing is all-in and you keep agency LLPAs (loan-level pricing adjustment)
- Can improve bottom line

Disadvantages

- Agency AU reps lost
- Agency AU can approve loans with mortgage rates that are not eligible
- AU doc and appraisal relief must be identified
- Delivery is less efficient; due diligence is performed
- Changes profile of loans sold to agencies
- Loans may not be eligible for agency streamlining

Future of MBS



MBA's Recommendations for the Future Secondary Mortgage Market



- Common, Fungible GSE Security
- Up-Front Risk Sharing
- Small Lender Access
- Expanding Credit Access
 - Transparent Credit Boundaries
 - Clearer Reps and Warranties
- Central Securitization Platform

Review



- Definitions
- Secondary Market Chronology
- Risks in fixed income investment
- The yield curve
- Derivatives
- Collateralized mortgage obligations
 - CMOs
 - REMICSS
 - Tranches

Questions?

The information contained in this presentation is for general informational purposes only and is not intended and should not be construed as legal advice. Please consult an attorney for advice and assistance with your specific legal questions and situations.

Evaluations

Your feedback matters! Please complete the evaluation for this session and hand it in to your facilitator or instructor. It is the last page in this section of your notebook before the next tab.

Disclaimer



This publication is designed to present, as simply and as accurately as possible, a general explanation of processes and functions within the mortgage industry. It should be noted that the information presented is not all-inclusive. Forms, regulations and overall processes may change because of changes within the industry. This publication should not be used as a substitute for referring to the applicable rules and regulations and is distributed with the understanding that the publisher is not engaged in rendering legal or other personalized professional service. If legal or other expert assistance is required, the services of a competent professional should be sought.

Art & Science of Pricing

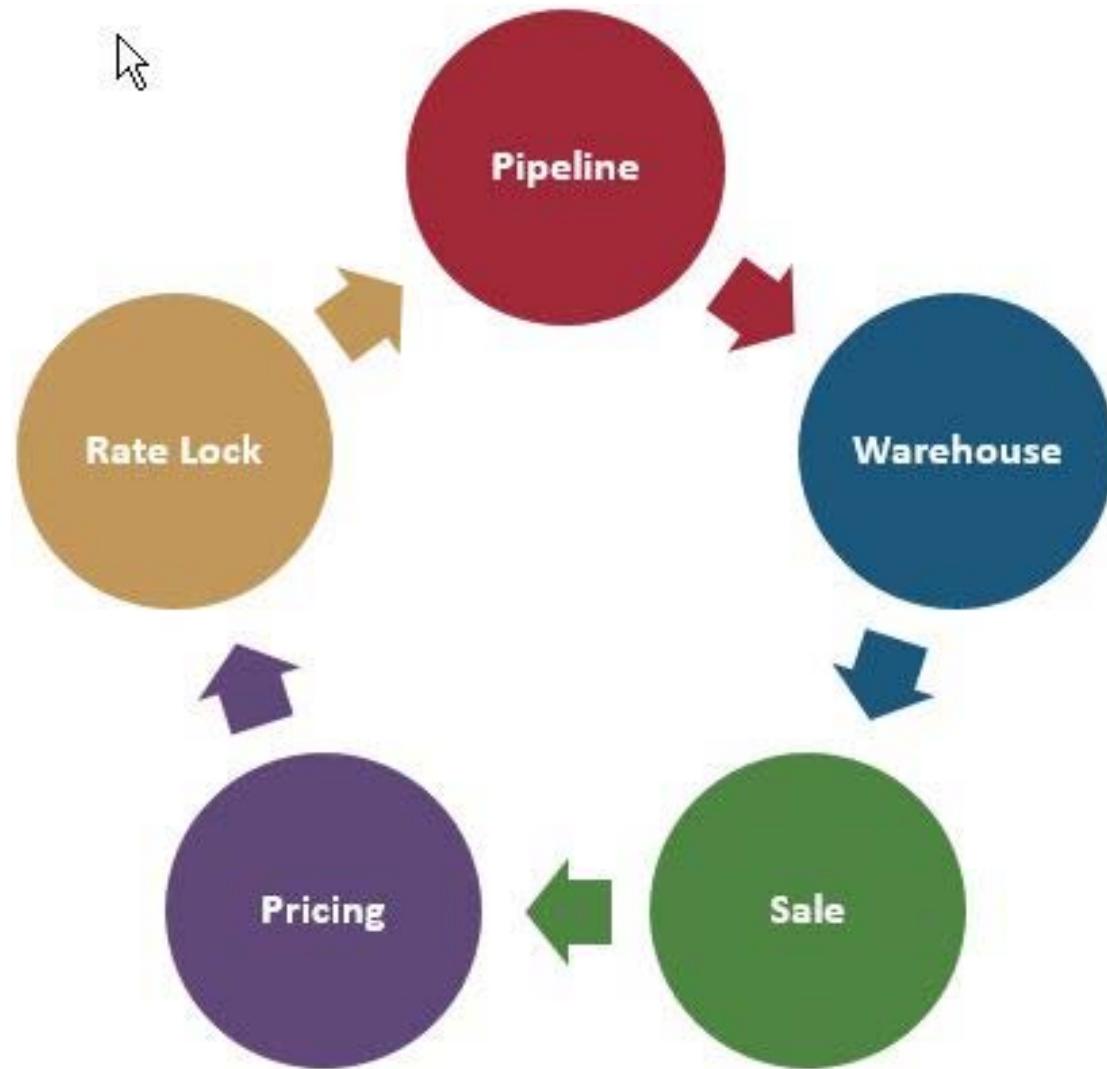


- Components of an effective pricing policy
- How rates are set
- Rate lock options
- Looking at competition
- Determining best execution
- Best efforts vs. mandatory commitments

Pricing Overview and Key Terms



Life Cycle of a Residential Loan – Pricing



Pricing (some subjective issues)



- Market Analysis
- Competition
- Rate Setting

- “Street” feedback
- Wall Street Journal/Web
- Latest Washington update
- Your analysis

Market Analysis: What is YOUR Analysis?



- Hot Topics
- Latest Washington update
- Strategic Implications Illustration (CRA)
- Open discussion
 - *Future of Fannie & Freddie?*
 - *GSE Single Security and Common Securitization Platform*
 - *Regulatory Issues?*
 - *What keeps you up at night?*

Know Your Competition



- Independent review
- Regular (weekly?)
- Knowing peer group
- Track over long time periods

- Risk-based pricing adjustments
 - Conforming vs. Nonconforming
 - Rate lock types
- SRPs – released or retained pricing
- Best execution
- Other structures:
 - FHLB – MPP & MPF, MPF 35, MPF Xtra
 - FHLB – MPF Direct (Jumbo), MPF Government (FHA / VA)
 - REITs
 - Best efforts vs. mandatory commitments

Nonconforming/Nonconventional Products



- FHA/VA
- Jumbo
- Non-Prime (Sub-Prime)
- Other (Reverse, Rural, etc.)

Rate Lock



Rate Lock Types



- Float
- Lock
- Lock w/Float Down Option
- Extended Rate Lock

Servicing Released vs. Servicing Retained

Servicing Released vs. Servicing Retained



- Customer issues
- Cash vs. annuity
- FAS 133/149/156 (FASB ASC 815, 820, 860 and others)
- Platform capability
- Cross-sell
- ... Who really owns the customer?

Best Execution



Best execution is a key component used in:

- Pricing
- Hedging
- Pooling and Delivering Loans

Best execution review

- Following are sample prices/MBS levels used to describe how rates are set by the Secondary Marketing Dept.
- Data is for GSE (Fannie/Freddie/FHLB) – cash (30 days) & MBS pricing – 30yr, 4.0% note rate – January 10th, 2017

(Levels used in examples are for illustration only and not made as an endorsement or recommendation)

Best Execution – 30 yr. – 4.0%

Step 1: Pricing Levels / Discovery



<u>Cash - (30 day)</u>	
Freddie Mac	101.065
Fannie Mae	100.8366
FHLB / MPF	101.411 *
<u>MBS - (1 month out, February 2017) (Note)</u>	
Freddie Mac (3.5 coupon)	102 14/32
Fannie Mae (3.0 coupon)	99 13+/32

Note: In real world, would use “interpolated” MBS – using March/April levels

** FHLB uses business days ... need to interpolate here also*

Freddie 30yr Note Rate January 10, 2017



Rate Sheet Results

Page 1 of 2

These current Freddie Mac prices for Servicing Retained/CTOS Mandatory pricing were based on the following criteria:

Contract Option:	Mandatory	Servicing Fee Rate:	0.250%
Servicing Option:	Retained/CTOS	Remittance Option:	Gold

Postsettlement Delivery Fees and Cash Adjustor for Relief Refinance Mortgages (if applicable) are not included in the Contract Product prices displayed.

Valid as of 01/10/2017 10:54:14 AM EST

30-Year Fixed Rate Conventional Note Rate Percent	Contract Period: 15 day	Contract Period: 30 day	Contract Period: 60 day
2.750%	90.895	90.831	90.495
2.875%	92.018	91.954	91.611
3.000%	93.148	93.084	92.736
3.125%	94.205	94.141	93.788
3.250%	95.987	95.904	95.661
3.375%	96.938	96.855	96.606
3.500%	97.873	97.790	97.536
3.625%	98.745	98.662	98.404
3.750%	99.557	99.474	99.212
3.875%	100.288	100.185	99.967
4.000%	101.168	101.065	100.844
4.125%	101.957	101.854	101.631
4.250%	102.659	102.556	102.327
4.375%	103.244	103.141	102.899
4.500%	103.910	103.787	103.683
4.625%	104.622	104.500	104.378
4.750%	105.347	105.225	105.092
4.875%	105.854	105.732	105.595
5.000%	106.259	106.117	106.070
5.125%	106.963	106.821	106.772
5.250%	107.594	107.452	107.401
5.375%	108.005	107.863	107.811
5.500%	108.373	108.231	108.175
5.625%	108.326	108.164	108.105
5.750%	108.875	108.713	108.651

<https://sell.freddiemac.com/dispatch>

1/10/2017

Fannie 30yr Pass-Through January 10th, 2017

GRAB
99<GO> Excel, 100<GO> Cropping, 200<GO> Launchpad , <Menu> to Return
97) Settings - Page 1/1 Fannie Mae

Required Net Yields 10-Year FRM A/A 15-Year FRM A/A 20-Year FRM A/A 30-Year FRM A/A

US Mtge-30-Year FRM A/A
Fannie Mae Zoom - 100%

01-10-17 30-YEAR FIXED RATE <A/A> PREM/DISC 08:15AM EST		10 DAY		30 DAY		60 DAY		90 DAY	
PASS-THROUGH	YLD	PRICE	YLD	PRICE	YLD	PRICE	YLD	PRICE	
5.250	-----N/A-----	-----N/A-----	-----N/A-----	-----N/A-----	-----N/A-----	-----N/A-----	4.328	107.8190	
5.125	4.192	107.9623	4.204	107.8541	4.226	107.6583	4.253	107.4116	
5.000	4.120	107.5218	4.132	107.4136	4.154	107.2179	4.182	106.9712	
4.875	4.067	106.9157	4.079	106.8075	4.101	106.6118	4.128	106.3651	
4.750	4.022	106.2290	4.034	106.1208	4.056	105.9251	4.084	105.6784	
4.625	3.969	105.6163	3.984	105.4841	4.010	105.2545	4.042	104.9764	
4.500	3.902	105.1324	3.917	105.0001	3.943	104.7706	3.974	104.4925	
4.375	3.852	104.4918	3.867	104.3595	3.893	104.1300	3.924	103.8519	
4.250	3.811	103.7658	3.826	103.6335	3.853	103.4040	3.884	103.1259	
4.125	3.766	103.0789	3.782	102.9466	3.808	102.7171	3.840	102.4390	
4.000	3.709	102.5049	3.724	102.3727	3.750	102.1431	3.782	101.8650	
3.875	3.666	101.7947	3.681	101.6625	3.708	101.4329	3.740	101.1548	
3.750	3.637	100.9688	3.653	100.8366	3.679	100.6070	3.712	100.3289	
3.625	3.609	100.1341	3.625	100.0018	3.652	99.7723	3.684	99.4942	
3.500	3.570	99.3971	3.587	99.2529	3.613	99.0354	3.644	98.7730	
3.375	3.534	98.6328	3.551	98.4886	3.577	98.2711	3.608	98.0087	

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 6900 Singapore 65 6212 1000 U.S. 1 212 316 2000 Copyright 2017 Bloomberg Finance L.P.
SN 790144 H016-2315-0 10-Jan-17 10:39:46 EST GMT-5:00



Mortgage Partnership Finance Archived Origination Fee Schedule

[Print](#)

Product: FX30

Remittance Type: Actual/Actual

PFI Number: All - Non Specific PFI

Indicative as of 1/10/2017 8:25:46 AM CT

Note: Data shown is %. All Days are Calendar Days.

Commitment Term	5 Days	15 Days	30 Days	45 Days	60 Days
Last Funding Date	01/17/2017	01/25/2017	02/09/2017	02/24/2017	03/13/2017
Schedule Code	01101700011	01101700012	01101700013	01101700014	01101700015
Note Rate (DC Rate)	Premium/Discount(Agent Fee)				
3.0000%	-5.43072053	-5.47858871	-5.56281138	-5.64703125	-5.75093750
3.1250%	-4.38044350	-4.42940496	-4.51542333	-4.60266276	-4.71089844
3.2500%	-3.33016647	-3.38022122	-3.46803527	-3.55829428	-3.67085938
3.3750%	-2.27988944	-2.33103747	-2.42064722	-2.51392579	-2.63082032
3.5000%	-1.46336240	-1.51560372	-1.60700916	-1.70330730	-1.82453125
3.6250%	-0.68248066	-0.73466251	-0.82582778	-0.92420573	-1.04914063
3.7500%	0.09840109	0.04627869	-0.04464640	-0.14510417	-0.27375000
3.8750%	0.87928283	0.82721990	0.73653497	0.63399739	0.50164062
4.0000%	1.55360208	1.50159861	1.41115385	1.30653645	1.17046875
4.1250%	2.20854829	2.15805345	2.07048757	1.96705078	1.83160156
4.2500%	2.86349450	2.81450830	2.72982128	2.62756510	2.49273437
4.3750%	3.51844072	3.47096314	3.38915500	3.28807942	3.15386718
4.5000%	4.11838693	4.07241799	3.99348872	3.89359375	3.76000000
4.6250%	4.70727717	4.66386983	4.58976621	4.49411458	4.36546875
4.7500%	5.29616741	5.25532168	5.18604370	5.09463541	4.97093750

TBA Price Indications January 10th 2017



GRAB

TBA		Actions		Settings		Fixed Income Tradin	
10:41							
		2.5	3.0	3.5	4.0		
FNCL	Jan	95-09 / 09+	99-18+ / 19	102-21+ / 22	105-09+ / 10		
	Feb	95-04+ / 05+	99-13+ / 14+	102-17 / 17+	105-05+ / 06+		
	Mar	94-31+ / 00+	99-07 / 08	102-10 / 11	104-30+ / 31+		
	Jan/Feb	04 ¹ / ₄ / 04 ¹ / ₄	04 ² / ₄ / 04 ² / ₄	04 ⁵ / ₄ / 04 ⁵ / ₄	04 ¹ / ₄ / 04 ¹ / ₄		
	Feb/Mar	05 ¹ / ₄ / 05 ¹ / ₄	06 / 06 ¹ / ₄	06 ² / ₄ / 06 ² / ₄	06 ⁵ / ₄ / 06 ⁵ / ₄		
FGLMC	Jan	95-04+ / 05	99-15 / 15+	102-18+ / 19	105-08 / 08+		
	Feb	95-00 / 01	99-10 / 11	102-14 / 14+	105-02 / 03		
	Mar	94-25 / 26	99-04 / 05	102-07 / 08	104-27 / 28		
	Jan/Feb	04 ¹ / ₄ / 04+	04 ⁵ / ₄ / 04 ⁵ / ₄	04 ² / ₄ / 04 ² / ₄	05 ¹ / ₄ / 06		
	Feb/Mar	06 ² / ₄ / 07	06 / 06 ¹ / ₄	06 ³ / ₄ / 06 ³ / ₄	07 / 07 ¹ / ₄		
G2SF	Jan	97-00 / 00+	101-05+ / 06+	103-25 / 25+	105-24 / 24+		
	Feb	96-27 / 28	101-00+ / 01+	103-20+ / 21+	105-19+ / 20+		
	Mar	96-21+ / 22+	100-27 / 28	103-15 / 16	105-15 / 16		
	Jan/Feb	05 / 05 ¹ / ₄	04 ² / ₄ / 04 ² / ₄	04+ / 04 ⁵ / ₄	04 ¹ / ₄ / 04 ¹ / ₄		
	Feb/Mar	05 ¹ / ₄ / 05 ¹ / ₄	05+ / 05 ² / ₄	05 ¹ / ₄ / 05 ² / ₄	04 ¹ / ₄ / 04 ¹ / ₄		
Benchmarks							
Treas 2Y	100-03 ⁵ / ₄ / 03 ⁷ / ₄	1.192 / 188	- 00 ² / ₄	Treas 7Y	100-14 / 14+	2.182 / 180	- 01+/-
Treas 3Y	99-24 ² / ₄ / 25	1.454 / 452	- 00 ¹ / ₄	Treas 10Y	96-22+ / 23	2.378 / 376	- 03
Treas 5Y	100-18+ / 18 ² / ₄	1.878 / 876	- 00+	Treas 30Y	98-01+ / 02	2.974 / 973	- 09+/-

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Japan 61 3 3201 6900 Singapore 65 6212 1000 U.S. 1 212 316 2000 Copyright 2017 Bloomberg Finance L.P.
SN 790144 H016-2315-0 10-Jan-17 10:41:02 EST GMT-5:00

Pass-through	3.50%
SVG	.25
Guarantee Fee	.50 <i>(For Illustration only)</i>
<i>GF Buydown</i>	<u>(.25)</u>
Mortgage Note	<u>4.00%</u>
Price	102 14/32
Cash Price	102.43
Buy Down GF (4X1)	<u>(1.00)</u> <i>(Estimate of Buy Down factor)</i>
Adjusted Cash Price	<u>101.43</u> *

* NOTE – February MBS delivery is before cash date settlement – Partial offset: MBS Servicing value is higher.
Need to consider!

Pass-through	3.00%
SVG	.25
Guarantee Fee	.50 <i>(For Illustration only)</i>
<i>GF Buyup</i>	<u>.25</u>
Mortgage Note	<u>4.00%</u>

Price	99 13+/32 (99 27/64)
Cash Price	99.42
Buy up GF (4X1)	<u>1.00</u> <i>(Estimate of Buy up factor)</i>
Adjusted Cash Price	<u>100.42</u> *

* NOTE – February MBS delivery is before cash date settlement – Partial offset: MBS Servicing value is higher.
Need to consider!

➤ Cash Delivery

- Freddie Cash 101.065
- Fannie Cash 100.8366
- FHLB Cash 101.411

➤ MBS Delivery

- Freddie PC **101.43**
- Fannie MBS 100.42

In the real world ... you need to use YOUR negotiated pricing to determine true “Best Execution”

- Recourse/Limited Recourse
 - Especially with FHLB MPF program
- Live Pricing
 - Agencies are becoming more aggressive with cash pricing
 - Direct Agency vs. Bloomberg (Direct Better!)
 - *Fannie – Whole Loan PE, Freddie – freddiemac.com*
 - *Affinity partnerships/alliances*
- Tolerance
 - favors cash execution
- MBS ... Specialty Pools
 - (i.e., low WAC)

FHLB – MPF 35 Program – Quick Overview of Program



The MPF 35 product allows you to share the risks associated with home mortgage finance with your Federal Home Loan Bank (FHLBank). MPF 35 offers you, a Participating Financial Institution (PFI) the ability to originate, sell and service fixed-rate, conventional residential mortgage loans and receive a credit enhancement fee for your credit expertise. Your FHLBank manages the liquidity, interest rate, and prepayment risks of the loans while you manage the credit risk of the loans. The credit risk sharing feature of MPF 35 allocates any future loan losses, after equity and private mortgage insurance are depleted, between the PFI and its FHLBank.

Features

- Credit Enhancement Fees: A mutually agreed upon amount ranging from 7 basis points (0.07%) up to 14 basis points (0.14%) annualized on the outstanding Master Commitment balances made up of two components:
 - A fixed rate portion paid monthly beginning the month after delivery; and
 - A performance-based portion paid monthly beginning the 13th month after delivery after deducting any losses (up to the amount of the First Loss Account)
- Remittance Options: Actual/Actual, Actual/Actual Single Remittance, and Scheduled/Scheduled
- Servicing Fees: 25 basis points (0.25%) paid monthly

Credit Risk Sharing - How it works

Borrower equity and, for loans with an original loan-to-value ratio greater than 80%, private mortgage insurance are the initial layers to absorb losses. The MPF 35 credit structure has three additional layers of loss protection:

■ First Loss Account

The first layer of loss, called the First Loss Account or FLA, is absorbed by the FHLBank. The amount of the FLA is typically equal to 35 basis points (0.35%) of the funded amount of all the loans in a Master Commitment.

■ Credit Enhancement Obligation

Any losses in excess of the FLA are allocated to the second layer Credit Enhancement obligation, or CE, which is provided by the PFI. This loss protection amount is equal to the total credit enhancement for a Master Commitment minus the FLA. The PFI may choose to enter into an agreement with a third party, such as a supplemental mortgage insurer, to obtain coverage that would reduce their exposure to losses resulting from their CE obligation.

■ Excess Losses

Any loan losses that exceed the FLA and CE layers are absorbed by the FHLBank.

➤ Loan-Level Price Adjustment (LLPA) Matrix

- LLPAs are assessed based upon certain eligibility or other loan features, such as credit score, loan purpose, occupancy, number of units, product type, etc. Special feature codes (SFCs) that are required when delivering loans with these features are listed next to the applicable LLPAs. ***Refer to the Selling Guide, Eligibility Matrix, and your contracts with Fannie Mae to determine loan eligibility.***

➤ Pricing Guidelines for LLPAs

- All LLPAs are cumulative. The LLPAs apply to all loans that meet the stated criteria for the LLPA, unless otherwise noted or excluded.

Fannie Mae LLPAs Example Table: Mortgages with Subordinate Financing



Table 3: Mortgages with Subordinate Financing^{(4) (5)} (excluding MCM)

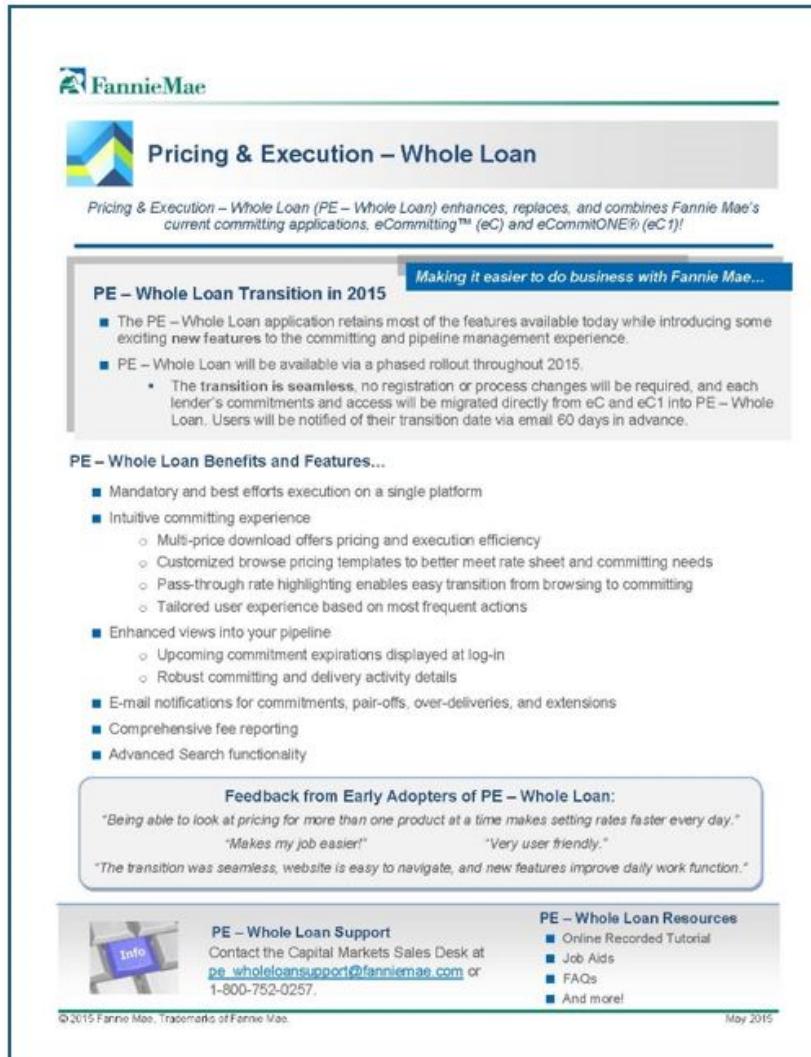
All mortgages where the CLTV exceeds the LTV	0.375%		SFC: N/A	
Applicable for all mortgages that meet these LTV and CLTV ranges and credit score requirements (the LLPAs below are in addition to the LLPA above)				
LTV Range	CLTV Range	Credit Score < 720	Credit Score ≥ 720	SFC
≤ 65.00%	80.01% – 95.00%	0.500%	0.250%	N/A
65.01% – 75.00%	80.01% – 95.00%	0.750%	0.500%	N/A
75.01% – 95.00%	90.01% – 95.00%	1.000%	0.750%	N/A
75.01% – 90.00%	76.01% – 90.00%	1.000%	0.750%	N/A
≤ 95.00%	95.01% – 97.00%	1.500%		N/A

(4) If the subordinate financing is a Community Seconds® loan, these LLPAs do not apply and the lender must use SFC 118. Refer to the *Eligibility Matrix* for maximum CLTV ratios for loans with Community Seconds.

(5) The LLPAs in this table are based on the CLTV, which does not include the undrawn portion of a home equity line of credit.

- Pricing & Execution – Whole Loan (PE – Whole Loan) enhances, replaces, and combines Fannie Mae's current committing applications, eCommitting™ (eC) and eCommitONE® (eC1).
- **PE – Whole Loan Benefits & Features**
 - Mandatory and best efforts execution on a single platform
 - Intuitive committing experience
 - Enhanced views into your pipeline
 - o Upcoming commitment expirations displayed at log-in
 - E-mail notifications for commitments, pair-offs, over-deliveries, and extensions
 - Comprehensive fee reporting
 - Advanced Search functionality

Fannie Mae Pricing & Execution – Whole Loan (PE – Whole Loan) cont.



The screenshot shows the Fannie Mae Pricing & Execution – Whole Loan website. At the top, there's a green header bar with the Fannie Mae logo and a blue navigation bar with the text "Pricing & Execution – Whole Loan". Below the header, a sub-header reads: "Pricing & Execution – Whole Loan (PE – Whole Loan) enhances, replaces, and combines Fannie Mae's current committing applications, eCommitting™ (eC) and eCommitONE® (eC1)!" A callout box on the right says "Making it easier to do business with Fannie Mae...". The main content area has a section titled "PE – Whole Loan Transition in 2015" which lists several key points about the transition. Below this is a section titled "PE – Whole Loan Benefits and Features..." which lists numerous features. At the bottom, there's a box titled "Feedback from Early Adopters of PE – Whole Loan:" containing quotes from users. The footer includes links for "PE – Whole Loan Support" and "PE – Whole Loan Resources".

Pricing & Execution – Whole Loan

Pricing & Execution – Whole Loan (PE – Whole Loan) enhances, replaces, and combines Fannie Mae's current committing applications, eCommitting™ (eC) and eCommitONE® (eC1)!

PE – Whole Loan Transition in 2015

- The PE – Whole Loan application retains most of the features available today while introducing some exciting new features to the committing and pipeline management experience.
- PE – Whole Loan will be available via a phased rollout throughout 2015.
 - The transition is seamless, no registration or process changes will be required, and each lender's commitments and access will be migrated directly from eC and eC1 into PE – Whole Loan. Users will be notified of their transition date via email 60 days in advance.

PE – Whole Loan Benefits and Features...

- Mandatory and best efforts execution on a single platform
- Intuitive committing experience
 - Multi-price download offers pricing and execution efficiency
 - Customized browse pricing templates to better meet rate sheet and committing needs
 - Pass-through rate highlighting enables easy transition from browsing to committing
 - Tailored user experience based on most frequent actions
- Enhanced views into your pipeline
 - Upcoming commitment expirations displayed at log-in
 - Robust committing and delivery activity details
- E-mail notifications for commitments, pair-offs, over-deliveries, and extensions
- Comprehensive fee reporting
- Advanced Search functionality

Feedback from Early Adopters of PE – Whole Loan:

"Being able to look at pricing for more than one product at a time makes setting rates faster every day."

"Makes my job easier!"

"Very user friendly."

"The transition was seamless, website is easy to navigate, and new features improve daily work function."

PE – Whole Loan Support
Contact the Capital Markets Sales Desk at pe_wholeloansupport@fanniemae.com or 1-800-752-0257.

PE – Whole Loan Resources

- Online Recorded Tutorial
- Job Aids
- FAQs
- And more!

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May 2015

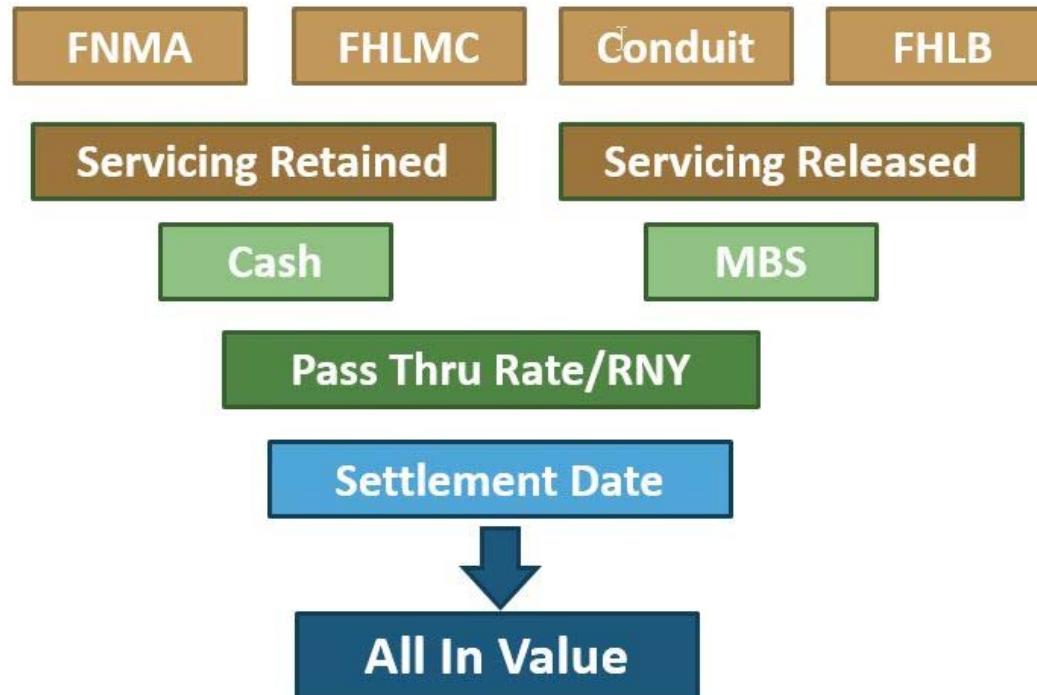
Key Features

- Allows for a variety of executions, including Cash and Guarantor or MultiLender Swap for eligible loan products.
- Provides real-time price quotes to help you determine your best execution.
- Features a standardized dataset that uses Uniform Loan Delivery Dataset data points.
- Provides for single or multi-loan delivery through either the graphical user interface or via import using the XML file format.
- Performs comprehensive evaluation edits against purchase eligibility and data quality requirements consistent with Loan Quality Advisor® purchase eligibility edits.
- Offers an online help function with additional support available through Customer Support (800-FREDDIE).

Key Benefits

- **Comprehensive.** Provides a seamless secondary marketing process incorporating pricing, contracting, loan delivery and allocation, note certification and settlement functions.
- **Quality.** Validates select appraisal data submitted through the Uniform Collateral Data Portal® to improve collateral data quality on the loans we deliver.
- **Usability.** Provides custodial certification and warehouse lending support.
- **Efficiency.** Allows historical data retrieval, export and reporting to support your process and audit needs.
- **Usability.** Provides fully functional Customer Test Environment.

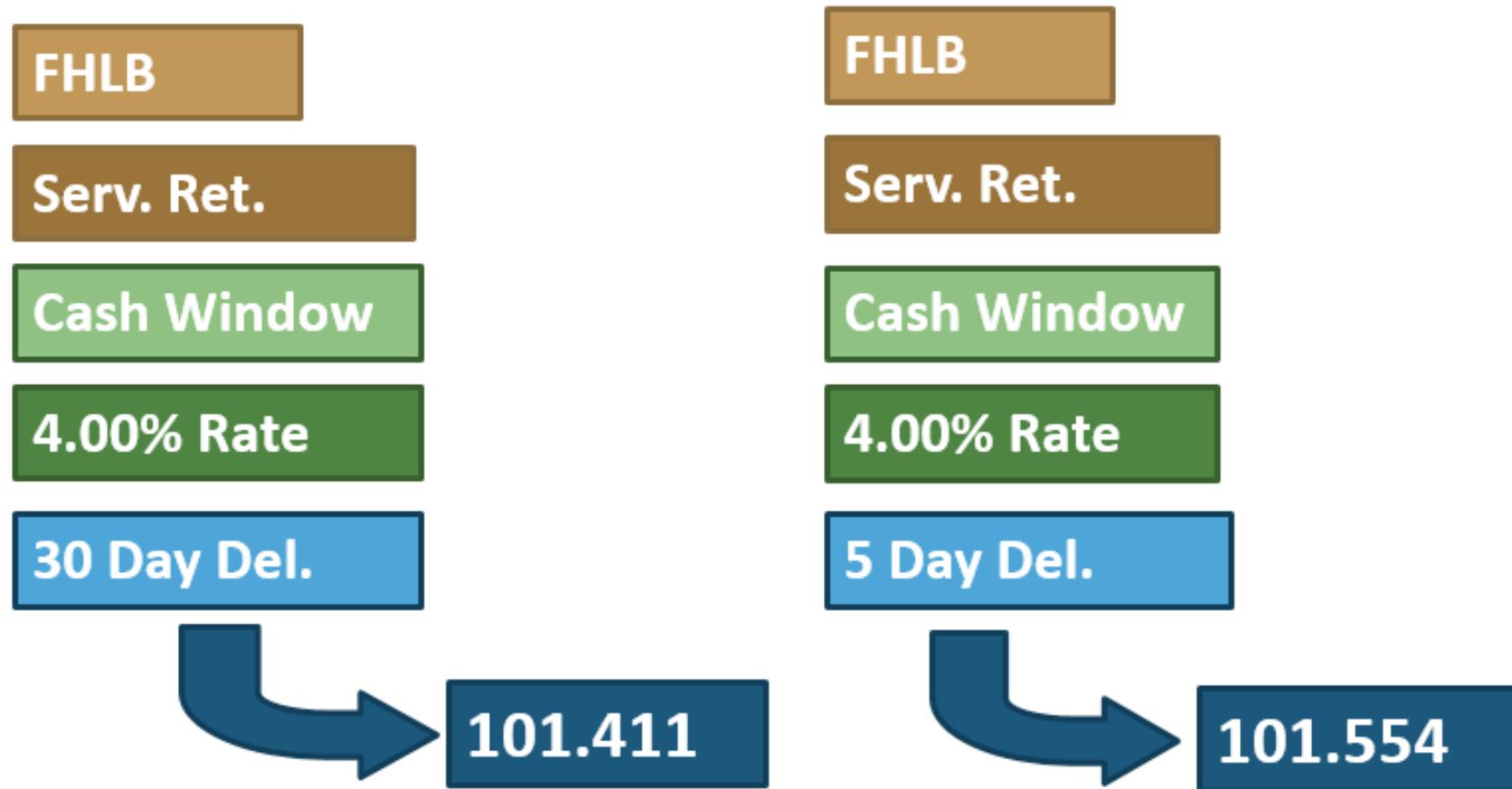
Best Execution Elements



Other Factors:

- Buy-ups
- Buy-downs
- Interest Carry
- Warehouse Spread
- S/R Premium
- Pricing Adjustment
- Delivery Fee
- Base Servicing
- Excess Servicing

Best Execution Example - (@Jan 10, 2017; 30yr FHLB 30yr)



Pricing Metrics Servicing Released



- Similar to retail approach, but add in SRP
- Importance of relationship with correspondents
 - *Think Countrywide or TBW*
- Loan criteria has huge impact on price
- AOTs, concurrent transfers, or loan-by-loan

Commitments: Best Efforts vs. Mandatory



Commitments: Best Efforts vs. Mandatory

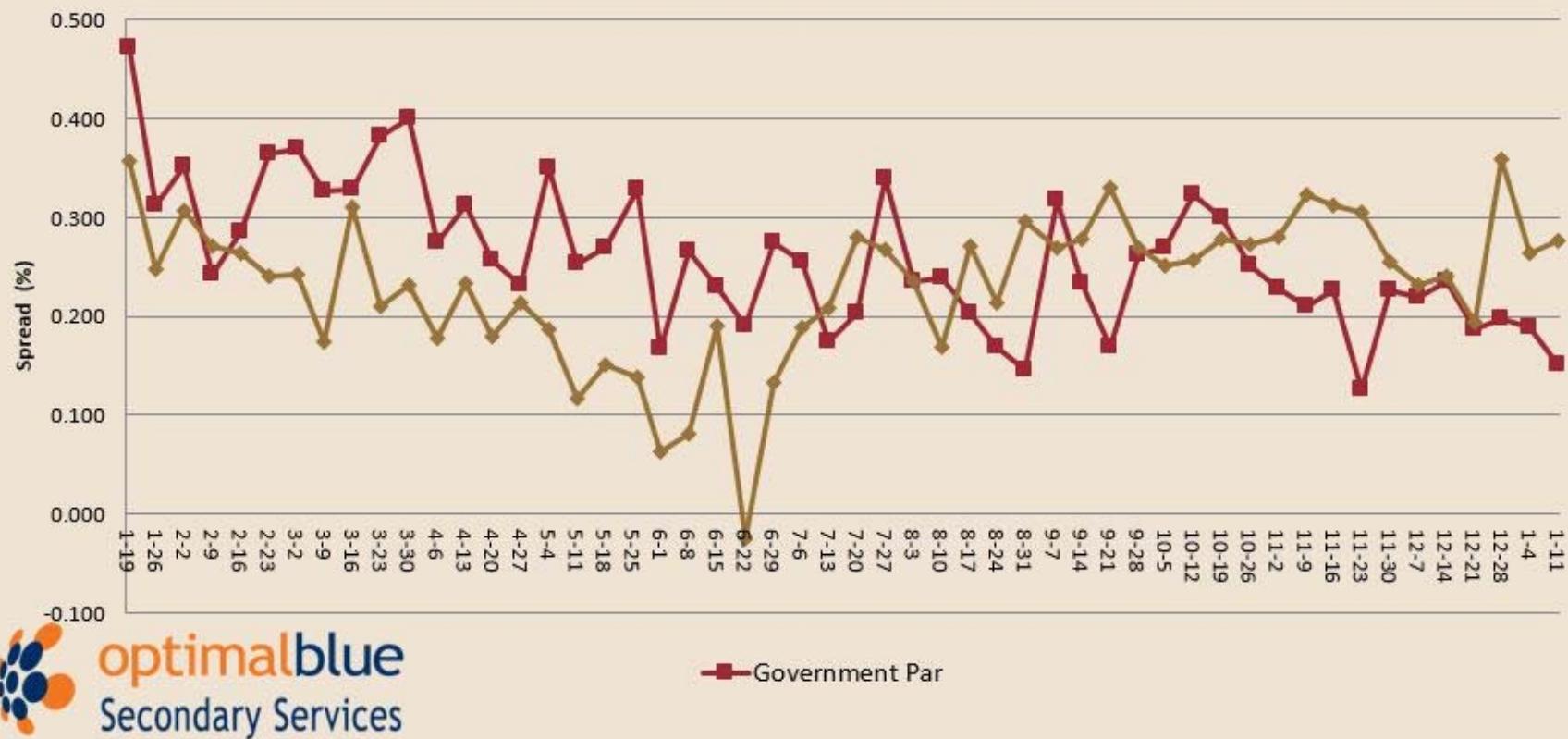


- Price considerations
- Hedging capabilities
- Tolerance for risk
- Investor choices

Commitments: Best Efforts vs. Mandatory

MBA
EDUCATION

Conventional and Government 30 Year Best Mandatory vs. Best Best Effort

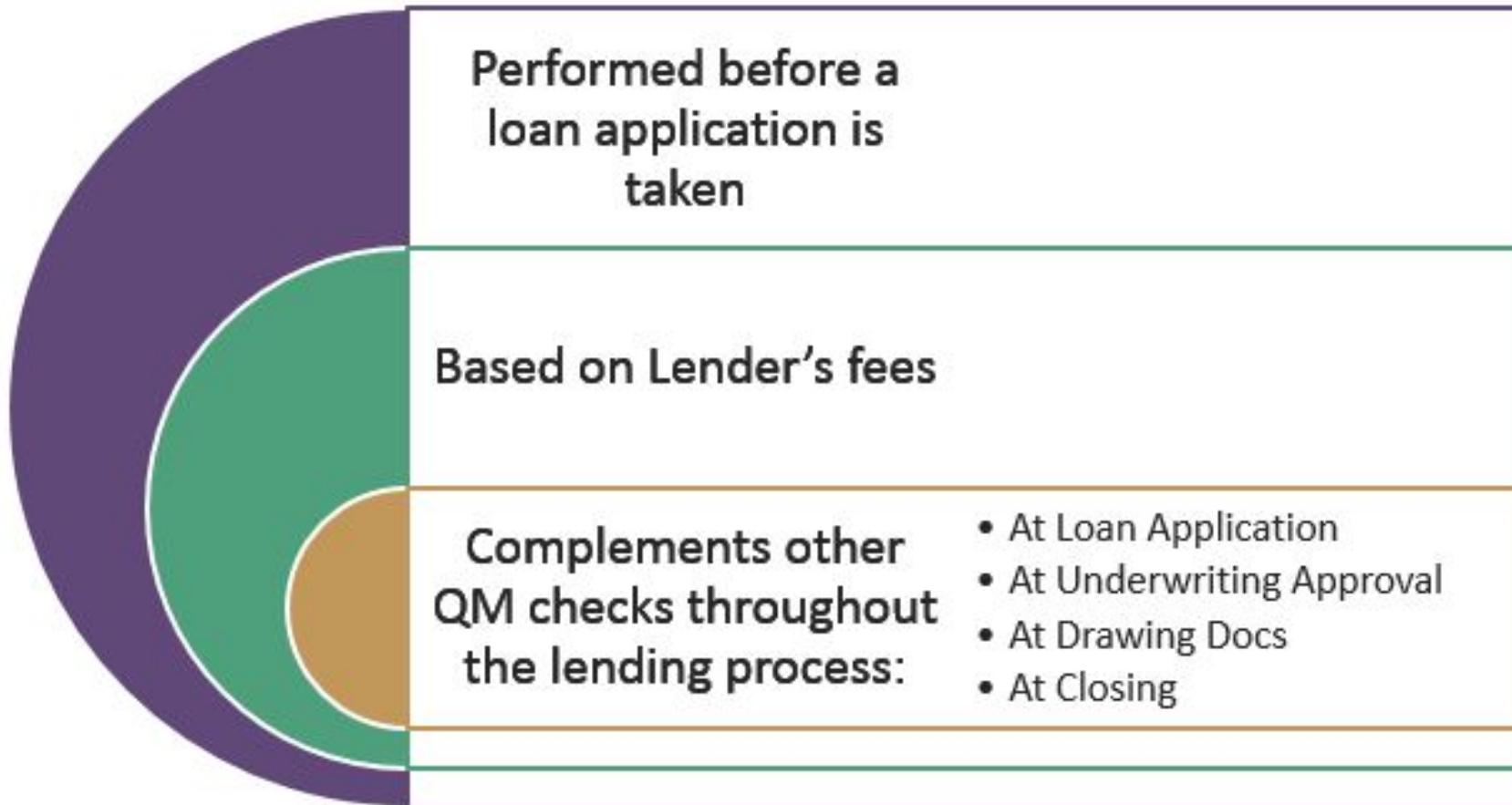


optimalblue
Secondary Services

Pricing Engines



- Automates Price considerations
- Real Time
- Maximize Profitability & Competitiveness
- Customize Pricing at
 - Originator
 - Investor
 - Business Channel
- **Enterprise Lending Services** A PPE Is More Than Just Pricing
- *(OptimalBlue is one of several vendors in PPE space)*



© 2017

QM Example

Current Loan Values	
Description	Value
Loan Amount	\$145,000.00
QM Loan Amount	\$142,713.00
Rate	3.875%
APOR Date	5/6/2014
APOR	4.350%
Start/Par Rate	3.875%
Start/Par Price	100.330
APR	4.006%
Price	100.330
Lock Period	30
Product	PHH 30 Yr Fixed Rural Housing



QM Example

QM Trace Information				
Description	Value	Lender Limit	CFPB Limit	Passes Lender Limit
▶ Toxic Features				✓
○ HPML (APR Minus APOR)	-0.344%	1.500%	1.500%	✓
○ DTI	28.000%	43.000%	43.000%	✓
○ Points and Fees	\$2,287.00 / 1.577%	\$4,281.39 / 3.000%	\$4,281.39 / 3.000%	✓
○ Excludable Bona Fide Discount Points	\$0.00 / 0.000%	\$2,900.00 / 2.000%	\$2,900.00 / 2.000%	

QM Points and Fees		
Description	Current Amount	QM Impact Amount
▶ Finance Charges	\$2,287.00 / 1.577%	\$2,287.00 / 1.577%
▶ Total Bona Fide Discount Points	\$0.00 / 0.000%	\$0.00 / 0.000%
○ Non-Bona Fide Discount Points	\$0.00 / 0.000%	\$0.00 / 0.000%
○ LO Comp Dollars	\$1,700.00 / 1.172%	\$0.00 / 0.000%
○ LLPAs/SRPAs	\$0.00 / 0.000%	\$0.00 / 0.000%
Total QM Points and Fees:		\$2,287.00 / 1.577%



- PPE gives Secondary Marketing global view of pipelines
- Identifies/calculates best execution
 - Best Efforts vs.
 - Mandatory vs.
 - AOT/Direct Trade
- Can co-mingle portfolio, aggregator, agency products at one time.

Best Execution-Secondary

Links	Investor	Eligible Product	Rate	Price	Days	Spread	Profit	Detail
 	Flagstar Mandatory -	Fannie Mae 30 Year Fixed (5301)	4.000	101.146	45	.880	\$2,023	Show
 	Flagstar -	Fannie Mae 30 Year Fixed (5301)	4.000	100.926	45	.660	\$1,517	Show
 	Flagstar Mandatory -	Freddie Mac 30 Year Fixed Rate (5302)	4.000	100.807	45	.541	\$1,244	Show
 	US Bank National Correspondent -	Conforming FHLMC 30 Yr Fixed (3601)	4.000	100.692	45	.426	\$980	Show
 	US Bank National Correspondent -	FNMA Conforming 30 Yr Fixed (3501/3505)	4.000	100.692	45	.426	\$980	Show
 	BB&T -	Conforming 30 Yr Fixed (101)	4.000	100.671	45	.405	\$932	Show
 	Flagstar -	Freddie Mac 30 Year Fixed Rate (5302)	4.000	100.587	45	.321	\$738	Show
 	Citi Mandatory -	Agency 30 Yr Fixed	4.000	100.455	45	.189	\$435	Show
 	US Bank National Correspondent -	Conforming Home Possible 95% LTV (w/3% Cash Downpayment) 30 Yr Fixed (3698)	4.000	100.442	45	.176	\$405	Show
 	US Bank National Correspondent -	Conforming Home Possible 95% LTV 30 Yr. (3687)	4.000	100.442	45	.176	\$405	Show
 	GMAC -	Conforming 30 Yr Fixed FHLMC (348)	4.000	100.376	45	.110	\$253	Show
 	GMAC -	Conforming 30 Yr Fixed FHLMC - NO 4.99 (348)	4.000	100.376	45	.110	\$253	Show
 	GMAC -	Conforming 30 Yr Fixed FNMA (346)	4.000	100.376	45	.110	\$253	Show
 	GMAC -	Conforming 30 Yr Fixed FNMA - NO 4.99 (346)	4.000	100.376	45	.110	\$253	Show
 	Mortgage Services III -	Conforming 30 Yr Fixed (300000)	4.000	100.268	45	.002	\$5	Show



The Holy Grail Historical Pricing



- PPEs historically have been able to detail pricing on the “current” day.
- Now the PPE can compare pricing/eligibility between two different points in time:
 - Day of LO lock vs. current day
 - Day of Secondary lock vs. current day
- Use Historical Pricing when loan parameters change
- FICO, LTV, DTI, etc.
 - & You need to confirm pricing and eligibility
 - A true best execution analysis at two points in time
 - Remain with original product/investor or redirect

- Fully integrating a PPE into LO workflows can improve compliance with fair lending policies.
 - Compare LO performance against lender policies.
 - Creates a historical record attached to the loan.
- Your PPE should be able to help monitor fair lending risk.
 - Can highlight “exception” loans, those outside of normal (higher rates and minority borrowers).
 - Helps define the market at time of lock; what other products were available and at what rate & price.
- Gives Compliance Officer a chance to audit before closing avoiding a non-compliant loan.

Pricing Metrics: Portfolio Pricing



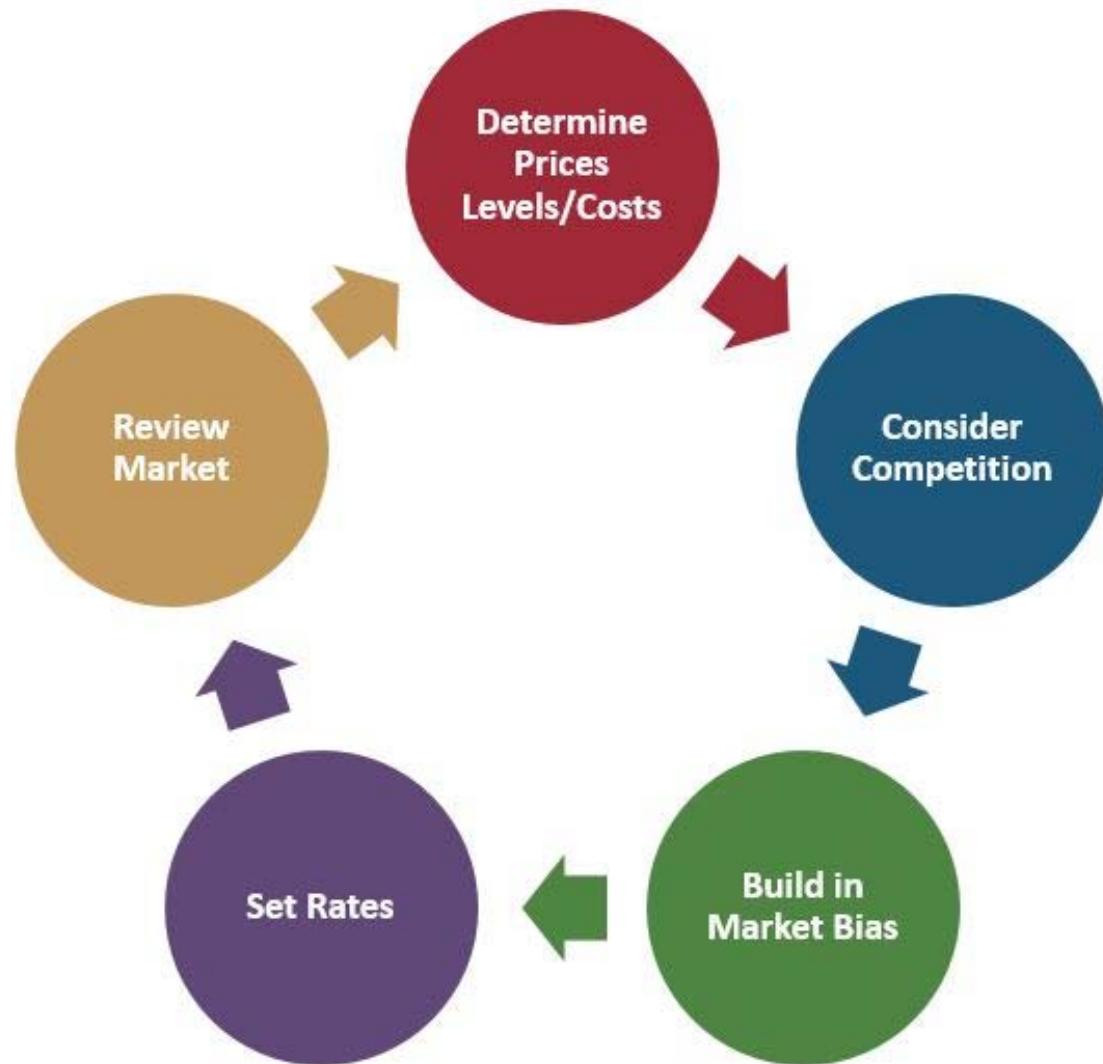
Portfolio pricing also includes the following elements:

- Funding spread (to risk-free investment)
- Option cost (vs. treasury investment)
- Other credit/admin costs (servicing)

Wrap Up



How To Set Rates



Review



- Components of an effective pricing policy
- How rates are set
- Rate lock options
- Looking at competition
- Determining best execution
- Best efforts vs. mandatory commitments

Questions?

The information contained in this presentation is for general informational purposes only and is not intended and should not be construed as legal advice. Please consult an attorney for advice and assistance with your specific legal questions and situations.

Evaluations

Your feedback matters! Please complete the evaluation for this session and hand it in to your facilitator or instructor. It is the last page in this section of your notebook before the next tab.

Disclaimer



This publication is designed to present, as simply and as accurately as possible, a general explanation of processes and functions within the mortgage industry. It should be noted that the information presented is not all-inclusive. Forms, regulations and overall processes may change because of changes within the industry. This publication should not be used as a substitute for referring to the applicable rules and regulations and is distributed with the understanding that the publisher is not engaged in rendering legal or other personalized professional service. If legal or other expert assistance is required, the services of a competent professional should be sought.

Pipeline Hedging



- Pipeline hedging concepts
 - The definition and quantification of “risk”
 - Hedging as a way to mitigate risk
 - Unique aspects of Pipeline Risk Management
- The hedger’s tools
- Pipeline hedging exercise
- Futures Overview
- Risk management on a broader scale

Hedging Concepts



- *n.* 1. *exposure to loss or harm; danger; peril.* 2. *chance; hazard.* 3. *contingency covered by insurance.*
- *v.t.* 1. *expose to injury or loss.* 2. *Take the chance of.* *risk'y, adj.*

Sounds like something we would like to manage

1. Identification of sources of risk

- Prerequisite of measurement

2. Measurement of risk

- Prerequisite of action
- Allows communication of risk
- Must be able to state in form which can be understood by sr. management and directors
- Provides the basis for a risk policy
- Method depends on source of risk

3. Mitigation of undesirable risk

- Method also depends on source of risk

Four Primary Types of Risk

Market Risk	Credit Risk	Operational Risk	Business Risk
<ul style="list-style-type: none">➤ Exposure to movements in the markets in which the institution participates➤ Interest rate risk➤ Commodity risk	<ul style="list-style-type: none">➤ Exposure to default of obligors➤ Default risk➤ Credit spread risk➤ Counterparty risk	<ul style="list-style-type: none">➤ Exposure to risks associated with inadequate controls➤ Rogue traders➤ Legal risk➤ Procedural risk	<ul style="list-style-type: none">➤ Exposure to inability to generate profitable transactions in the future➤ Poor product development➤ Overreliance on a single funding source / investor execution

Measurement Depends on Type of Risk

Market Risk	Credit Risk	Operational Risk	Business Risk
➤ Amenable to quantification, but proper quantification can require robust models	➤ Amenable to quantification, but proper quantification can require robust models	➤ Difficult to quantify ➤ Either constant, low-level events or rare catastrophic events	➤ Difficult to quantify

Mitigation Depends on Type of Risk

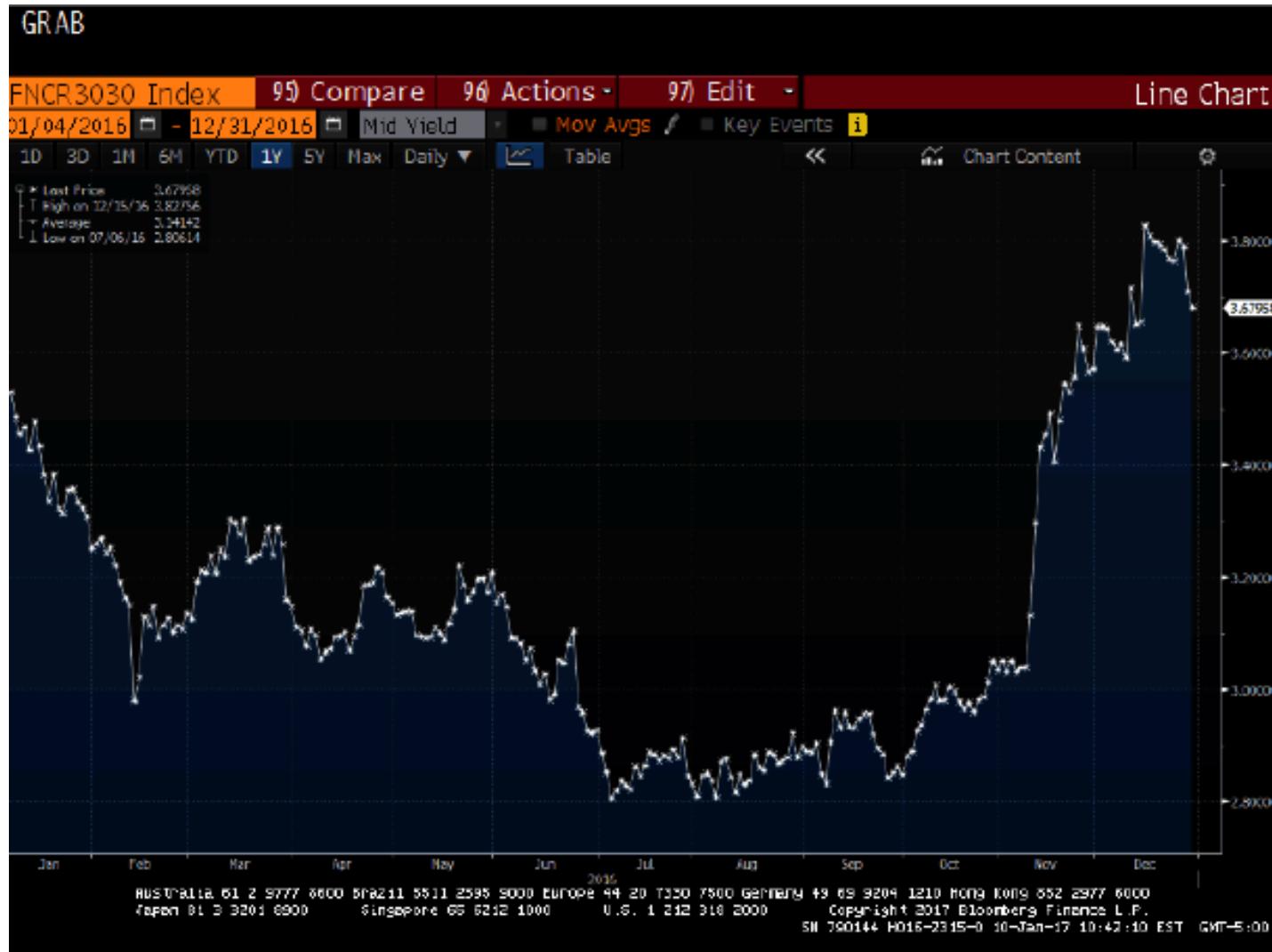
Market Risk	Credit Risk	Operational Risk	Business Risk
➤ Can be <u>hedged</u> relatively cheaply	➤ Diversification ➤ Contract structure (for example, indentures) ➤ Institutional structure (for example, clearinghouses) ➤ Hedging (credit derivatives) is relatively more costly	➤ Common-sense procedures ➤ Oversight ➤ Internal and external audits	➤ Contingency planning ➤ Stress testing

Interest Rate Risk - a Subset of Market Risk

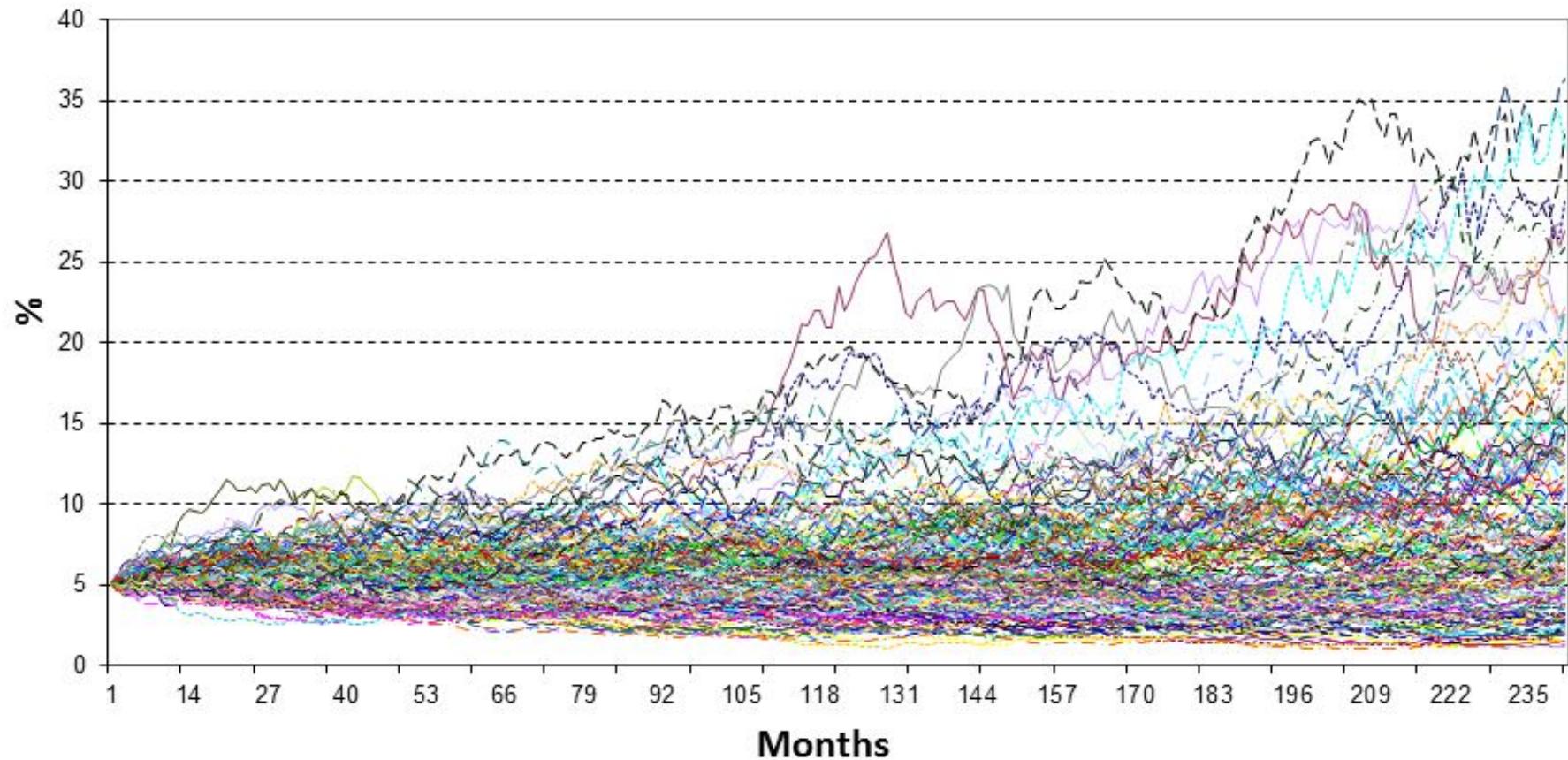


- Interest rate risk is the uncertainty in earnings or market value resulting from ignorance of the future course of interest rates
- Mortgage valuations (rate locks [the pipeline] and closed loans [the warehouse]) are sensitive to changes in interest rates
- In order to effectively communicate and mitigate interest rate risk, it is necessary to have quantitative measures
- Proper use of those measures helps us construct the proper hedge

Rate Review Jan 4 - Dec 31, 2016



What is the Future Path of Interest Rates?



Pipeline Hedging - a Very Specific Case of Risk Management



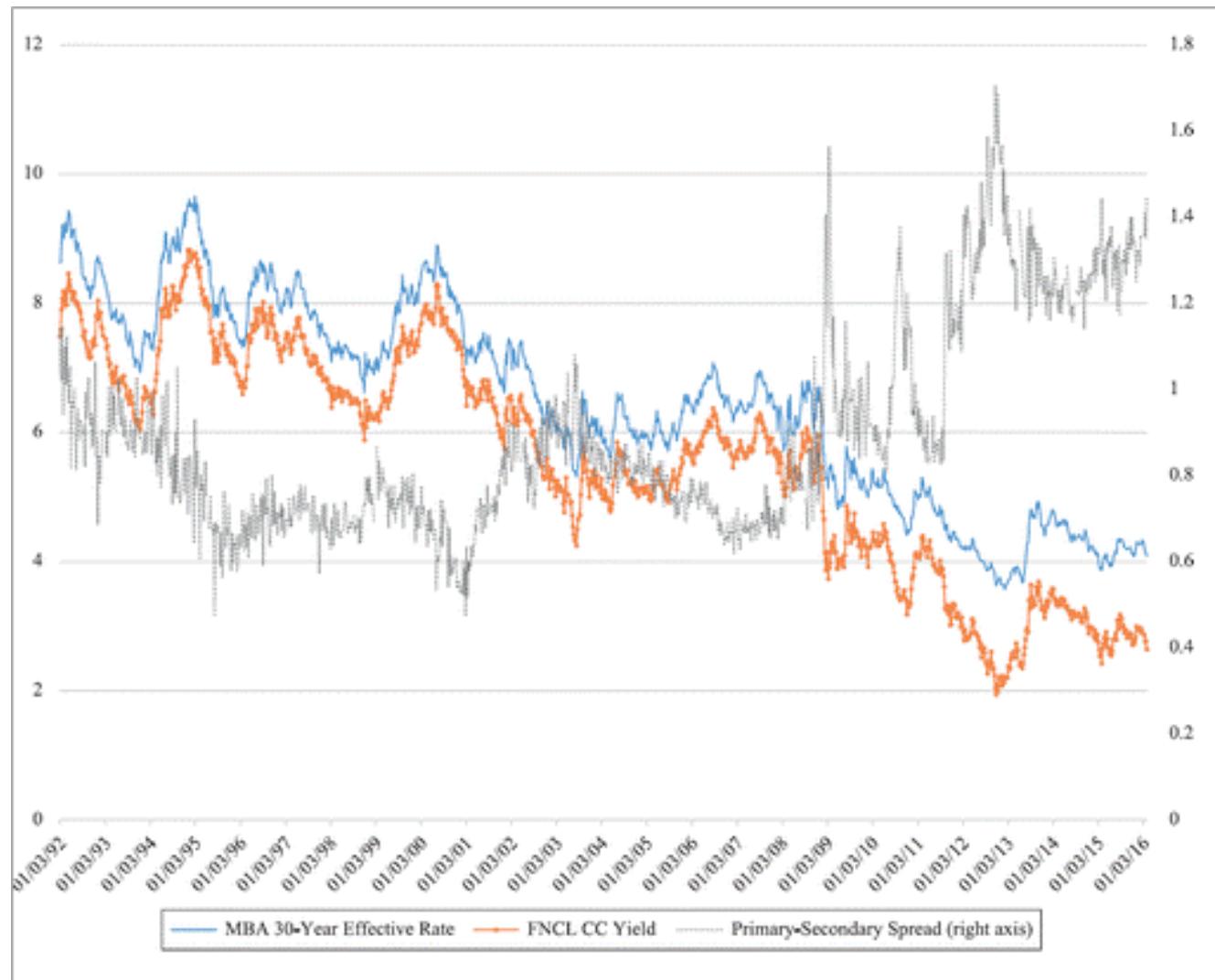
- It's of critical importance to the success of Secondary Marketing activities impacting other areas (e.g., pricing, loan sale) , and to the overall profitability of the company
- Mortgage Banks have other areas with interest rate sensitivities:
 - Mortgage Servicing Assets
 - Portfolio loans
 - Funding/Warehouse lines
- Pipeline (and Warehouse) hedging is what we will talk about (primarily) today

Hedging is:



- A strategy is to enter a position such that **Δ of value of loan = Δ of value of hedges** in order to manage risk and preserve value.

A Historical Look at Profitability (And relationship with Volatility)



Two Big Risks for Pipeline and Warehouse Managers



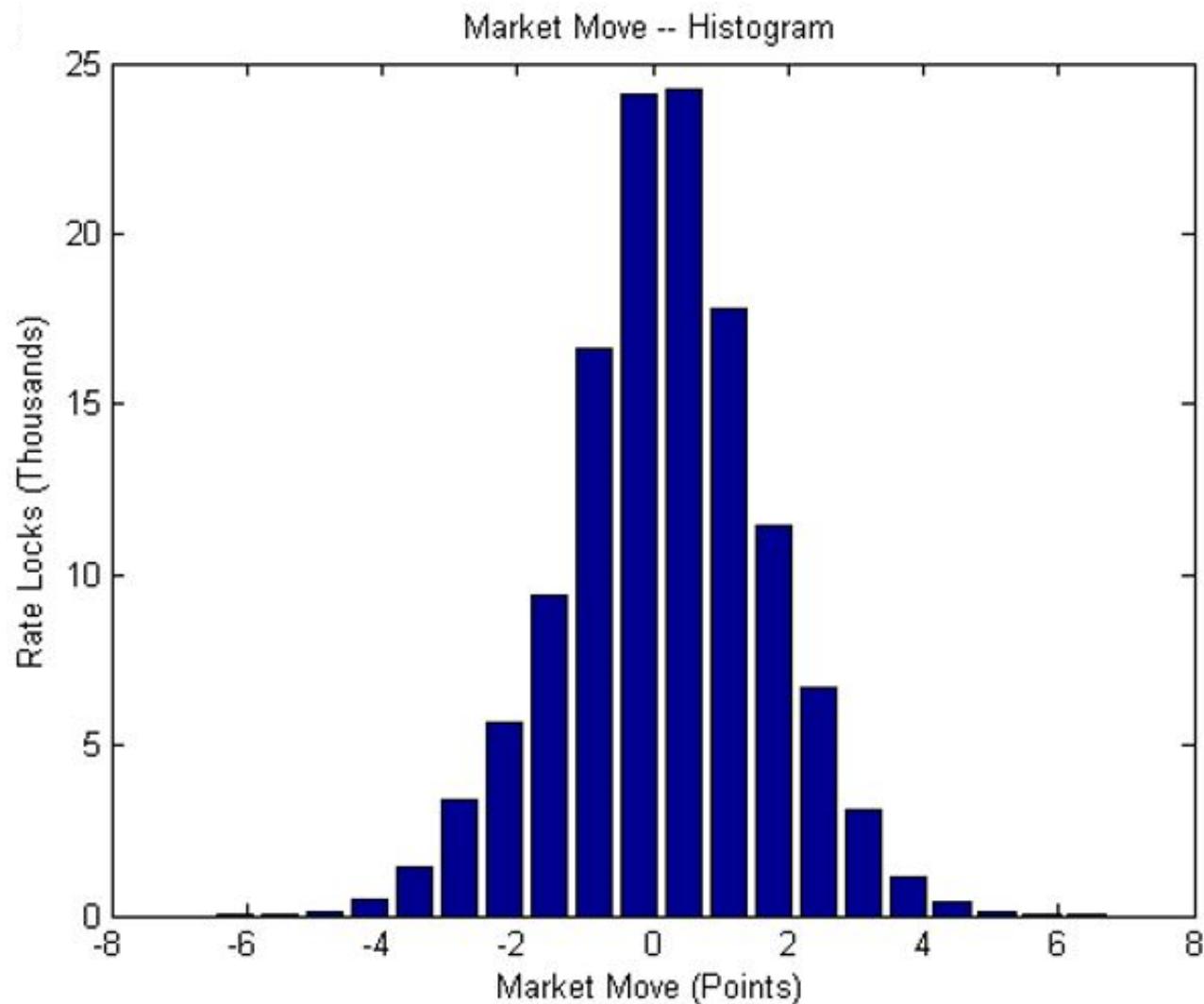
Price Risk

- The risk that the locks and/or the closed loans change value because rates change

Fallout Risk

- The risk that the locks don't close (for whatever reason)

Price Risk Varies for Loans in Pipeline and Warehouse

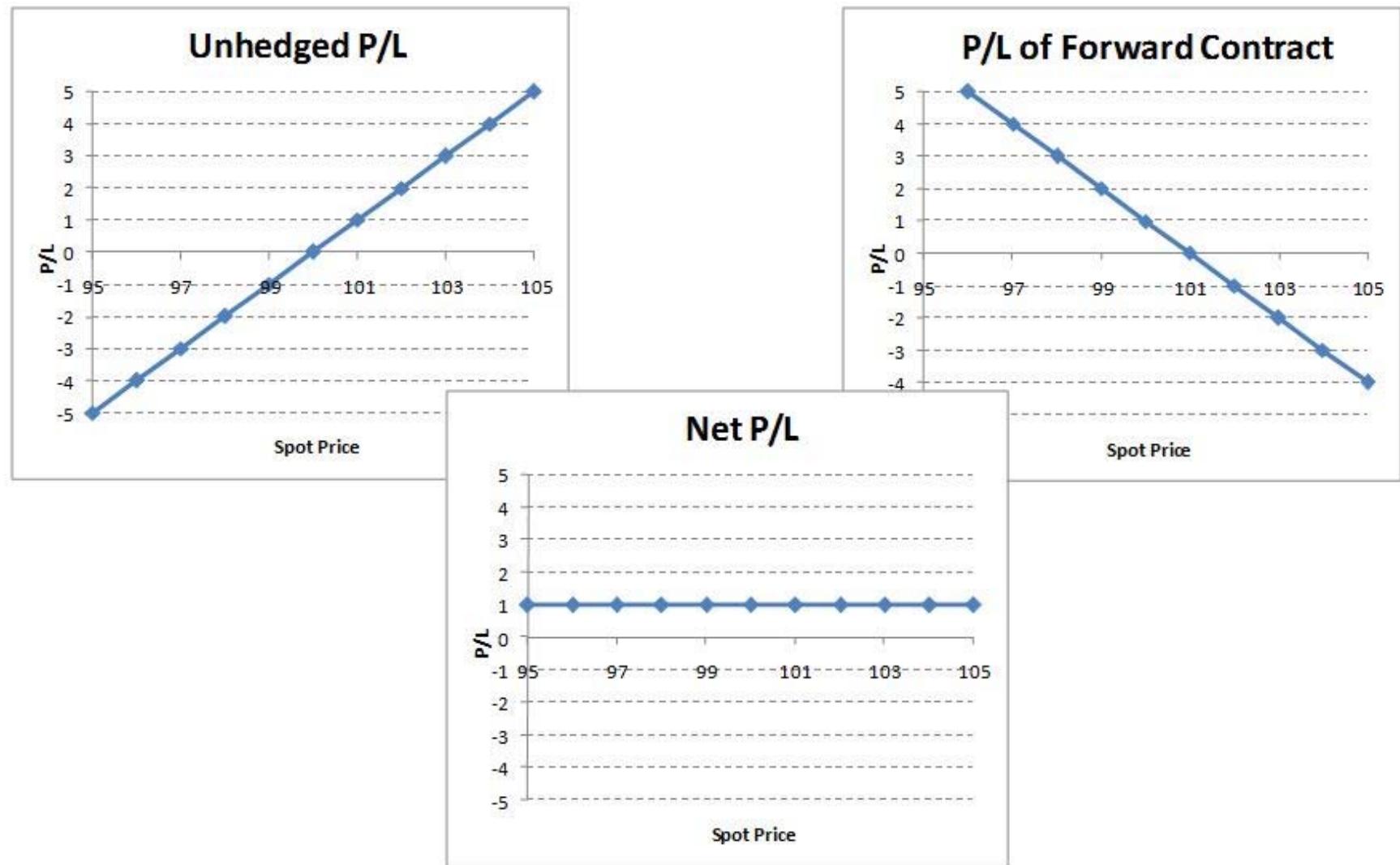


Hedging a Closed Loan

Remember This?



Hedging a Closed Loan



- The risk that a mortgage banker faces is unique within the realm of fixed income portfolio management
- Claim: in contrast to a closed loan, no single available hedge instrument, by itself, perfectly offsets a rate lock
- The obvious strategy is to estimate the percentage of rate locks that will close, and commit to sell that number of loans -- (but that strategy will fall short because that percentage will change dynamically)

Rate Locks Are Options



- A rate lock is best viewed as a kind of mortgage put option
 - Borrower has the right but **not** the obligation to sell you a loan (a package of future P&I payments)
 - Exercise depends somewhat on mortgage price movements (or interest rate movements)
- Rate lock valuation is best viewed by thinking of rate locks in this way

Rate Locks – Why so difficult to hedge?



- They contain Price Risk (like closed loans)
- They also contain Fallout Risk
- And yet, while option-like, borrowers are not perfectly efficient in their decision to fallout

The decline in the value of a rate lock due to:

- Termination of the lock for any reason (absolute fallout)
- Concessions made to the borrower (partial fallout)

Factors Affecting Fallout



- Credit (both borrower and property considered)
- Market movement
- Type of product
- Purpose of loan (purchase vs. refi)
- Source of loan
 - Retail vs. wholesale
 - Geographic region
 - Branch
- Lock period
- Processing status
- Policy considerations
- Other Factors

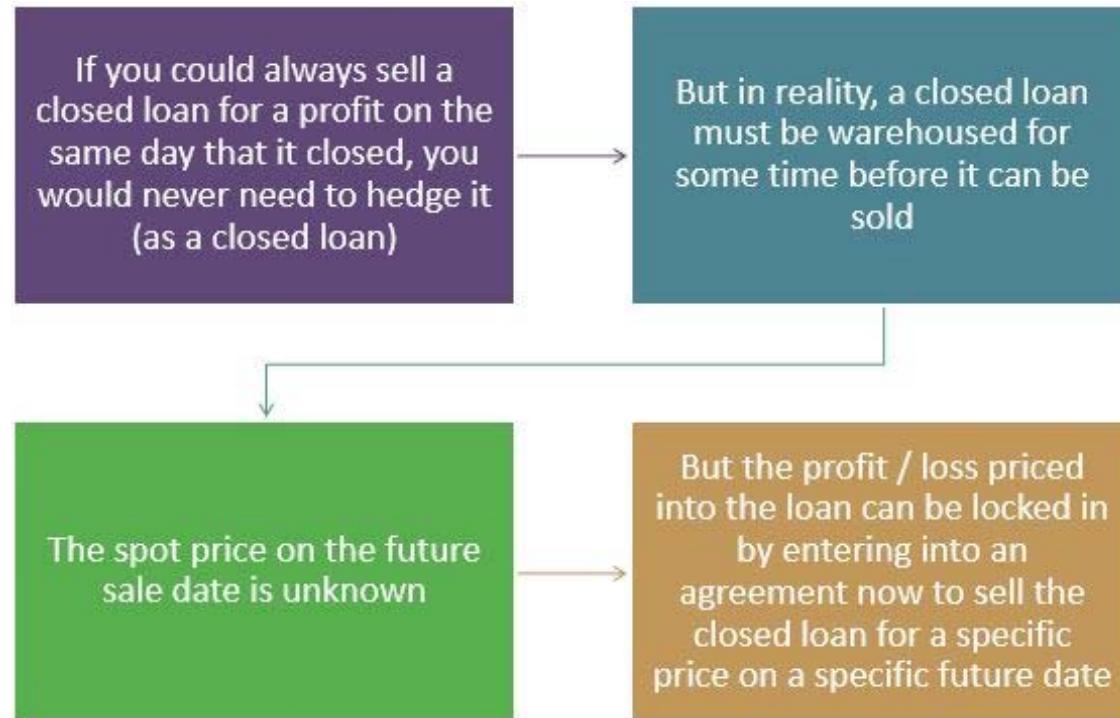
Which Loans Are Fallout?



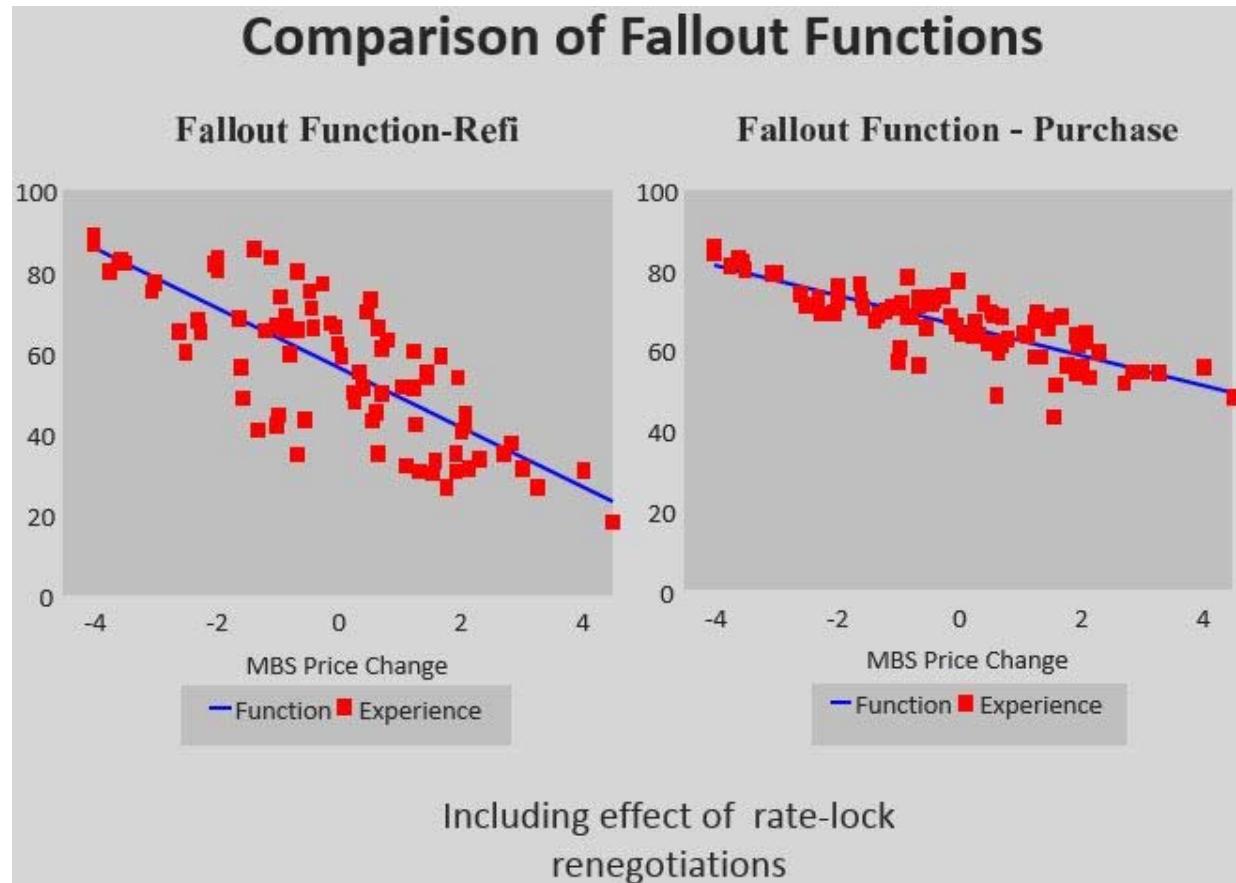
- Rate lock does not close
- Borrower renegotiates discount points
- Borrower renegotiates rate
- Closing date extension granted
 - Why should we care?
 - Recall the hedger's challenge to preserve value

Hedging a Closed Loan

Remember This?



Actual Fallout History



Prepared by Quantitative Risk Management

Pipeline Hedging – Various Approaches



Prepared by Quantitative Risk Management

Various Definitions of Hedge Cost



- The cost of obtaining a hedge portfolio that is equal but opposite to the profile of the unhedged rate lock
- The sum of all of the transactions costs associated with all of the hedges used to hedge a rate lock/closed loan.
- The difference between the gross margin created at pricing and the gain-on-sale margin at loan delivery.

➤ Fallout Function Elasticity

- The sensitivity of closing ratios with respect to changes in interest rates. More elastic functions (i.e., more option-like rate locks) have higher hedge costs.

➤ Interest Rate Volatility

- Volatility determines the price paid/charged by the market for option contracts needed to create a flat profit/loss profile. Higher volatility results in higher costs for the purchase or replication of options.

➤ Rate Lock Period

- 60-day rate locks have more “time value” than 45-day rate locks and are therefore more expensive to hedge. (Long-term options cost more than short-term options.)

Hedging Tools



- Models/Reports
- Policies
- Market Analysis
- A “Quiver” of available hedge instruments
- Rules of Thumb

A strong hedging team should have:

- Robust models for determining the interest rate sensitivity of all locks, loans and hedges
- Robust models for determining a loan's best execution (highest delivery value)
- Actionable reports to aid in structuring the hedges and reporting the resulting sensitivity to senior management
- Reports showing compliance with Hedge Policies

Loan Slotting and Coverage Report Just One Example of “Actionable”

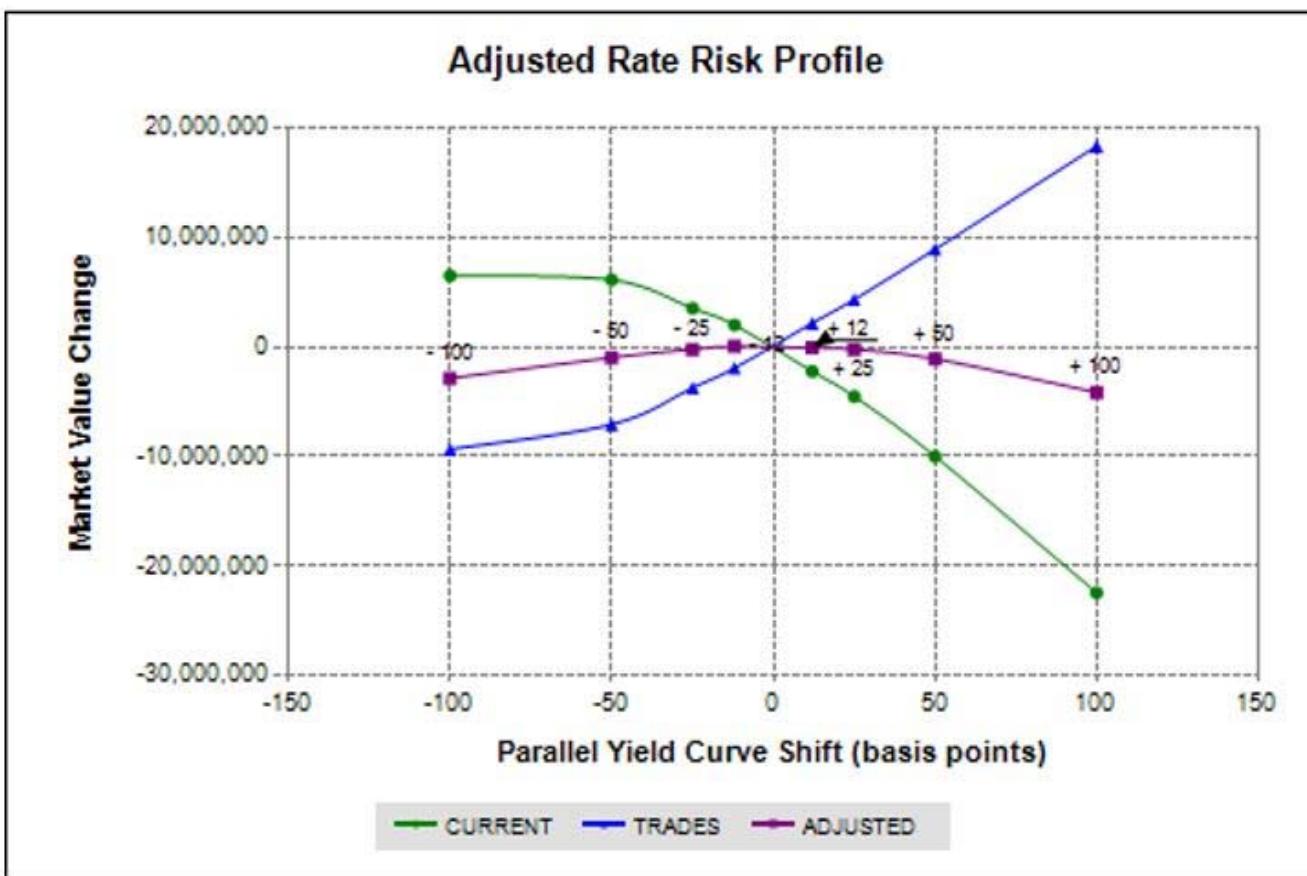


Delivery Class	Coupon	April 20##			May 20##			June 20##			Total				
		Clsd Loans	MBS Frwd	Net	Rate Locks	Clsd Loans	MBS Frwd	Net	Rate Locks	Clsd Loans	MBS Frwd	Net			
15yr Fixed	2.500				0.1	0.1	1.5	1.5	1.5	0.1	1.5	1.5			
	3.000				10.3	10.3	24.4	-43.2	-18.8	24.4	10.3	-43.2	-8.5		
	3.500				39.9	39.9	46.7	-107.9	-61.2	46.7	39.9	-107.9	-21.3		
	4.000				10.1	10.1	12.7	-16.5	-3.8	12.7	10.1	-16.5	6.3		
	4.500				0.8	0.8	0.7		0.7	0.7	0.8		1.4		
	5.000				-	-	-	-	-	-	-	-			
	Total				61.2	61.2	85.9	-167.5	-81.6	85.9	61.2	-167.5	-20.4		
30yr Conv. Conf.	4.250				1.2	1.2			1.2			1.2			
	4.375	0.8	0.8		1.8	1.8			1.8	0.8		2.6			
	4.500	56.8	-116.4	-59.6	30.9	86.2	-116.4	0.8	108.4	-116.4	-8.0	139.4	143.0	-349.1	-66.7
	4.625	8.2	8.2		14.0		14.0			14.0	8.2		22.2		
	4.750	44.6	-24.1	20.5	23.2		-72.3	-49.1		23.2	44.6	-96.5	-28.6		
	4.875	11.0	11.0		15.0		15.0			15.0	11.0		26.0		
	5.000	42.0	-9.4	32.5	23.4	3.5	-18.9	8.1	7.3	30.7	45.5	-28.3	47.9		
	5.125	17.1	17.1		19.2		19.2			19.2	17.1		36.3		
	5.250	19.6	19.6		12.9		12.9			12.9	19.6		32.5		
	5.375	6.2	6.2		4.8		4.8			4.8	6.2		11.0		
	5.500	7.8	7.8		8.0	2.5		10.5	6.8	6.8	14.8	10.3		25.1	
	Total	214.1	-149.9	64.1	154.5	92.3	-207.6	39.2	122.6	-116.4	6.2	277.1	906.3	-473.9	109.6

Adjusted Rate Risk Profile

MBA
EDUCATION

QRM
Quantitative Risk Management



Most Secondary operations have written hedging policies

- Regulators require them of banks/thrifts/credit unions
- Senior management should require them

Good policies include:

- A statement => "...objective is to preserve value..."
- Defined risk limits
 - Long/short position
 - \$ limits under interest rate shock scenarios
- Approved hedge instruments and counterparties

Fundamental Analysis

“The Cause”

Interested in:

- State of the Economy (Economic Releases)
- Policies/Actions of the Federal Reserve Board
- Treasury Auctions
- Proposed Legislation
- Other Markets

Technical Analysis

“The Effect”

Interested in:

- Identifying the Trend
- Determining the Strength of the Trend
- Recognizing Potential
- Turning Points
- Support Resistance
- Buy & Sell Signals

Delivery-based Instruments

- Best Efforts Commitments (no hedging required)
- Cash/Bulk Trades
- Assignment of Trade (AOT)
- MBS Forwards and Options

Cross Hedges

- Treasury Futures/Options
- Eurodollar Futures/Options
- Swaps/Swaptions/Caps/Floors

Delivery Instrument Comparison



	Price Risk?	Fallout Risk?	Servicing Released?	Pairoff Costs	Gain on Sale
Best Efforts	No	No	Yes	High	Lowest
Cash/ Direct/ Bulk	Yes	Yes	Maybe	High	Low
AOT	Yes	Yes	No	Low	Higher
MBS Forward	Yes	Yes	Maybe	High	Highest

A “cross hedge” is a hedge position that does not have the exact delivery characteristics of the item being hedged, but nonetheless provides offset to the exposure being hedged

- Many times chosen for liquidity reasons
- e.g., Treasury Futures, Eurodollar Futures, Swaps, or a non-related MBS
- Because sensitivities are not an exact match, they are required to be sold at some ratio

MBS Options

- Well-understood
- No basis risk
- Good match to pipeline
- Cost (Bid / Ask – High?)

Treasury Options

- Policy considerations
- Basis risk
- Cost (Low)
- Duration Convexity Diff
- Wide variety of instrument
 - Bonds (30-yr)
 - Notes (5-yr, 10-yr,)

Options



- Options are tools used to balance fallout
- They are used so loans don't have to be paired off
- However, they are expensive

Experienced traders may develop rules of thumb to place some discipline around a trading response – typically as a reaction from experience about liquidity or other types of transaction costs

- No MBS trade < \$1m
- Transactions < \$1m are assigned to best efforts commitments
- Loans slotting to illiquid coupons may be cross-hedged with the “Current Coupon” FNMA MBS

Result must stay within Risk Policy

Pipeline Hedging Exercise



➤ **Objective:**

- Apply tools learned in the Pipeline Hedging session.
- Students will have opportunity to "mock hedge" a \$10 million pipeline.

Hedging Exercise



- You have been hired to hedge the pipeline of Taglia Mortgage Company.
- You have complete discretion to construct hedge, but must justify position with ALCO.
- You can use any combination of MBS Forwards (TBAs) & Puts, but the total can not be more than \$10 million.
- You will get three chances to construct your hedge.
- The winner will be the individual with the largest CUMULATIVE gain.
- The goal is not winning (although it's nice), but rather to avoid being a big loser!

EXPOSURE

- \$10 Million Pipeline. 100% newly originated 60 day rate locks - all 30 yr conforming product
- Your preliminary reports show that you will close 70% in a flat market.
- You make your determination as to what coverage should be taken.

NOTE: The 70% Closing Ratio MAY change based on market direction!
Be willing to defend your action based on your "read" of the market and risk tolerance.

COVERAGE TAKEN

MBS Forwards:	Sell	(\$1MM each / Sell @ Par)	# _____ A _____ MM
MBS Put Options:	Buy	(\$1MM Put At The Money / Cost, 1pt)	# _____ B _____ MM

Hedging Exercise

MARKET ACTION

Pete to give us "market breaking news" and impact on fixed income markets.

MARK TO MARKET

Effect on Pipeline: _____ pt Change X _____ MM = \$ _____
(\\$10MM X Actual Closing Ratio)

Effect on Coverage:

MBS _____ pt Change X _____ A _____ MM = \$ _____

Puts ($\Rightarrow \$0$) _____ pt Change X _____ B _____ MM = \$ _____

Cost of Puts 1 pt X _____ B _____ MM = \$(_____)

\$ _____

NET PIPELINE IMPACT: _____

Futures



The purpose of this session is to introduce you to the world of futures and give you case studies as to how they are used. Examples are included in back for your review (will NOT be on test).

NOTE – today's review will be brief, high level, and as noted above, introductory.

- Futures Basics
- Benefits of Futures
- Disadvantages of Futures
- Hedging Examples

- Definition
- Choice of products
- Integrity of market
- Hedge objective

Futures Contract



Legally binding agreement to make or accept delivery of a standardized quantity and quality of a commodity at a standardized time and place for a price agreed upon today in an organized futures exchange.

The Futures Clearing System

- Eliminates counterparty risk
- Provides flexibility to unwind position



Mortgage Pipeline Hedge Objective



Δ Value of Mortgages

=

Δ Futures x Hedge Ratio Price

Hedging with Futures: Benefits of Futures



- Ease of Execution
- Liquidity
- Scheduling
- Transferability
- Convergence

Hedging with Futures: Disadvantages of Futures



- Basis Risk (this is big one)
- Volatility
- Margin Calls
- Corporate Acceptance
- FAS 133/149/157/159 (FASB ASC 815, 820, 860 and others)

Basis Risk

- The difference in price movement between two instruments

Basis Risk in Derivatives

- The extent that price change of treasury hedge does NOT match the price change of the mortgage pipeline

Hedging with Futures: Hedging Examples



- 30yr Freddie 3% MBS example
- Case Study – ARM Hedge

A secondary market manager is expecting to sell \$1,300,000 Freddie 3s in the secondary market within the next week. The manager is concerned about the current interest rate volatility in the marketplace. If rates were to rise, the value of the loans would decline and he would have to sell them at a discount.

Action:

Hedge this price risk by selling the Treasury Note Futures to protect the loans from a decline in value.

- Knowing how many futures contracts should be used to hedge a mortgage pool can be complicated to figure out.
- The goal of hedging is to offset with a futures position as much of the change in value of the pool as possible.
- Figuring appropriate hedge ratios depends on:
 - The characteristics of the mortgage to be hedged
 - The futures contract selected
 - The level of current interest rates

Futures Hedging Example Note, cont.



- Advantage with futures is the liquidity, security, and diversity of government bond markets with U.S. Treasury futures and options from CME Group.
- Available on the 2-year, 5-year, 10-year, and 30-year tenors, U.S. Treasuries are standardized contracts on U.S. government notes or bonds that offer a wide variety of strategies for Secondary Managers looking to hedge pipeline risk on interest rate market exposure.
- Benefit from a liquid marketplace and sufficient market volume as well as easy-to-access leverage capital and operational efficiencies with CME Group's U.S. Treasuries.

Futures Hedging Example Note, cont.



The three Treasury futures contracts that are most useful for hedging 30-year MBS:

- **Treasury bond futures** (most responsive, but most basis risk)
- **10-Year Treasury note futures** (*Contract usually used by Secondary Managers*)
- **5-Year Treasury note futures** (least responsive, but also least basis risk)

The number of bond futures contracts used to hedge a pool of mortgages is generally less than the number of 10-Year T-Note futures used, which itself is less than the number of 5-Year T-Note futures.

Futures Hedging Example Note, cont.



10-Year T-Note contracts used to hedge \$1.3 million of new mortgages.

10-Year T-Note futures moved more in price than the Gold 3's. The mortgages were not hedged on a dollar for dollar basis. The relationship of dollar value of futures to the dollar value of mortgages is referred to as ***the hedge ratio (this is NOT a static number – it can, and will, change as the market moves)***

10 contracts (\$1 million) of 10-Year T-Note futures to
\$1.3 million Gold 3's

Hedge Ratio is 1:1.3 – or 7.6 futures contracts for every \$1M Freddie Gold 3's

Short Hedge w/ 10-Year T-Note Futures



Time

Cash	Futures
Current Delivery for	Sell:
3% Gold PCs are trading	10 Ten Year T-Note Futures
@101-00 = \$1,313,000	@106-00 = \$1,060,000

INTEREST RATES RISE

Time + 1

Sell \$1,300,000 3% Gold PCs in the Secondary Market @ 99-16 = \$1,293,500	Buy: 10 Ten Year T-Note Futures @104-00 = \$1,040,000
<u>Loss: (\$19,500)</u>	<u>Gain: \$20,000</u>

Sold Gold PCs: \$1,293,500

Gain on Futures: 20,000

Gross Proceeds: \$1,313,500

Hedging Short and Intermediate Term ARMs

- When (If?) the Yield Curve steepens, ARMs become more attractive
 - ARMs comprise increased percentage of pipeline
 - Lenders faced with decision of whether to hedge them (for sale into the secondary market) or simply put into the portfolio
- Hedge Considerations – Basis and Liquidity
 - Loans are priced based on the short term yields
 - What instruments are available?

- 15 and 30 Yr MBS
 - liquid but large basis risk, different part of the yield curve
- 5 & 10 Yr CME Swap Futures
 - questionable liquidity, basis risk, limited flexibility
- Cash Swaps
 - flexible and liquid, but excessive transaction cost (and pair-off cost) for many lenders
- CME Treasury Futures
 - flexible and liquid but mortgage/treasury, swap/treasury basis risk
- CME Eurodollar Futures
 - extremely liquid, flexible and limited swap/mortgage basis risk

- Exchange traded at Chicago Mercantile Exchange (CME)
- LIBOR-based interest rate futures with quarterly settlements out to 10 years – very liquid at least to 7 years
- Traded in “stacks” and “bundles” representing groups of contracts with of successive settlements
- Simple sensitivity measure (.25bp per contract) and configurable # of contracts (1M) by settlement to match ARM key-rate duration profiles
- Commonly used by mid/large lenders hedging ARMs.

Key Rate Exposure Report – To determine which months to sell

Key Rate BPV Exposure			Key Rate BPV Exposure report decomposes the total sensitivity															
Report Group: Pending																		
Benchmark: 6% FN30: FNMA 30			Face Amount	Benchmark Equivalent	BPV Per 100	3 Months	6 Months	12 Months	24 Months	36 Months	48 Months	60 Months	84 Months	120 Months	240 Months	360 Months	KR BPV Total	
Exposure	Fixed	Rate Locks	1,371,778	872,458	30,896	-415	646	1,181	2,558	2,419	2,048	3,051	3,965	5,951	7,506	2,124	31,035	
		Pending Rate Locks	53,090	31,528	1,116	-9	33	53	106	100	77	120	151	145	268	75	1,119	
		Closed Loans	418,233	402,337	14,248	-243	337	650	1,286	1,173	1,012	1,435	1,878	2,674	3,216	886	14,303	
		Closed Loan - AOT	1,009,649	1,041,915	36,897	-354	821	1,459	3,153	3,135	2,947	3,960	5,483	5,823	8,087	2,498	37,011	
		Closed Loan - Bid Management	630,281	672,758	23,824	-300	478	916	1,975	1,837	1,416	2,347	2,884	4,646	6,080	1,644	23,922	
		Subtotal	3,483,031	3,020,997	106,981	-1,320	2,315	4,258	9,078	8,662	7,499	10,913	14,361	19,238	25,157	7,227	107,389	
	Adjustable	Rate Locks	68,212	22,828	808	-65	37	105	172	168	141	156	104	-7	-7	-	806	
		Pending Rate Locks	6,020	2,167	77	-7	5	11	16	16	14	14	14	4	-1	-	77	
		Closed Loans	39,495	11,639	412	-47	46	101	122	84	47	42	17	1	-1	-	411	
		Closed Loan - Bid Management	180,131	103,999	3,683	-277	125	425	760	722	628	820	414	49	2	1	3,670	
		Subtotal	293,858	140,632	4,980	-396	213	642	1,071	990	829	1,032	548	39	-7	1	4,962	
		Subtotal	3,776,889	3,161,629	111,961	-1,716	2,528	4,900	10,148	9,653	8,329	11,945	14,910	19,277	25,150	7,229	112,352	
Coverage	Fixed	MBS Forward	-2,110,706	-2,523,707	-89,371	705	-1,034	-2,870	-6,756	-8,055	-4,197	-8,106	-9,110	-23,543	-22,815	-5,886	-89,666	
		Subtotal	-2,110,706	-2,523,707	-89,371	705	-1,034	-2,870	-6,756	-8,055	-4,197	-8,106	-9,110	-23,543	-22,815	-5,886	-89,666	
	Non-Mortgage	Futures	-305,000	-21,191	-750	53	-53	-171	-495	-64	-	-	-	-	-	-	-750	
		Subtotal	-305,000	-21,191	-750	53	-53	-171	-495	-64	-	-	-	-	-	-	-750	
	Others	Bid Management	-800,613	-767,812	-27,190	564	-598	-1,322	-2,706	-2,536	-2,035	-3,140	-3,280	-4,579	-6,005	-1,636	-27,274	
		Subtotal	-800,613	-767,812	-27,190	564	-598	-1,322	-2,706	-2,536	-2,035	-3,140	-3,280	-4,579	-6,005	-1,636	-27,274	
		Subtotal	-3,216,319	-3,312,711	-117,312	1,323	-1,685	-4,384	-9,957	-8,675	-8,232	-11,247	-12,390	-28,122	-28,820	-7,522	-117,693	
	Net Exposure		560,570	-151,081	-5,350	-394	843	536	191	977	2,096	698	2,520	-8,846	-3,670	-294	-5,341	

This position is long the short-end and short the long-end of the yield curve

Risk Management on a Broader Scale



- ***Published Inter-Agency Guidelines*** issued on January 6, 2010 (still relevant today!). Summarizes the guidance of Federal Reserve, FDIC, NCUA, OCC, OTS (may they rest in peace), and state regulators
- Describes selected IRR management techniques used by effective risk managers
- Re-emphasizes the importance of
 - Corporate governance
 - Policies and procedures
 - Risk measuring and monitoring systems
 - Stress testing
 - Internal controls related to IRR exposure

- Institutions are expected to have a robust IRR measurement process and system to assess exposures relative to established risk tolerances
- Perform comprehensive simulations of the potential impact of changes in market rates
- Use in conjunction with economic value-based methodologies to measure the degree of change under different interest rate scenarios

Scenarios Specifically Mentioned Include:



- Instantaneous and significant change in the level of interest rates
- Changes in the relationships between key market rates and changes in the slope and shape of the yield curve

Review



- Pipeline hedging concepts
 - The definition and quantification of “risk”
 - Hedging as a way to mitigate risk
 - Unique aspects of Pipeline Risk Management
- The hedger’s tools
- Pipeline hedging exercise
- Futures Overview
- Risk management on a broader scale

Questions?

The information contained in this presentation is for general informational purposes only and is not intended and should not be construed as legal advice. Please consult an attorney for advice and assistance with your specific legal questions and situations.

Evaluations

Your feedback matters! Please complete the evaluation for this session and hand it in to your facilitator or instructor. It is the last page in this section of your notebook before the next tab.

Disclaimer



This publication is designed to present, as simply and as accurately as possible, a general explanation of processes and functions within the mortgage industry. It should be noted that the information presented is not all-inclusive. Forms, regulations and overall processes may change because of changes within the industry. This publication should not be used as a substitute for referring to the applicable rules and regulations and is distributed with the understanding that the publisher is not engaged in rendering legal or other personalized professional service. If legal or other expert assistance is required, the services of a competent professional should be sought.

Servicing Portfolio Valuation

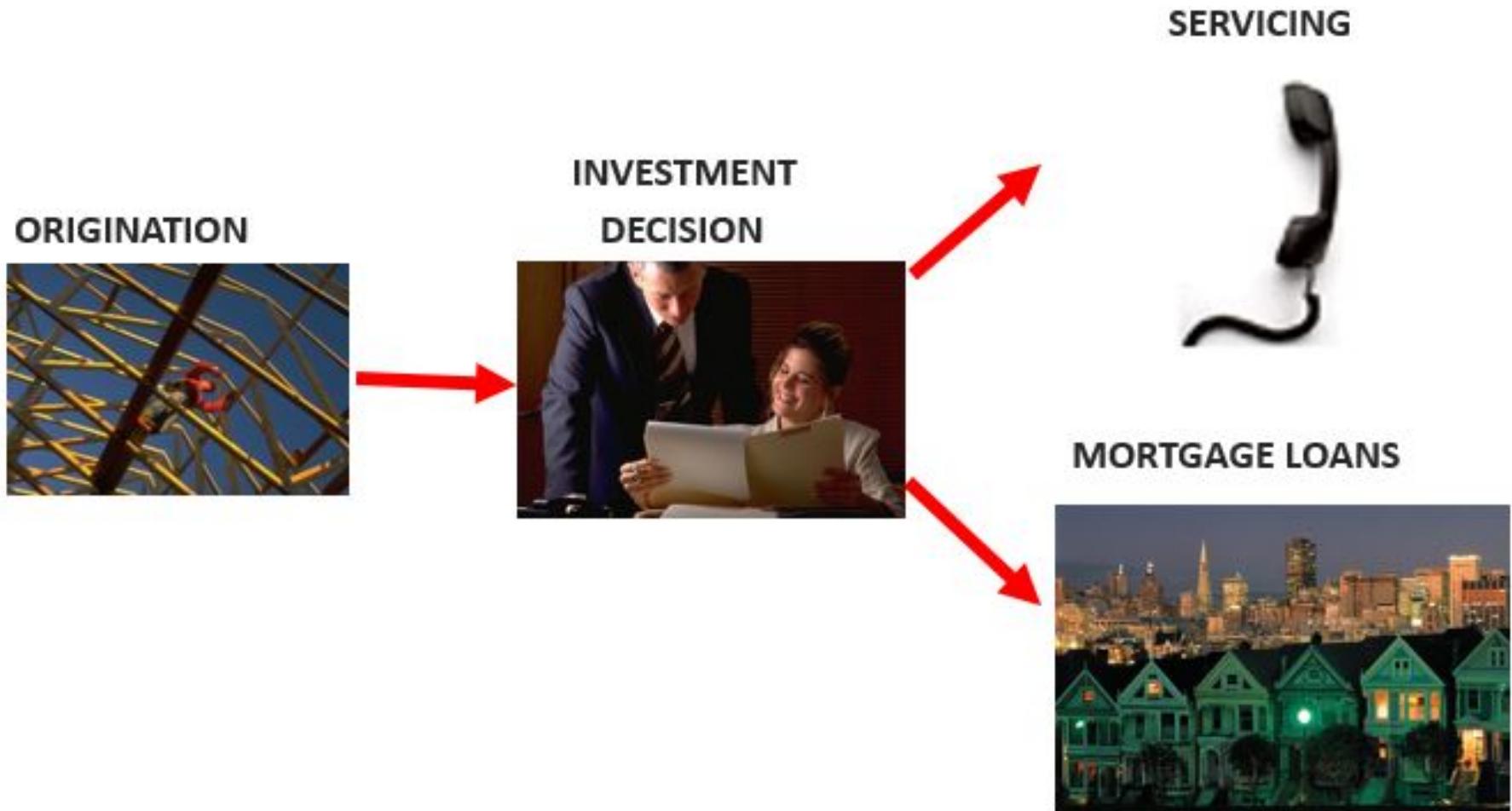


- Components of a portfolio
- The valuation process
- Income components
- Operating costs
- Foreclosure costs & credit risk factors
- Amortization calculation
- Projecting prepayments
- Yield requirements
- The market for MSRs
- Additional topics

Servicing Basics

Unbundling the Mortgage Business

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Another Way To Look At It...

ORIGINATION



*Creates the opportunity
to make money*

i.e. Makes Loans

SERVICING



*Actually makes
the money*

i.e. Gets it back!

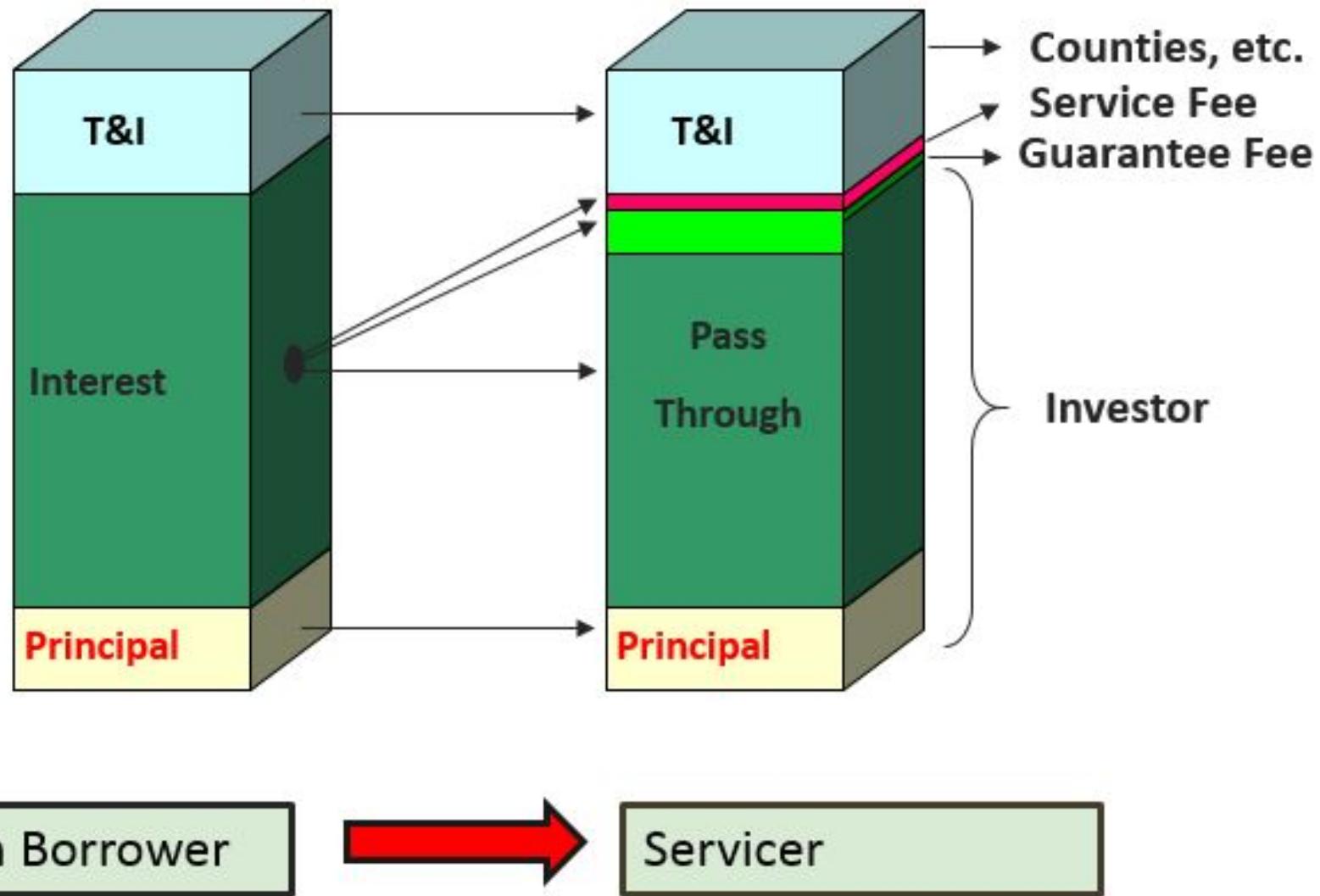
What is “Servicing?”



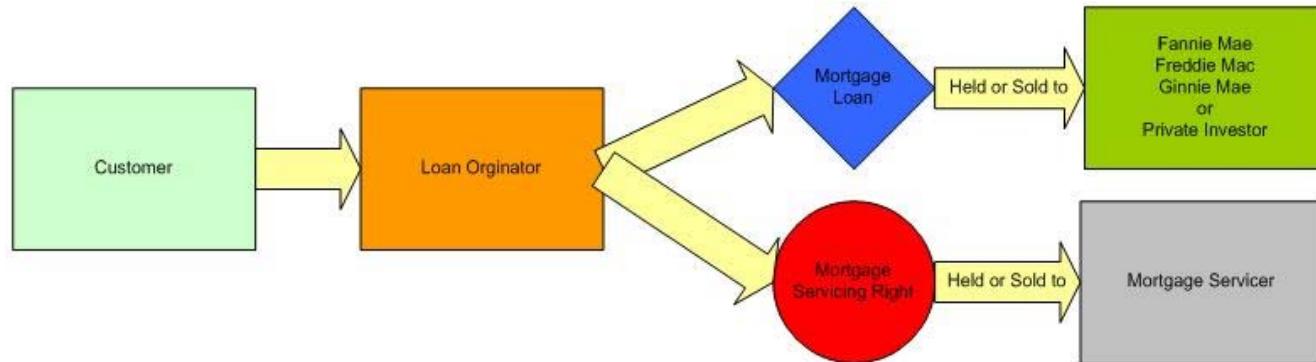
“Loan servicing is the contractual right to receive mortgage payments from mortgagors for a fee, and remit pieces of those payments – principal, interest, taxes and insurance – to the appropriate recipients”

**Source: Servicing Portfolio Evaluation & Management
MBA. Healy & Briggs. 1992**

Breakdown of a Mortgage Payment



What is a Mortgage Servicing Right?



A mortgage servicing right (MSR) is the strip of interest from the loan, and based on the accounting rules becomes an asset when a mortgage loan is sold servicing retained. The strip of interest is paid to the servicer to perform the servicing duties based on the investor guidelines. Mortgage servicers are responsible for the collection of payments on the mortgage loan and the distribution of these payments to appropriate authority (including investors, tax authorities and insurance companies).

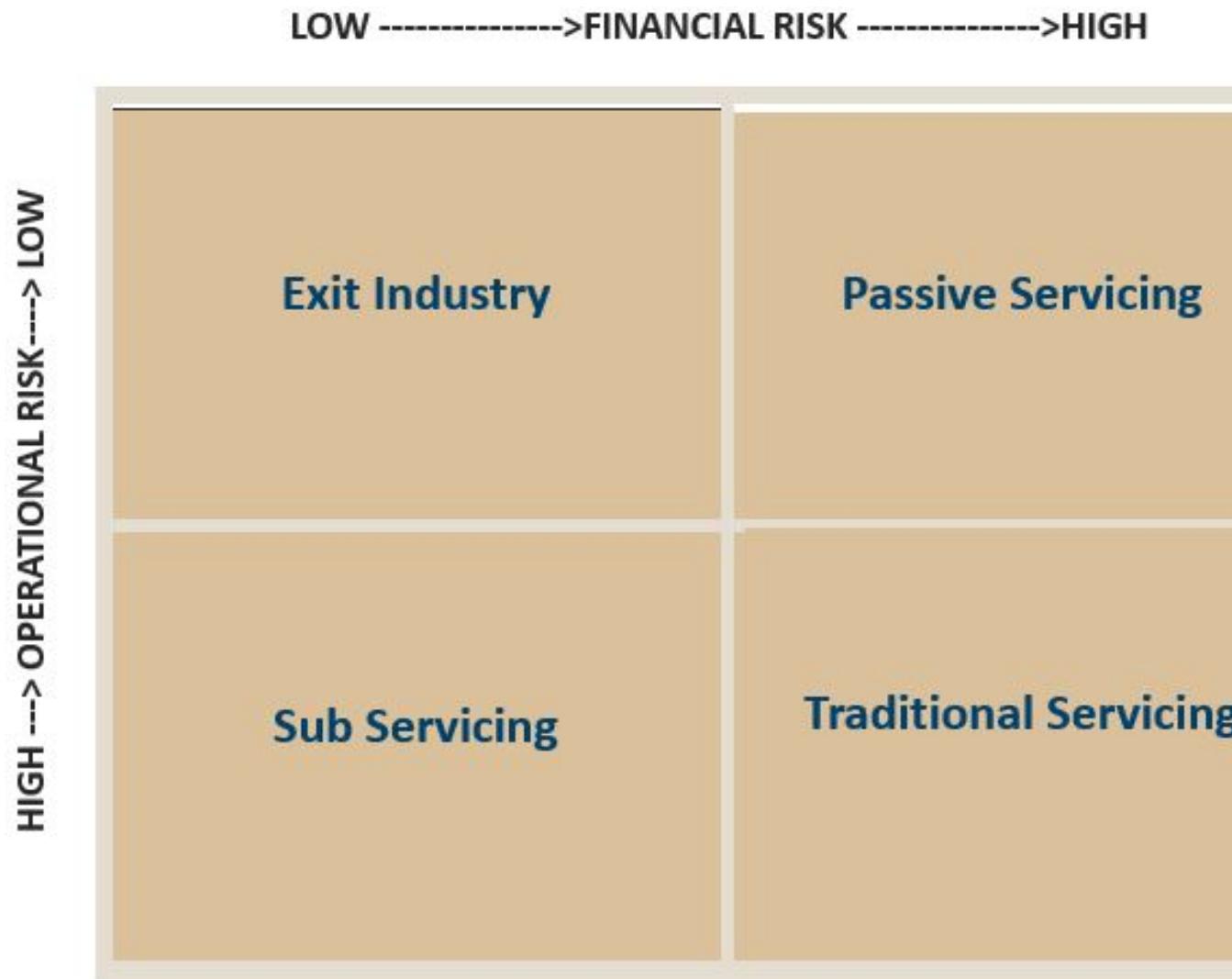
Source: Phoenix Capital

Servicing Investment Alternatives

Servicing Investment Alternatives



Servicing Investment Alternatives, cont.



Top Subservicers



Rank	Sub Servicer	Q4 2015 Volume (In Millions)
1	Cenlar	\$391,000
2	Dovenmuehle	\$255,000
3	PHH Mortgage	\$126,300
4	Loan Care	\$111,000
5	DiTech (Walter GreenTree)	\$51,000
6	Celink	\$41,000
7	Flagstar	\$40,200
8	Select Portfolio Servicing	\$36,000
9	Seterus	\$22,000
10	Nationstar	\$21,200
11	Provident Funding	\$21,000
12	Ocwen	\$20,900
13	LenderLive	\$16,500
14	Roundpoint	\$14,900
15	Specialized Loan Serv	\$13,700
16	Rushmore Loan Mtg	\$11,000
17	Selene Finance	\$10,000
18	PennyMac	\$8,800
19	Fay Servicing	\$8,500
20	Wells Fargo	\$4,300

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Top 20 Servicers 2015 vs. 2003



Rank	Servicer	Q4 2015 Volume (In Millions)	Market Share	Rank	Servicer	Q1 2003 Volume (In Millions)	Market Share
1	Wells Fargo & Company	\$1,649,060	16.7%	1	<i>Washington Mutual</i>	728,260	11.0%
2	Chase	\$910,100	9.2%	2	Wells Fargo & Company	580,430	8.8%
3	Bank of America	\$564,920	5.7%	3	<i>Countrywide</i>	502,080	7.6%
4	Nationstar Mortgage	\$398,000	4.0%	4	Chase	432,030	6.5%
5	<i>Cenlar</i>	\$391,000	4.0%	5	Bank of America	257,200	3.9%
6	U.S. Bank Home Mortgage	\$296,100	3.0%	6	<i>Citi Mortgage</i>	196,870	3.0%
7	CitiMortgage	\$291,410	3.0%	7	<i>ABN AMRO</i>	195,750	3.0%
8	DiTech (Walter GreenTree)	\$246,600	2.5%	8	<i>GMAC</i>	194,750	2.9%
9	PHH Mortgage	\$226,260	2.3%	9	<i>National City</i>	127,340	1.9%
10	Quicken Loans, Inc.	\$195,600	2.0%	10	<i>Cendent (now PHH)</i>	119,670	1.8%
11	PennyMac	\$160,300	1.6%	11	<i>Principal Residential</i>	113,320	1.7%
12	SunTrust Mortgage, Inc.	\$148,130	1.5%	12	<i>Golden West</i>	66,410	1.0%
13	PNC Mortgage	\$137,520	1.4%	13	<i>Homecomings Financial</i>	64,750	1.0%
14	Branch Banking & Trust Co.	\$123,010	1.2%	14	<i>Cenlar FSB (SS) (E)</i>	59,820	0.9%
15	<i>Loan Care, LLC.</i>	\$111,000	1.1%	15	<i>First Horizon</i>	58,180	0.9%
16	Caliber Home Loans	\$85,230	0.9%	16	<i>U.S. Bank Home Mortgage</i>	56,680	0.9%
17	Lakeview Loan Servicing	\$81,600	0.8%	17	<i>Fairbanks Capital</i>	53,210	0.8%
18	Freedom Mortgage Corp	\$76,290	0.8%	18	<i>Citifinancial</i>	48,010	0.7%
19	<i>Provident Funding</i>	\$74,000	0.8%	19	<i>HSBC</i>	45,790	0.7%
20	Fifth Third Mortgage	\$73,460	0.7%	20	<i>Household Mortgage Services</i>	44,000	0.7%
Top 5		4,209,180	42.2%	Top 5		2,500,000	37.7%
Top 10		5,329,350	53.4%	Top 10		3,334,380	50.3%
Top 20		6,239,590	62.5%	Top 20		3,944,550	59.5%
Total 1 to 4 Outstanding		9,986,020		Total 1 to 4 Outstanding		6,630,000	

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Top 20 Servicers 2015 vs. 2010



Rank	Servicer	Q4 2015 Volume (In Millions)	Market Share	Rank	Servicer	Q4 2010 Volume (In Millions)	Market Share
1	Wells Fargo & Company	\$1,649,060	16.5%	1	Bank of America	2,069,241	21.6%
2	Chase	\$910,100	9.1%	2	Wells Fargo & Company	1,808,327	18.8%
3	Bank of America	\$564,920	5.7%	3	Chase	1,254,846	13.1%
4	Nationstar Mortgage	\$398,000	4.0%	4	CitiMortgage, Inc.	601,684	6.3%
5	Cenlar	\$391,000	3.9%	5	Residential Capital, LLC (GMAC)	384,967	4.0%
6	U.S. Bank Home Mortgage	\$296,100	3.0%	6	U.S. Bank Home Mortgage	216,096	2.3%
7	CitiMortgage	\$291,410	2.9%	7	PHH Mortgage	166,075	1.7%
8	Dovenmuehle	\$255,000	2.6%	8	SunTrust Mortgage, Inc.	165,514	1.7%
9	DiTech (Walter GreenTree)	\$246,600	2.5%	9	PNC Mortgage/National City	138,529	1.4%
10	PHH Mortgage	\$226,260	2.3%	10	MetLife Home Loans	115,916	1.2%
11	Quicken Loans, Inc.	\$195,600	2.0%	11	OneWest Financial/IndyMac	109,790	1.1%
12	PennyMac	\$160,300	1.6%	12	Branch Banking & Trust Co.	83,815	0.9%
13	SunTrust Mortgage, Inc.	\$148,130	1.5%	13	American Home Mortgage Servicing, Inc.	79,541	0.8%
14	PNC Mortgage	\$137,520	1.4%	14	Cenlar FSB (SS)	77,000	0.8%
15	Branch Banking & Trust Co.	\$123,010	1.2%	15	Annaly Capital Investment	74,750	0.8%
16	LoanCare, LLC	\$111,000	1.1%	16	Aurora Loan Services, Inc.	74,404	0.8%
17	Caliber Home Loans	\$85,230	0.9%	17	Dovenmuehle Mortgage	69,750	0.7%
18	Lakeview Loan Servicing	\$81,600	0.8%	18	Fifth Third Mortgage	65,806	0.7%
19	Freedom Mortgage Corp	\$76,290	0.8%	19	Nationstar Mortgage	64,169	0.7%
20	Provident Funding	\$74,000	0.7%	20	Flagstar Bank, FSB	62,926	0.7%
Top 5		4,209,180	42.2%	Top 5		6,119,065	63.8%
Top 10		5,584,350	55.9%	Top 10		6,921,195	72.1%
Top 20		6,421,130	64.3%	Top 20		7,683,146	80.1%
Total 1 to 4 Outstanding		9,986,020		Total 1 to 4 Outstanding		9,595,103	

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MSR Portfolios



IN BILLIONS - MSR Portfolio Only	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	UPB Change Q1 2016 to Q4 2015 Percentage Change	Q1 2016 to Q1 2015 UPB Percentage Change	Q1 2016 to Q1 2014 UPB Percentage Change
Penny Mac	35	37	40	42	44	4.5%	25.7%	62%
Two Harbors	44	43	48	51	55	7.6%	25.8%	33%
HomeStreet	12	13	14	15	16	4.4%	34.2%	31%
Stonegate	17	17	18	18	18	3.2%	6.5%	28%
Walter / GreenTree	193	207	207	206	207	0.3%	7.4%	17%
SunTrust	115	118	122	121	121	0.3%	5.3%	15%
NYCB	23	24	22	24	25	1.7%	7.4%	13%
PNC	113	115	122	123	125	1.2%	10.6%	10%
M and T Bank	25	24	24	24	24	(0.8%)	-3.7%	5%
Huntington	16	16	16	16	16	0.4%	4.1%	4%
US Bank	225	225	229	232	232	0.2%	3.1%	3%
BB&T	89	89	90	91	91	(0.6%)	1.5%	3%
Nationstar	343	353	355	346	333	(3.8%)	-3.0%	2%
Regions	27	27	26	26	28	8.5%	3.7%	0%
Flagstar	27	28	26	26	27	1.8%	-1.6%	-8%
Wells Fargo	1,374	1,344	1,323	1,300	1,280	(1.5%)	-6.8%	-13%
Fifth Third	64	62	60	59	58	(1.7%)	-9.4%	-16%
Chase	724	723	703	674	655	(2.8%)	-9.4%	-18%
PHH	109	105	102	99	96	(2.9%)	-11.7%	-24%
Everbank	39	35	35	31	31	0.1%	-20.5%	-26%
Bank of America	459	409	391	378	368	(2.6%)	-19.8%	-30%
HSBC	22	21	20	19	18	(4.3%)	-18.5%	-30%
CITI	212	204	199	194	185	(4.3%)	-12.5%	-31%
Ocwen Financial	337	268	238	230	224	(2.8%)	-33.6%	-43%

Provided and Collected by Seth Sprague, Phoenix Capital

Business Profit Dynamics

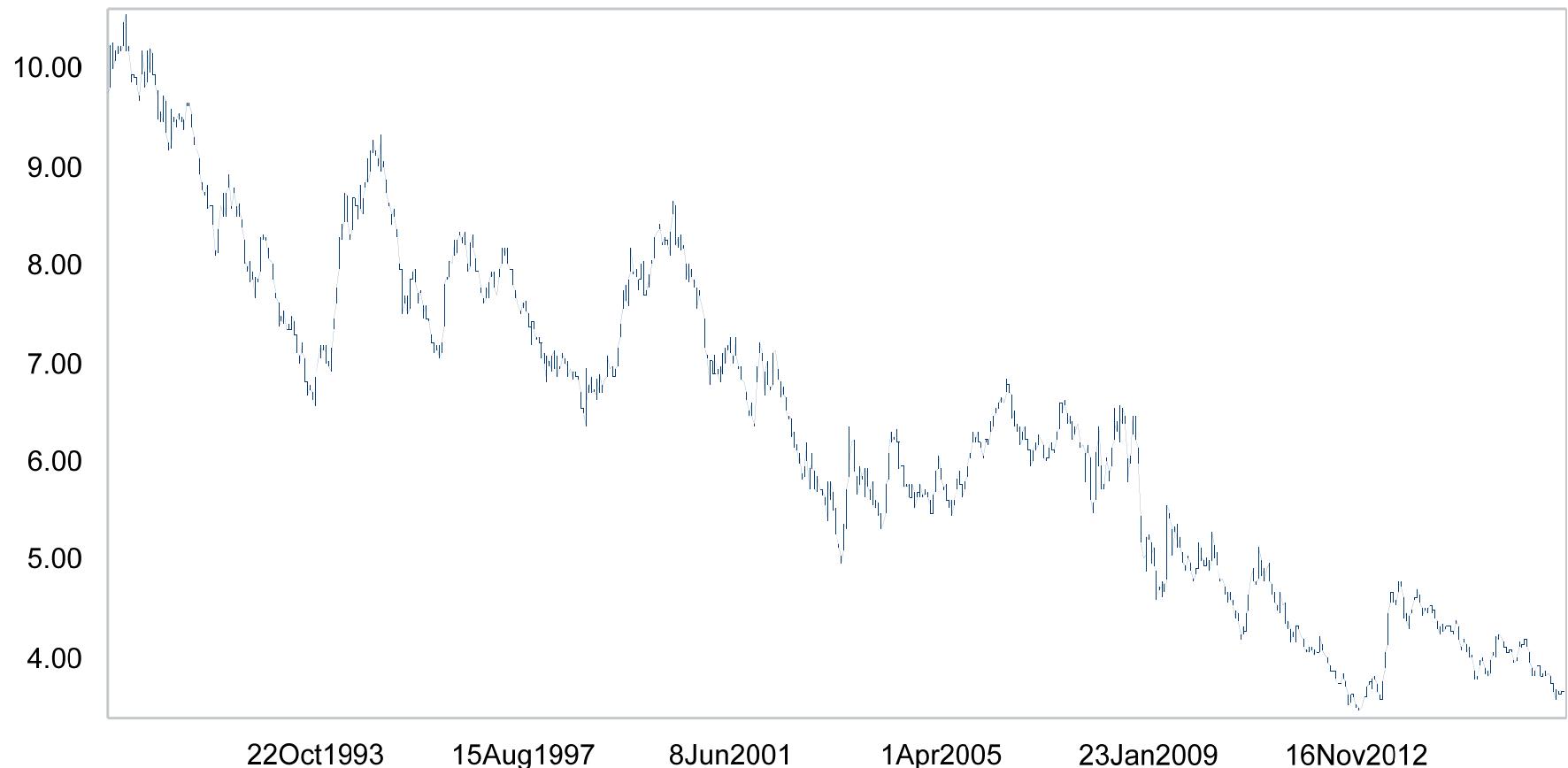


Business Profit Dynamics

	LOAN PRODUCTION	LOAN SERVICING	TOTAL
SERVICE FEES	0.00%	0.25%	0.25%
ORIGINATION & OTHER	2.00%	0.02%	2.02%
NET INTEREST	0.25%	0.05%	0.30%
MARKETING GAIN/LOSS	0.00%	0.00%	0.00%
GROSS INCOME	2.25%	0.32%	2.57%
ORIGINATION EXPENSE	3.00%	0.00%	3.00%
SERVICING COSTS	0.00%	0.09%	0.09%
CASH FLOW	- 0.75%	0.23%	- 0.52%
SERVICING VALUE	1.00	0.00%	1.00%
AMORTIZATION	0.00%	- 0.12%	- 0.12%
NET VALUE	0.25%	0.09%	0.34%

30 Yr Fixed Rates – Historical

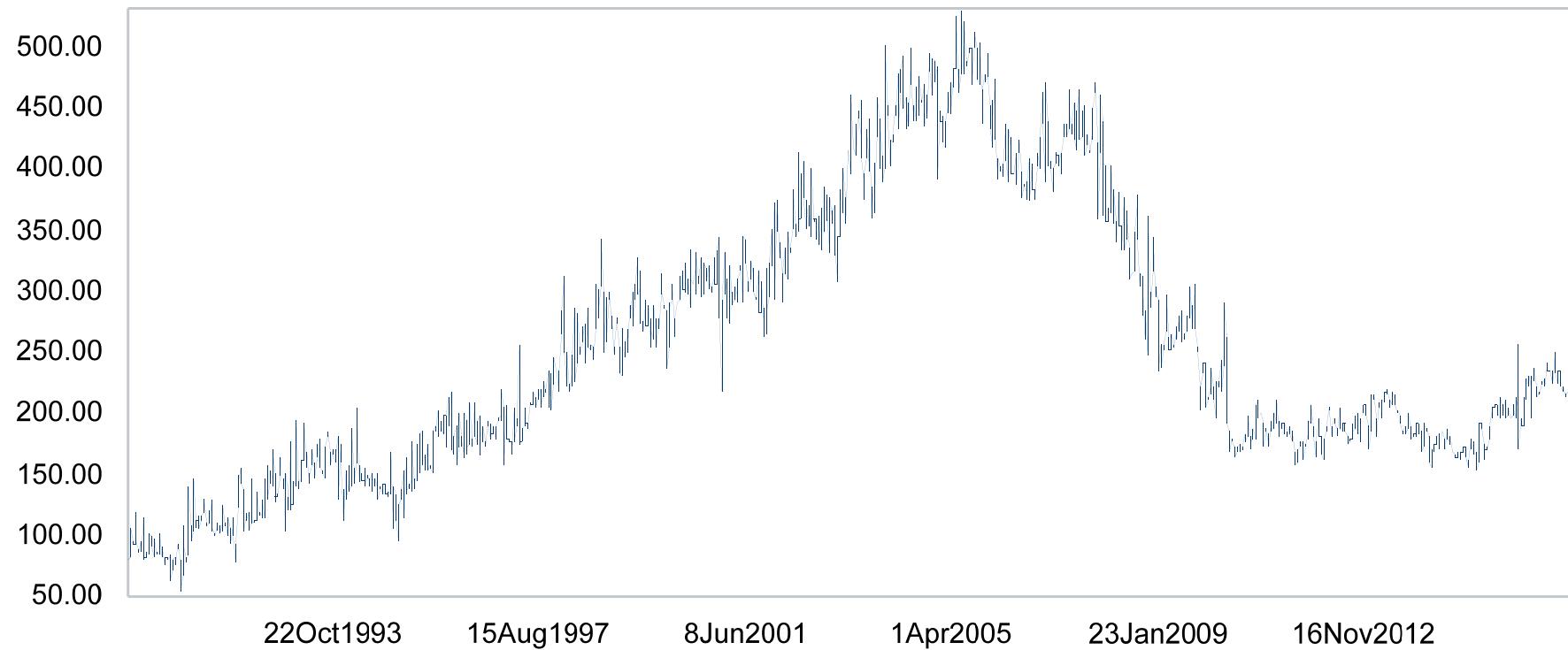
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MBA Purchase Index

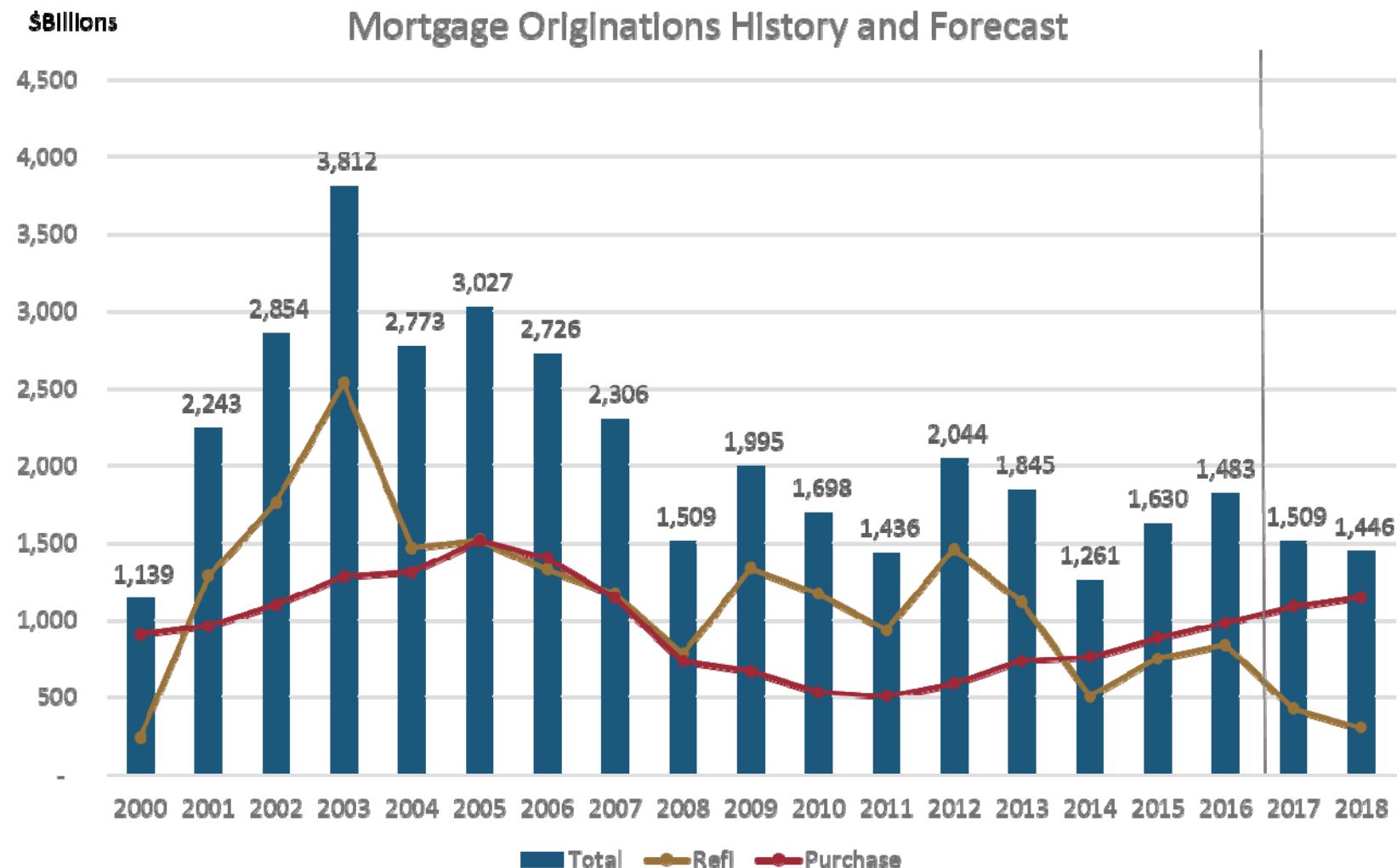


Purchase Applications Index (SA, 3/16/1990=100)



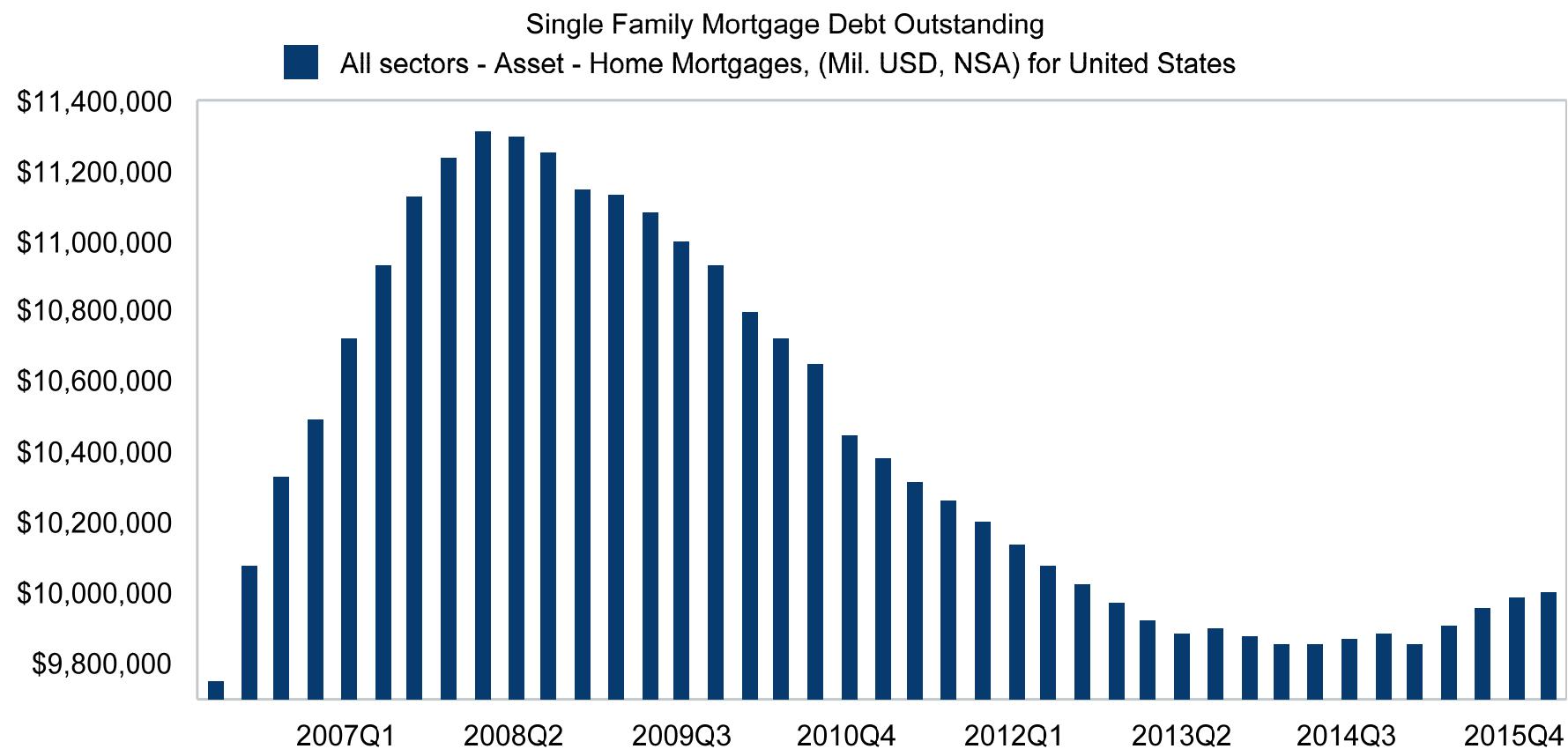
MBA Mortgage History and Forecast

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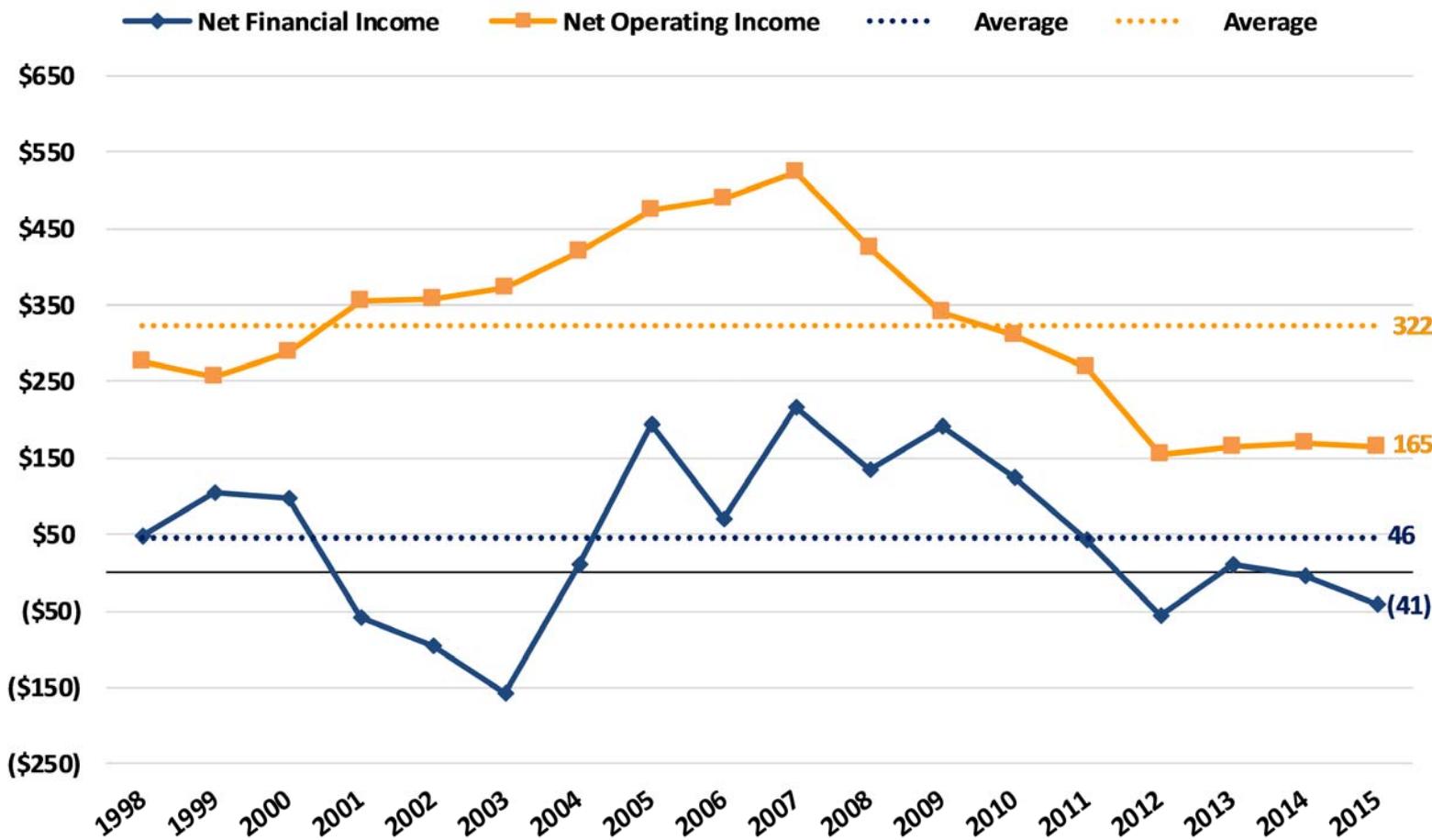


Outstanding Mortgage Universe

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Profit & Loss Trends (\$ per loan)

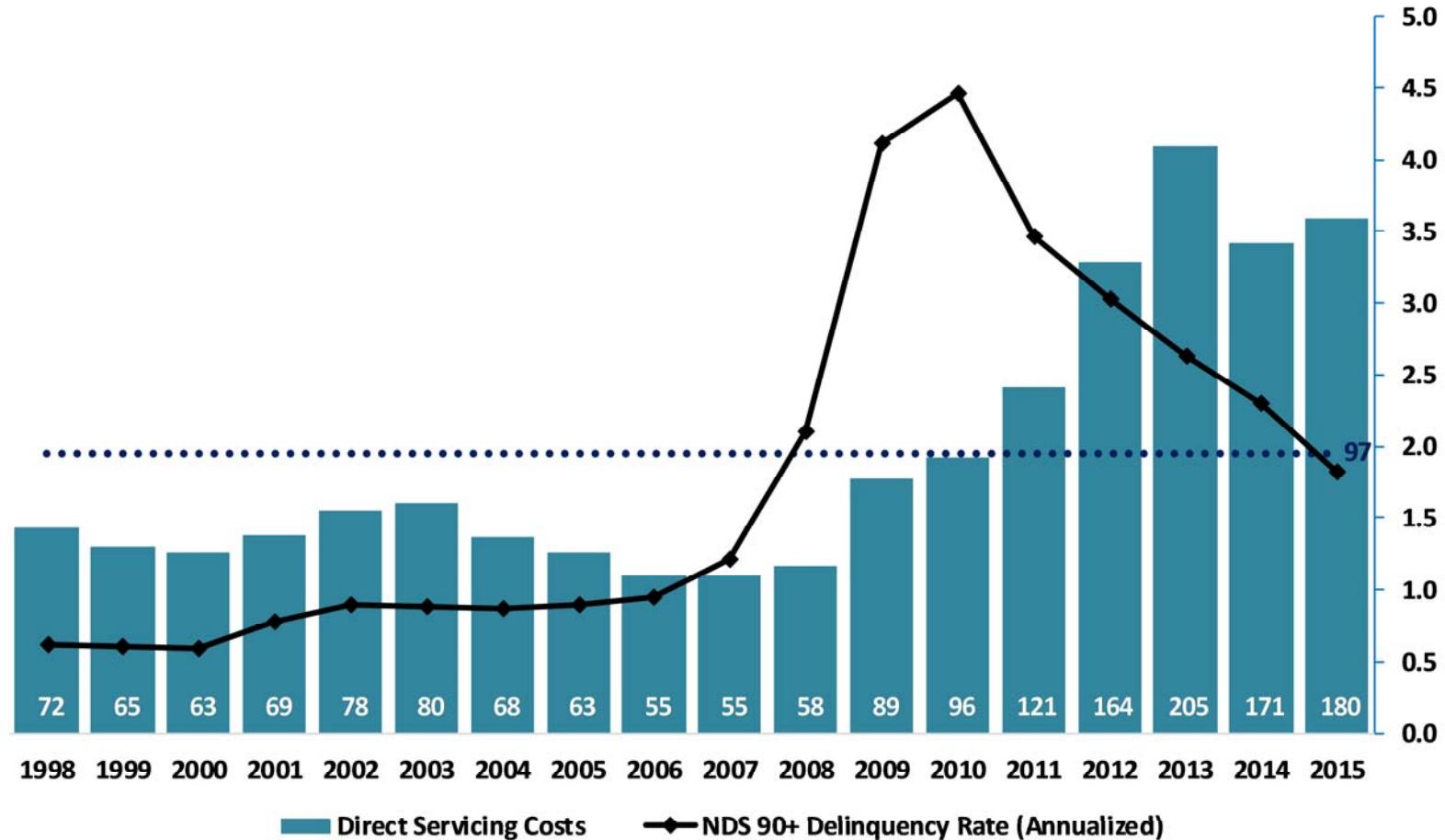


Source: MBA's Servicing Operations Study, Prime Servicers

* **NOI excludes MSR-Related Items:** Amortization/Loan decay, Gain/loss on MSR valuation, Hedge gains/losses, Gain/loss on bulk sale of servicing

Direct Servicing Costs (\$ per loan)

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EDUCATION



Source: MBA's Servicing Operations Study, Prime Servicers , 1H2015 PGR: MBA and STRATMOR Peer Group Roundtables

2nd Quarter 2016 Results, Independent Mortgage Companies and Subs of Banks



\$ PER LOAN	All Firms Q2 2016
DIRECT REVENUES	
Servicing Fees	464
First Mortgages, Seconds, Other	420
Subservicing Fees Earned	44
Late Fees and Other Ancillary Income	43
Total Direct Servicing Revenues	507
DIRECT EXPENSES	
Personnel	126
Occupancy and Equipment	7
Technology-Related Expenses	5
Other Direct Expenses	131
Total Direct Expenses	269
DIRECT SERVICING NET INCOME	238
INDIRECT EXPENSES	
Unreimbursed FC/REO Svg Expenses	6
Corporate Allocation	33
Total Indirect Expenses	39
Net Interest Income	(7)
NET OPERATING INCOME	192
MSR FINANCIAL ITEMS	
Amortized Cost of Servicing Rights / Loan Decay	(117)
Net Gain (Loss) on Bulk Sale of Servicing	(12)
Net Gain (Loss) from MSR Valuations & Hedging	(223)
Total Financial Items	(352)
TOTAL NET FINANCIAL INCOME	(160)
Memorandum Items:	
Average Servicing Portfolio (\$000)	13,172,898
Average Servicing Portfolio (#)	78,730
Average Loan Balance (\$)	180,781

Source: MBA Quarterly Performance Report for Independent Mortgage Companies and Subs of Financial Institutions as of Q415, simple averages. Note that an average of roughly 50% of average servicing portfolio for this sample is subserviced.

2nd Quarter 2016 Results, by Company Type



\$ PER LOAN:	Bank/ Thrift Subs	Independent Mtg Cos.
DIRECT REVENUES		
Servicing Fees	383	494
Late Fees and Other Ancillary Income	42	39
Total Direct Servicing Revenues	425	532
DIRECT EXPENSES		
Personnel	102	132
Occupancy and Equipment	11	6
Technology-Related Expenses	6	4
Other Direct Expenses	99	148
Total Direct Expenses	217	290
DIRECT SERVICING NET INCOME	208	242
INDIRECT EXPENSES		
Unreimbursed FC/REO Svg Expenses	0	8
Corporate Allocation	27	27
Total Indirect Expenses	27	35
Escrow Earnings	0	1
Net Interest Income	(3)	(7)
NET OPERATING INCOME	178	201
MSR FINANCIAL ITEMS		
Amortized Cost of Servicing Rights / Loan Decay	(115)	(129)
Net Gain (Loss) on Bulk Sale of Servicing	2	(10)
Net Gain (Loss) from MSR Valuations & Hedging	(135)	(248)
Total Financial Items	(247)	(387)
TOTAL NET FINANCIAL INCOME	(70)	(186)
Memorandum Items:		
Average Servicing Portfolio (\$000)	15,124,669	7,789,383
Average Servicing Portfolio (#)	93,169	43,220
Average Loan Balance (\$)	158,492	189,239

Source: MBA Quarterly Performance Report for Independent Mortgage Companies and Subs of Financial Institutions as of Q415, simple averages. Note that an average of roughly 50% of average servicing portfolio for this sample is subserviced.

Regulatory and Accounting Guidelines





INTERAGENCY ADVISORY ON MORTGAGE BANKING

Initially record servicing assets at **fair value**.

Fair value is defined in FAS 140 as the amount at which an asset could be bought or sold in a current transaction between willing parties, that is, other than in a forced or liquidation sale. Quoted market

results of periodic reviews of each asset's subsequent carrying amount and fair value. The validation process should compare actual performance with predicted performance. Management

Comparison of assumptions used in valuation models with the institution's actual experience in order to substantiate the value of MSAs. Management should measure the actual performance of MSAs by analyzing gross monthly cash flows of servicing assets relative to the assumptions and projections used in each quarterly valuation. In addition, a comparison of the first month's actual cash received on new MSAs with the projected gross cash flows can help validate the reasonableness of initial MSA values prior to the impact of prepayments and discount rates. "Economic value" analysis is a critical tool in understanding the profitability of mortgage servicing to an institution; however, it is not a substitute for the estimation of the fair value of MSAs under GAAP.

<http://www.fdic.gov/news/news/press/2003/PR1403a.html>



INTERAGENCY ADVISORY ON MORTGAGE BANKING

Management Information Systems

- *Accurate financial reporting systems, controls, and limits.* At a minimum, the board should receive information on hedged and unhedged positions, mark-to-market analyses, warehouse aging, valuation of MSAs, various rate shock scenario and risk exposures, creation of economic value, and policy exceptions whenever material exposure to MSAs exists.
- Failure to validate or update models for new information. Inaccuracies in valuation models can result in erroneous MSA values and affect future hedging performance. Models should be inventoried and periodically revalidated, including an independent assessment of all key assumptions.
- *Review and approval of results and assumptions by management.* Given the sensitivity of the MSA valuation to changes in assumptions and valuation policy, any such changes should be reviewed and approved by management and, where appropriate, by the board of directors.

Fair Value Accounting

- Active engagement of Senior Management
 - Consistent reporting & review
 - Committees
 - Approval of assumptions
 - Approval of valuations
- Middle office function/Market Risk
- Model valuation group (approves valuation model)
- Controllers areas
- Treasury/Hedge group
- Finance/Forecasting
- IT/Technology

- Adoption of FAS 156 as of the beginning of its first fiscal year that begins after September 15, 2006
- Two approved methods exist for the on-going MSR accounting
 - Fair Value
 - Mark to market through income statement
 - Due to volatility likely to hedge the MSR asset
 - LOCOM (Lower cost or market)
 - Record at fair value, amortize and test for impairment
 - ✓ Impairment occurs when market value is less than book value
 - ✓ Less volatile than fair value but impairment charges can be material and sudden
 - Both require initial recognition of MSRs at fair value

MSR Fair Value Disclosure



Note 8: Mortgage Banking Activities

Mortgage banking activities, included in the Community Banking and Wholesale Banking operating segments, consist of residential and commercial mortgage originations, sale activity and servicing.

We apply the amortization method to commercial MSRs and apply the fair value method to residential MSRs. The changes in MSRs measured using the fair value method were:

(in millions)	Quarter ended Sep 30,		Nine months ended Sep 30,	
	2015	2014	2015	2014
Fair value, beginning of period	\$ 12,661	13,900	12,738	15,580
Servicing from securitizations or asset transfers	448	340	1,184	900
Sales and other (1)	6	—	—	—
Net additions	454	340	1,184	900
Changes in fair value:				
Due to changes in valuation model inputs or assumptions:				
Mortgage interest rates (2)	(858)	251	(313)	(1,134)
Servicing and foreclosure costs (3)	(18)	(4)	(46)	(15)
Discount rates (4)	—	—	—	(55)
Prepayment estimates and other (5)	43	6	(194)	181
Net changes in valuation model inputs or assumptions	(833)	253	(553)	(1,023)
Other changes in fair value (6)	(504)	(462)	(1,591)	(1,426)
Total changes in fair value	(1,337)	(209)	(2,144)	(2,449)
Fair value, end of period	\$ 11,778	14,031	11,778	14,031

(1) Includes sales and transfers of MSRs, which can result in an increase of total reported MSRs if the sales or transfers are related to nonperforming loan portfolios.
(2) Includes prepayment speed changes as well as other valuation changes due to changes in mortgage interest rates (such as changes in estimated interest earned on custodial deposit balances).

(3) Includes costs to service and unreimbursed foreclosure costs.

(4) Reflects discount rate assumption change, excluding portion attributable to changes in mortgage interest rates.

(5) Represents changes driven by other valuation model inputs or assumptions including prepayment speed estimation changes and other assumption updates. Prepayment speed estimation changes are influenced by observed changes in borrower behavior and other external factors that occur independent of interest rate changes.

(6) Represents changes due to collection/realization of expected cash flows over time.

Source: Wells Fargo Form 10-Q for Q3 2015

MSR LOCOM Disclosure



Servicing Rights

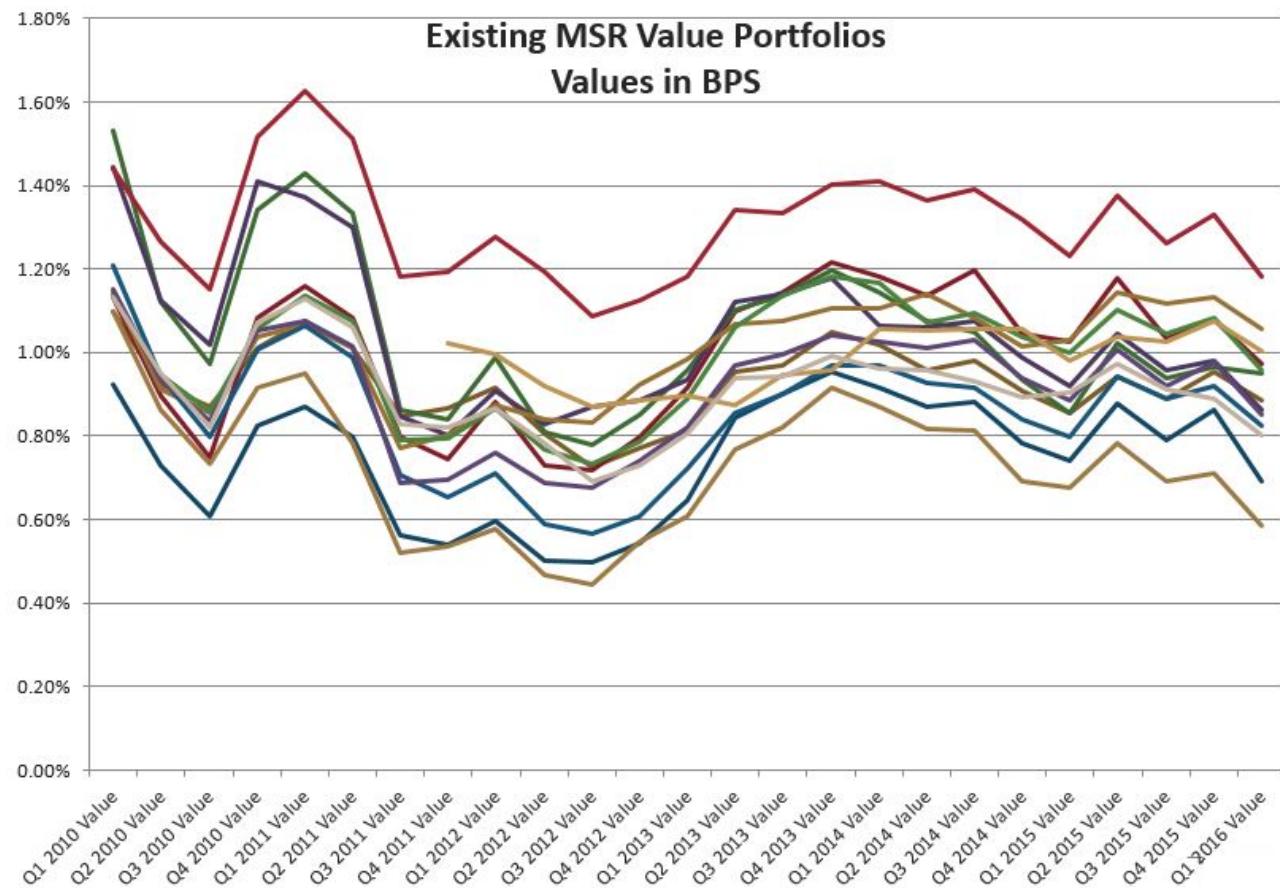
The following table presents changes in the servicing rights related to residential mortgage and automobile loans for the nine months ended September 30:

(\$ in millions)	2015	2014
Carrying amount before valuation allowance as of the beginning of the period	\$ 1,392	1,440
Servicing rights that result from the transfer of residential mortgage loans	48	60
Amortization	(111)	(89)
<u>Carrying amount before valuation allowance</u>	<u>1,329</u>	<u>1,411</u>
Valuation allowance for servicing rights:		
Beginning balance	(534)	(469)
Provision for MSR impairment	(38)	(7)
Ending balance	(572)	(476)
Carrying amount as of the end of the period	\$ 757	935

Source: Fifth Third 10-Q for Q3 2015

MSR Valuation

MSR Valuations (Public Data)



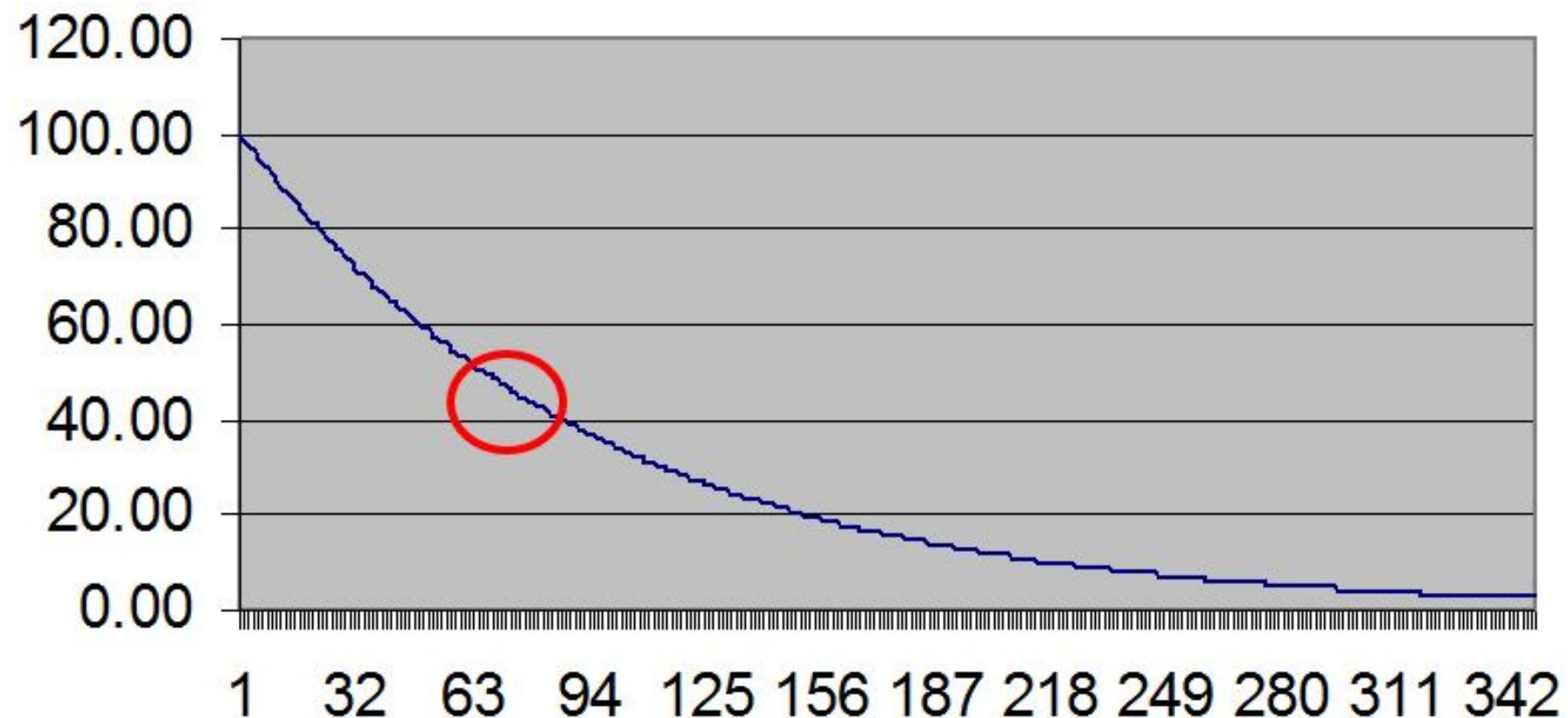
Source: Phoenix Capital

- Weighted averages (based on notional)
 - Original term (WAOT)
 - Age (WAA)
 - Remaining maturity (gross) (WAM)
 - Remaining term (prepayment adj) (WART)
 - Coupon (WAC)
 - Service fee (WASF)
- Duration (economic value)
- Servicing Multiple

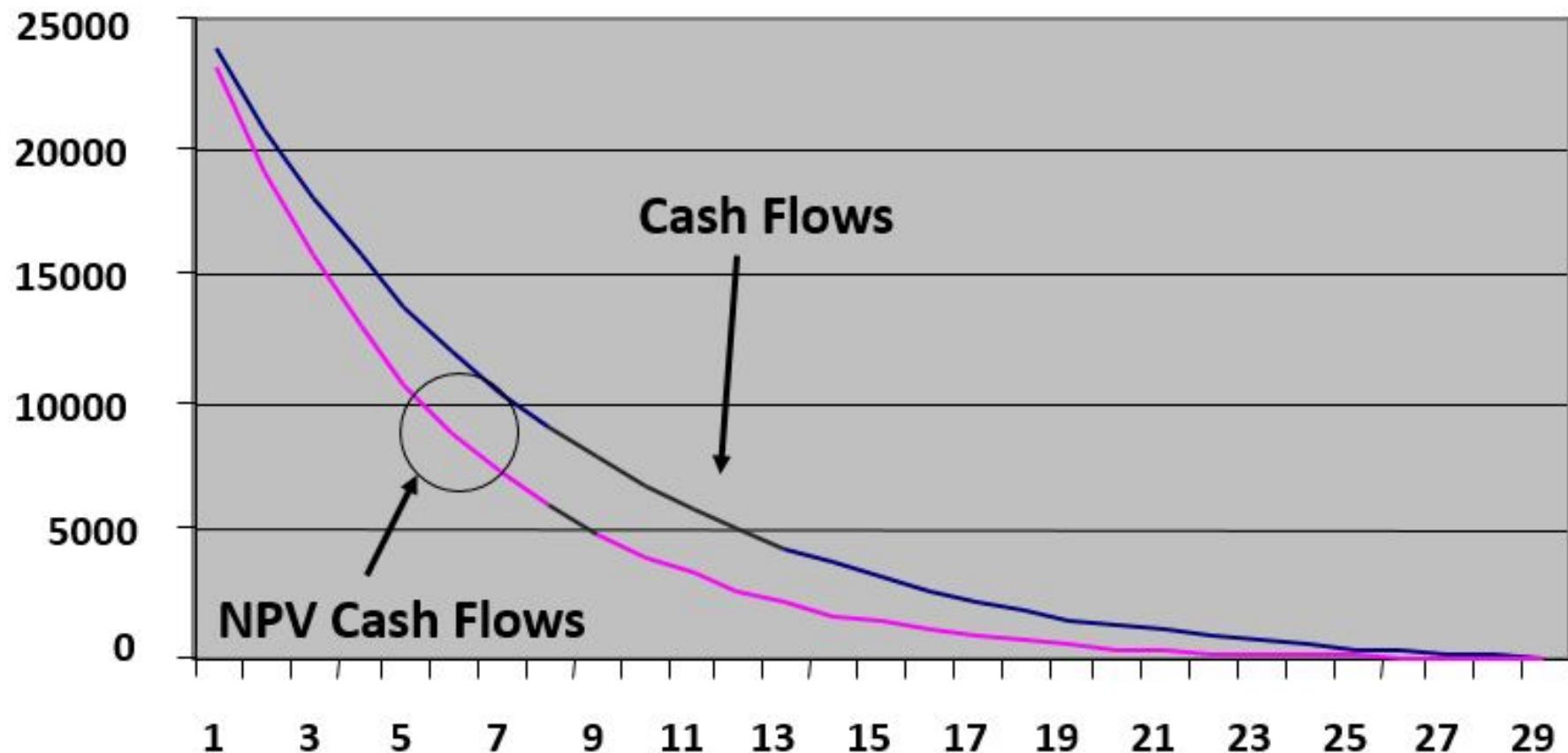
Weighted Average Acronyms (and Examples)



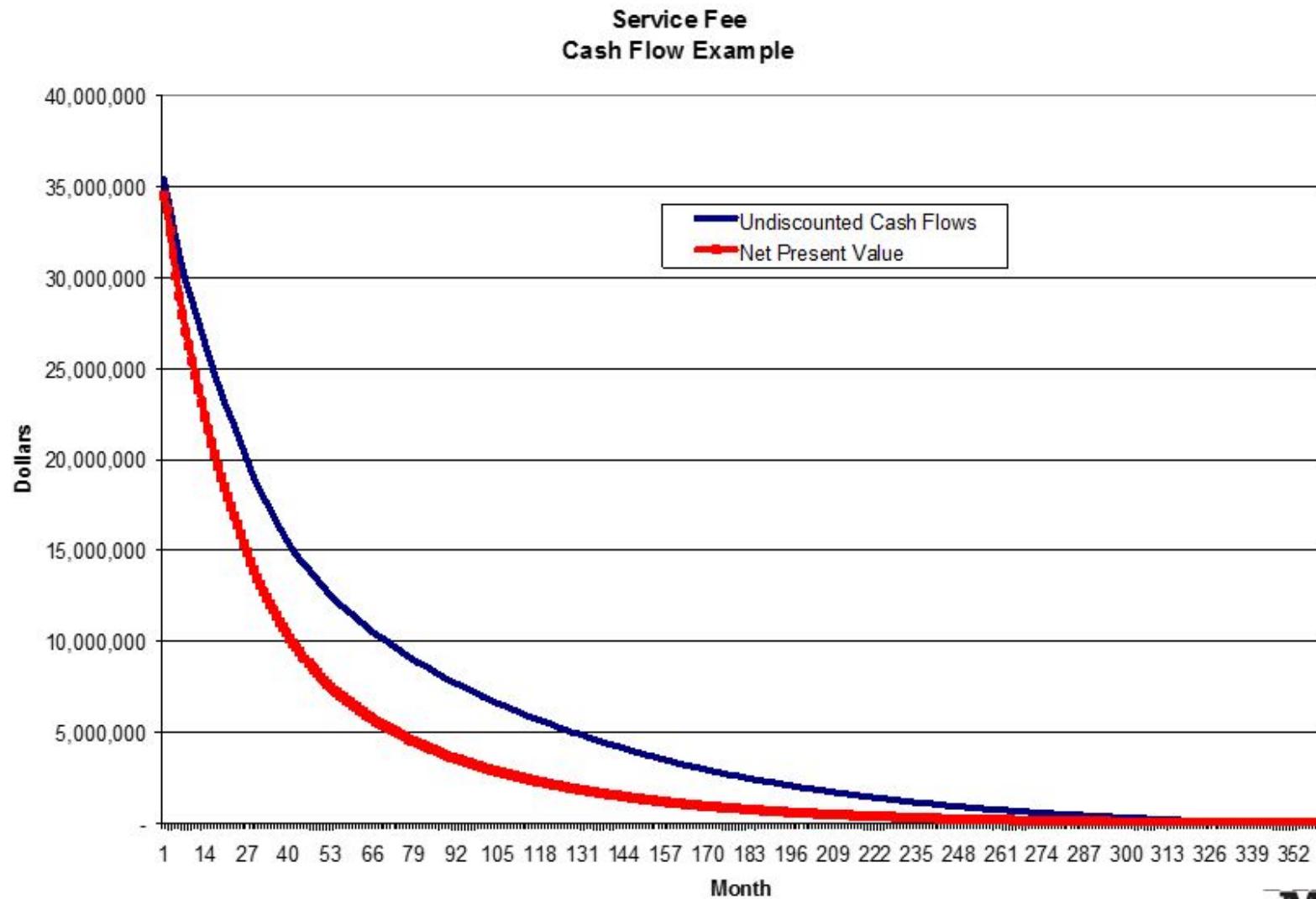
WAOT	Original Term (360)
WAA	Age (12)
WAM (gross)	Remaining Maturity (348)
WART (prepayment adj.)	Remaining Term (92)
WAC	Coupon (4.00)
WASF	Servicing Fee (.25)
Duration	Economic Value (59)



Economic Duration A Sensitivity Measure



Present Value – Service Fees



What is Servicing Value?



The net present value (NPV) of the *revenue streams* generated by a servicing portfolio,

MINUS

the *operating expenses* to administer it

ADJUSTED FOR

the *call option* given the mortgagor by virtue of his/her right to prepay at will.

Source: Servicing Portfolio Evaluation & Management, MBA, Healy & Briggs. 1992

Servicing values are expressed in two forms:

- Multiple of the service fee
 - A pool of servicing with a 25 bps strip of servicing, the net present value is expressed as a 4 multiple
- Percentage of the unpaid principal balance
 - A pool of servicing with a 25 bps strip of servicing, the net present value is expressed as 100 bps (or a 4 multiple of the service fee)

Sample Cash Flow Report



Cash Flow Report
(In Millions)

	Total Cash Flow	Service Fee	Ancillary	T&I Float	Payoff Float	P&I Float	Delq Serv Expense	Core Serv Expense	Unreimbursed F/C Expense	IOE Expense	Conversion Costs	Interest Lost	Advance Costs
0	1,276.8	1,283.9	122.9	99.0	68.6	27.6	(119.2)	(113.9)	(17.8)	(6.0)	(17.3)	(44.2)	(6.8)
1	13.1	35.4	3.3	0.3	0.5	0.1	(4.1)	(2.4)	(0.8)	(0.2)	(17.4)	(1.5)	(0.2)
2	30.3	34.6	3.3	0.5	0.8	0.2	(4.0)	(2.4)	(0.7)	(0.2)	-	(1.6)	(0.2)
3	29.8	33.8	3.2	0.6	1.1	0.2	(3.9)	(2.3)	(0.7)	(0.1)	-	(1.8)	(0.2)
4	28.9	32.9	3.1	0.6	0.9	0.2	(3.8)	(2.3)	(0.7)	(0.1)	-	(1.7)	(0.2)
5	28.2	32.0	3.0	0.6	0.9	0.2	(3.6)	(2.2)	(0.7)	(0.1)	-	(1.6)	(0.2)
6	27.6	31.2	2.9	0.6	0.9	0.2	(3.5)	(2.2)	(0.6)	(0.1)	-	(1.4)	(0.2)
7	27.2	30.5	2.9	0.6	0.9	0.2	(3.5)	(2.2)	(0.6)	(0.1)	-	(1.3)	(0.2)
8	26.8	29.7	2.8	0.7	0.8	0.2	(3.4)	(2.1)	(0.6)	(0.1)	-	(1.1)	(0.2)
9	26.4	29.2	2.8	0.7	0.8	0.2	(3.3)	(2.1)	(0.6)	(0.1)	-	(1.0)	(0.2)
10	25.8	28.6	2.7	0.7	0.8	0.2	(3.2)	(2.1)	(0.6)	(0.1)	-	(1.0)	(0.2)
11	25.4	28.1	2.6	0.7	0.8	0.2	(3.1)	(2.0)	(0.5)	(0.1)	-	(1.1)	(0.2)
12	24.9	27.5	2.6	0.7	0.9	0.2	(3.1)	(2.0)	(0.5)	(0.1)	-	(1.1)	(0.2)

Sample Best Practices



➤ Large/Mega servicers

- Frequent valuations (most likely daily)
- Dedicated “large” full-time MSR staffs
 - Valuation, hedging, research/ prepayment
- Multiple calibration points
 - Independent valuations, surveys

➤ Medium/small servicers

- Monthly valuations
- Active market calibration practices

MSR Valuation Approaches



Static approach

- Assumptions used are the same for all cash flow periods
 - Assumes “the world does not change”
- Modified forward curve approach
 - Some assumptions may change each period
 - Forward curve drives prepayments

OAS approach

- Hundreds or thousands of interest rate paths are run
 - Each path generates a different value for each cash flow period
 - Paths are aggregated to produce one- value

Static approach

- Tends to be utilized by non Top 20 servicers
- Often used by companies that do not hedge MSR risk
- Easier to understand and explain results
- Less IT investment

OAS approach

- Tends to be utilized by larger servicers
- Often used by companies that hedge actively the MSR risk
- Complex
- Requires significant computer power

The Valuation Process



- Disaggregate portfolio into homogenous subsets
- Project portfolio characteristics for each subset
- Convert characteristics into cash flows
- Adjust cash flows for prepay
- Discount cash flows

Trade off/balance must be determined about number of subsets/aggregation:

- Accuracy of assumptions vs. processing time

At what level are assumptions:

- Different
- Material to the valuation
- Available and supportable
- Maintainable

- In-house
 - Requires staff and expertise to develop & maintain
- Third party
 - QRM, Compass, MIAC/RF Spectrum
- Outsource
 - Using third party brokers as valuation experts
- All must be supportable by IT and pass model validation group

Income Components



Income Major Components



- Servicing fees
- Ancillary/other income
- Taxes and insurance float
- Principal and interest float

Income Components

	YEAR 1
Service Fees	87%
Other Income	3%
Escrow Earnings	<u>10%</u>
REVENUES	100%
Operating Costs	-22%
Foreclosure Costs	<u>-3%</u>
EXPENSES	-25%
Income before Tax	75%
Amortization Expense	-64%
Income Taxes	<u>-4%</u>
Income after Taxes	8%
After Tax Cash Flow	71%

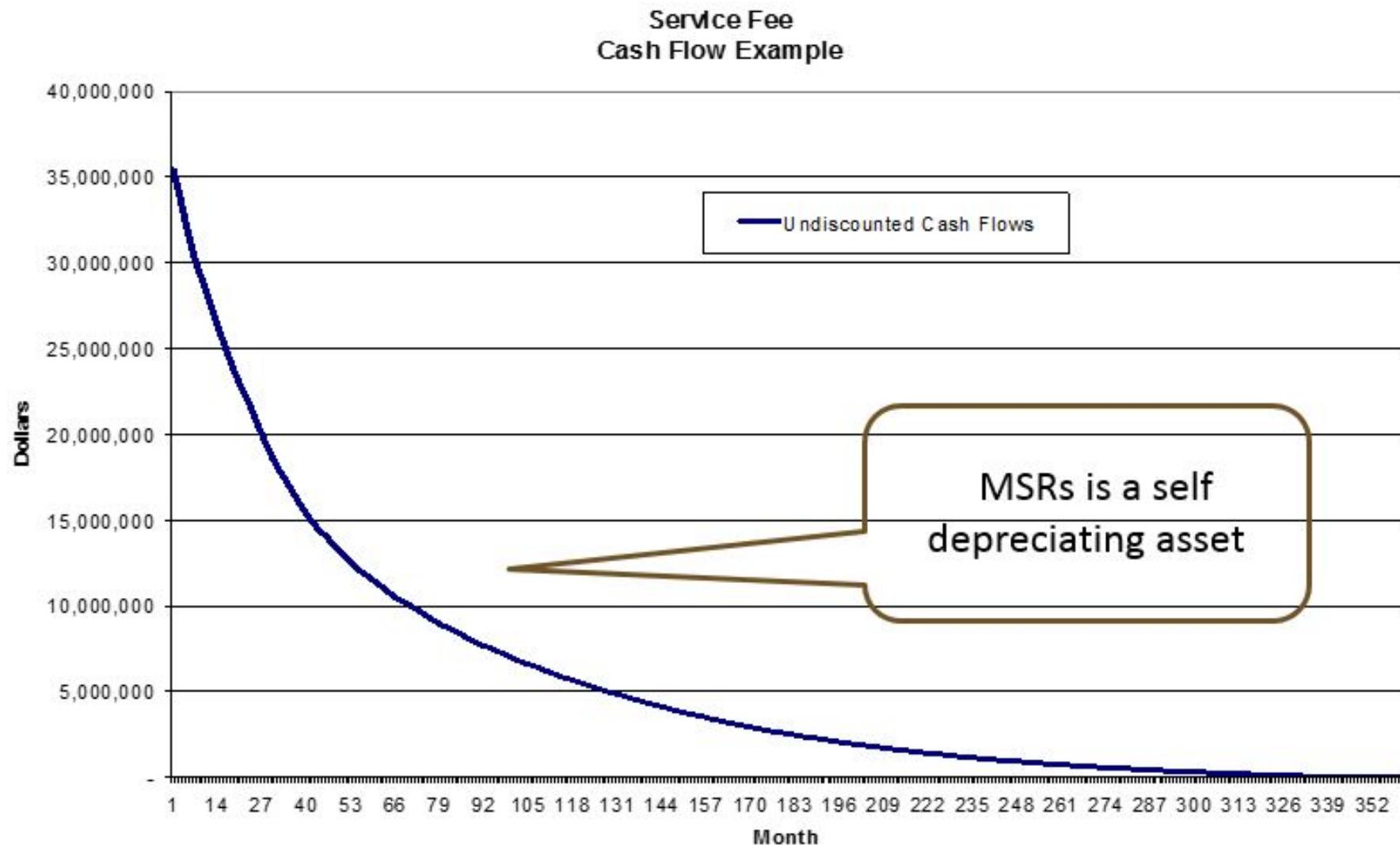
Cash Flow Report – Revenue



Cash Flow Report (In Millions)

	Total Cash Flow	Service Fee	Ancillary	T&I Float	Payoff Float	P&I Float
0	1,276.8	1,283.9	122.9	99.0	68.6	27.6
1	13.1	35.4	3.3	0.3	0.5	0.1
2	30.3	34.6	3.3	0.5	0.8	0.2
3	29.8	33.8	3.2	0.6	1.1	0.2
4	28.9	32.9	3.1	0.6	0.9	0.2
5	28.2	32.0	3.0	0.6	0.9	0.2
6	27.6	31.2	2.9	0.6	0.9	0.2
7	27.2	30.5	2.9	0.6	0.9	0.2
8	26.8	29.7	2.8	0.7	0.8	0.2
9	26.4	29.2	2.8	0.7	0.8	0.2
10	25.8	28.6	2.7	0.7	0.8	0.2
11	25.4	28.1	2.6	0.7	0.8	0.2
12	24.9	27.5	2.6	0.7	0.9	0.2

Service Fees Graph

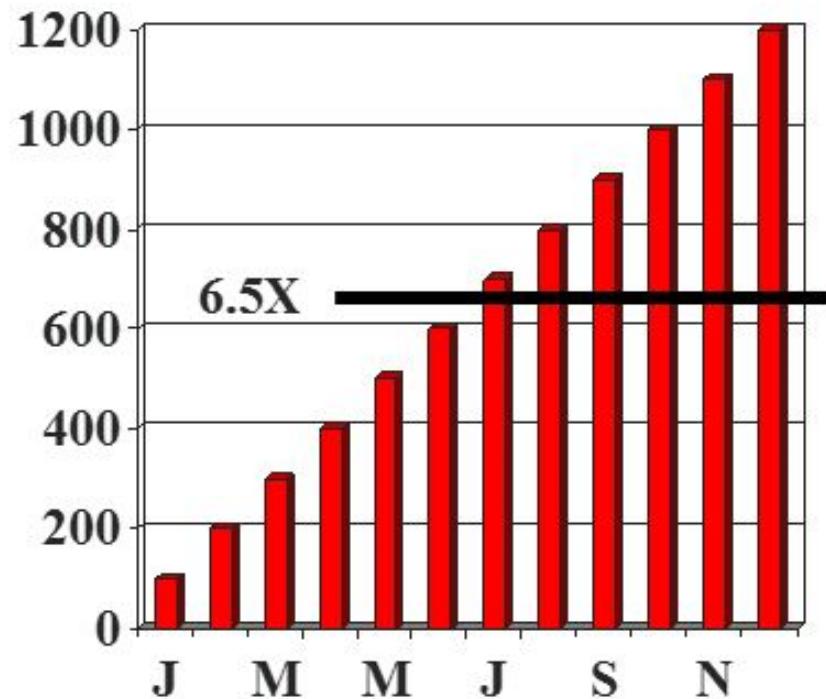


- Easy to determine, but you don't want to get this one wrong!
- ARMs
 - Hybrids
- Net of guarantee fees
- Non-standard service fees

- Late charges
 - Collections versus accruals
 - May model like delinquencies
- Optional Insurance & Miscellaneous Income
 - Builds complex relationships
 - Adds revenue to bottom line
 - Just in time payments

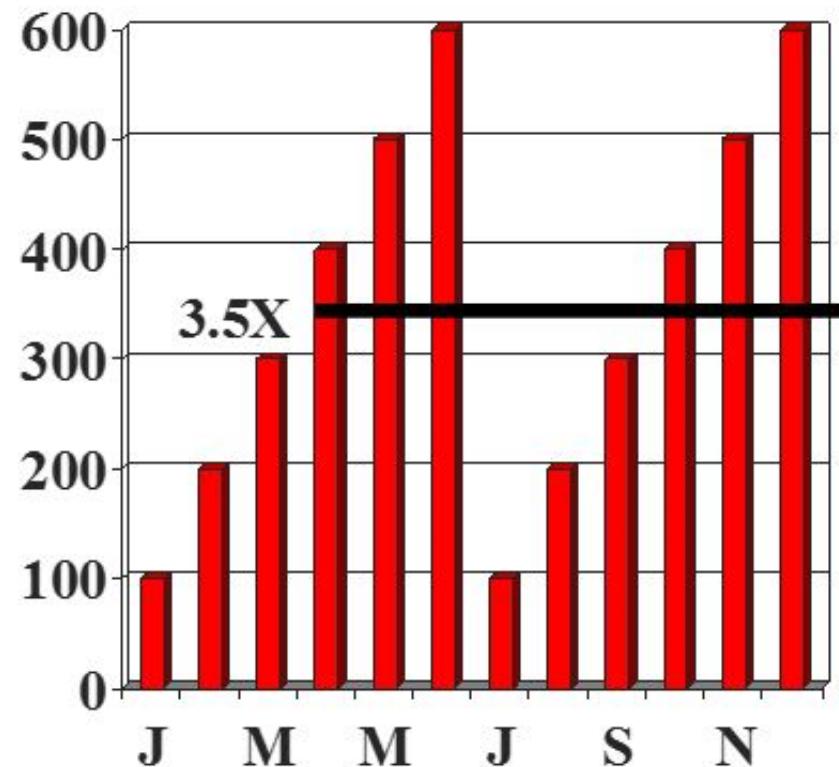
- T&I Constant
- State Multiplier

Once per year



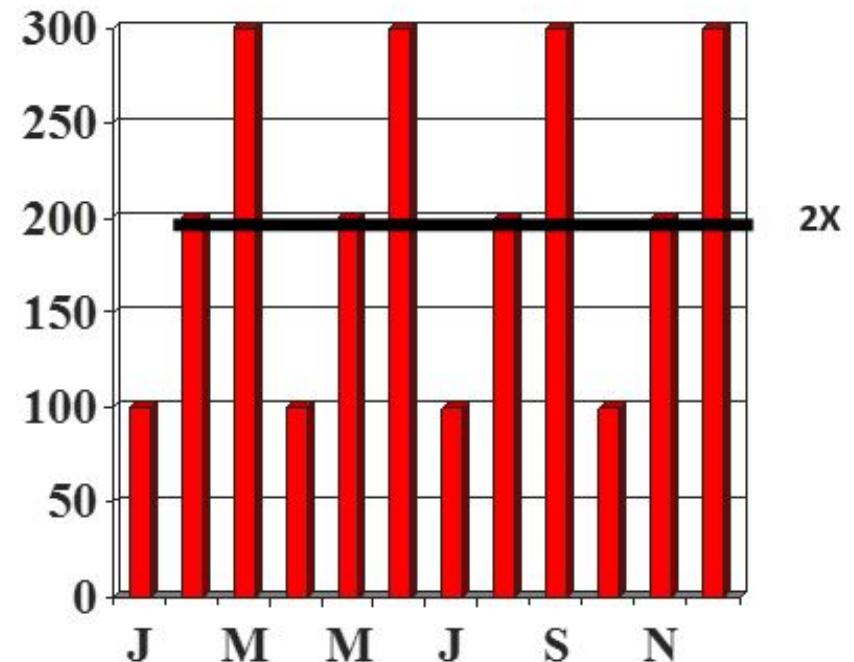
- T&I Constant
- State Multiplier

Twice per year



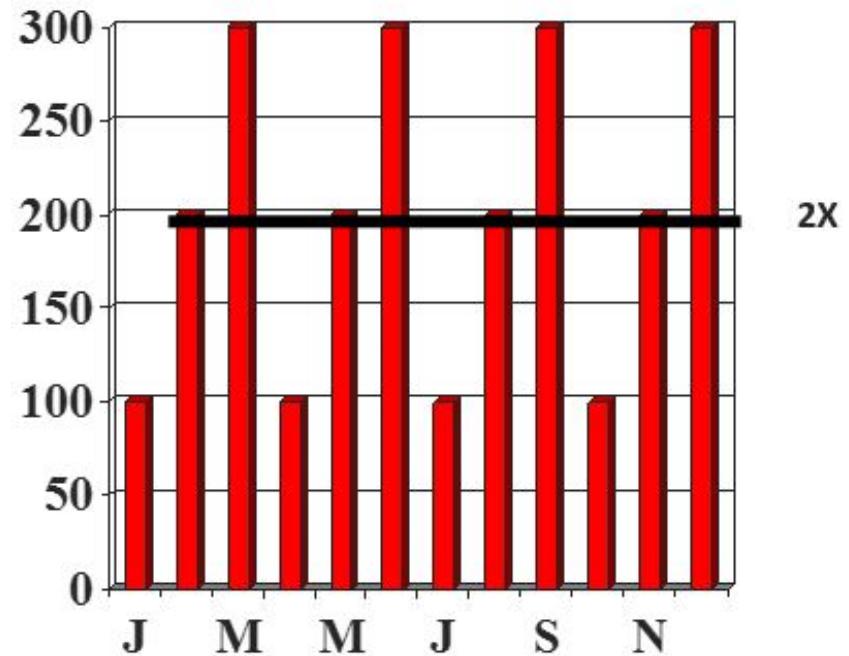
- T&I Constant
- State Multiplier

Four times per year



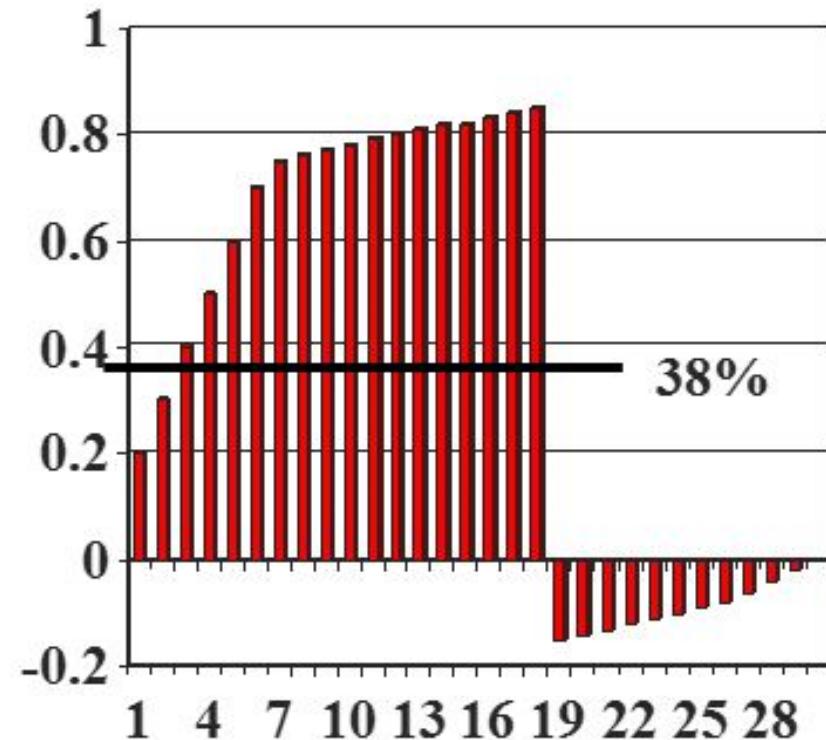
- T&I Constant
- State Multiplier
- Surpluses/Shortages
- Interest on Escrows
- Reserves
- Earnings Rate

Four times per year



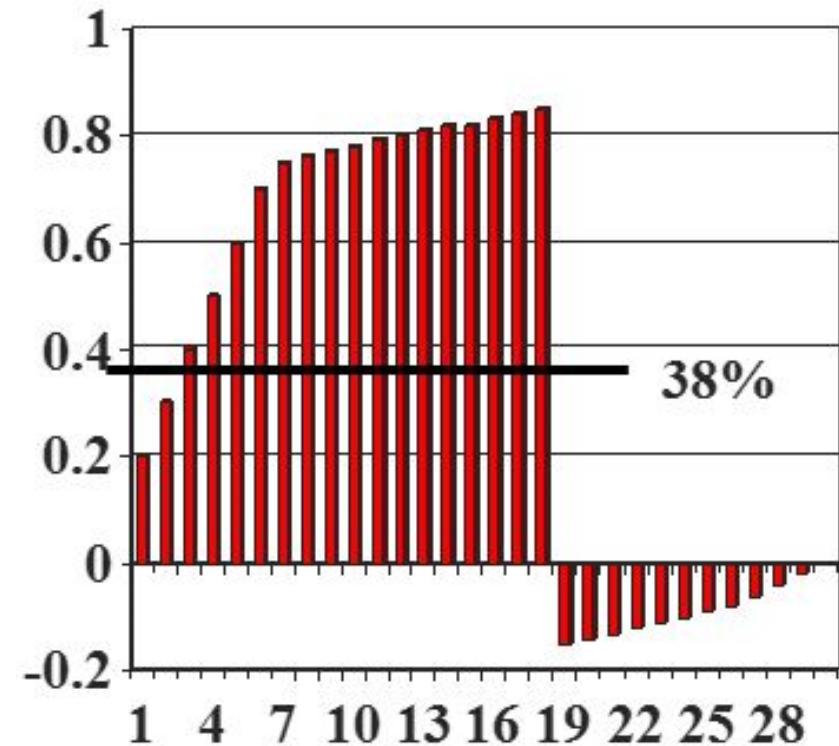
- P&I Constant
- Investment Multiplier

FNMA MBS



- P&I Constant
- Investment Multiplier
- Advances
- Prepayments
- Reserves
- Earnings Rate

FNMA MBS



Operating Costs



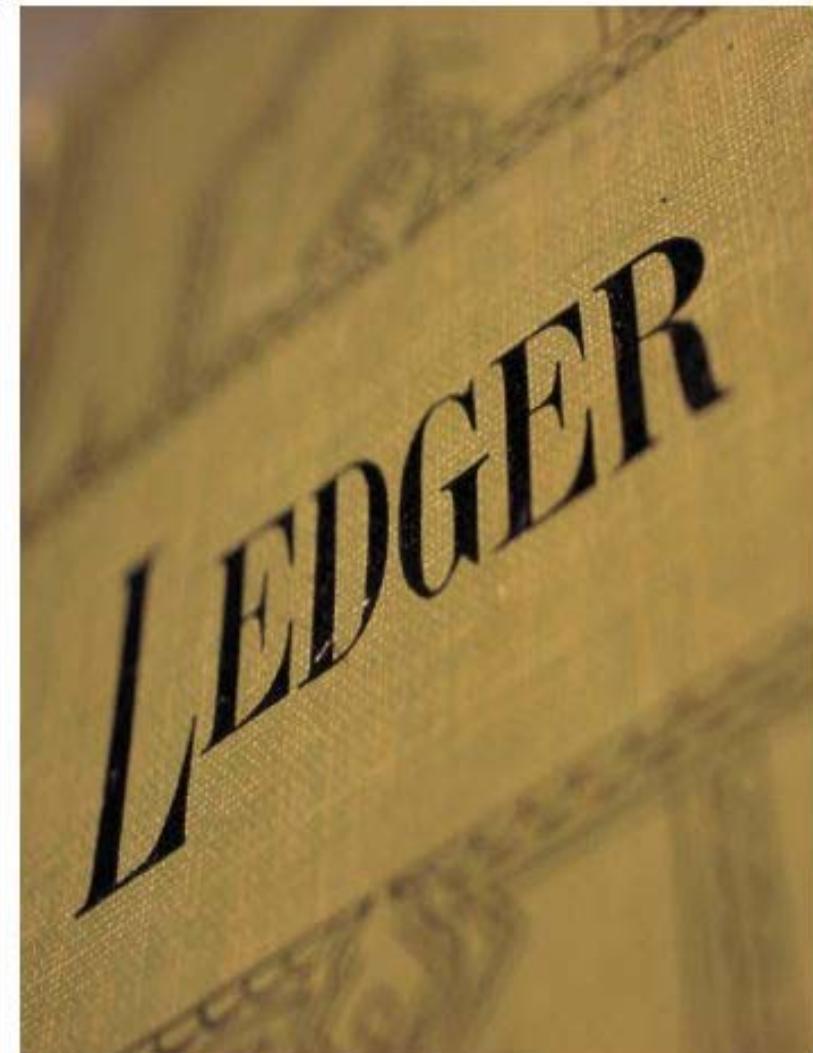
Operating Cost Topics



- Expense components
- Economies of scale
- Mortgage banking flow chart
- Grow or exit the industry
- Costs are cumulative
- Major components of direct servicing expenses

Expense Components

	<u>YEAR 1</u>
Service Fees	87%
Other Income	3%
Escrow Earnings	<u>10%</u>
REVENUES	100%
Operating Costs	-22%
Foreclosure Costs	-3%
EXPENSES	-25%
Income before Tax	75%
Amortization Expense	-64%
Income Taxes	<u>-4%</u>
Income after Taxes	8%
After Tax Cash Flow	71%



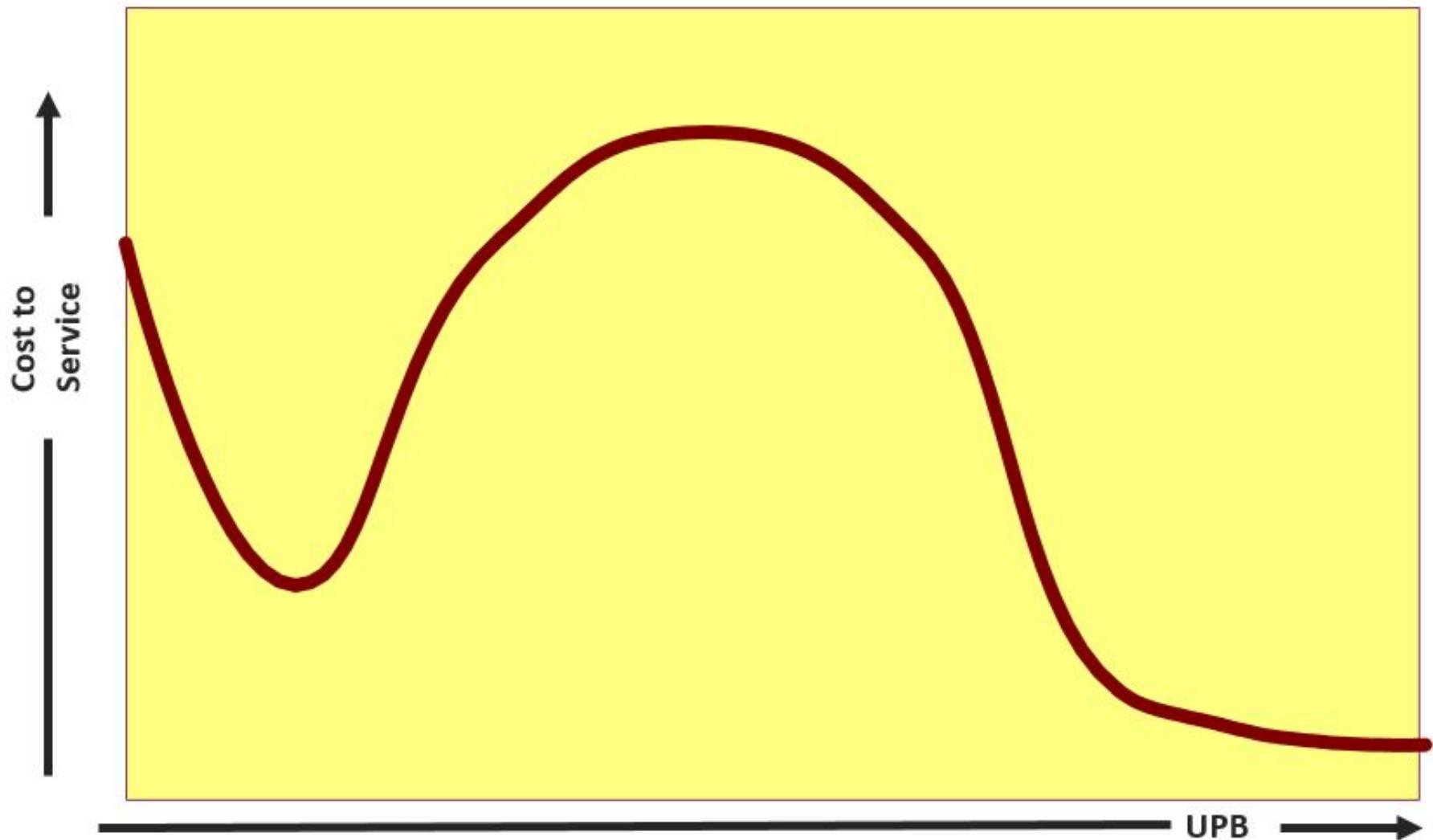
Cash Flow Report - Expenses



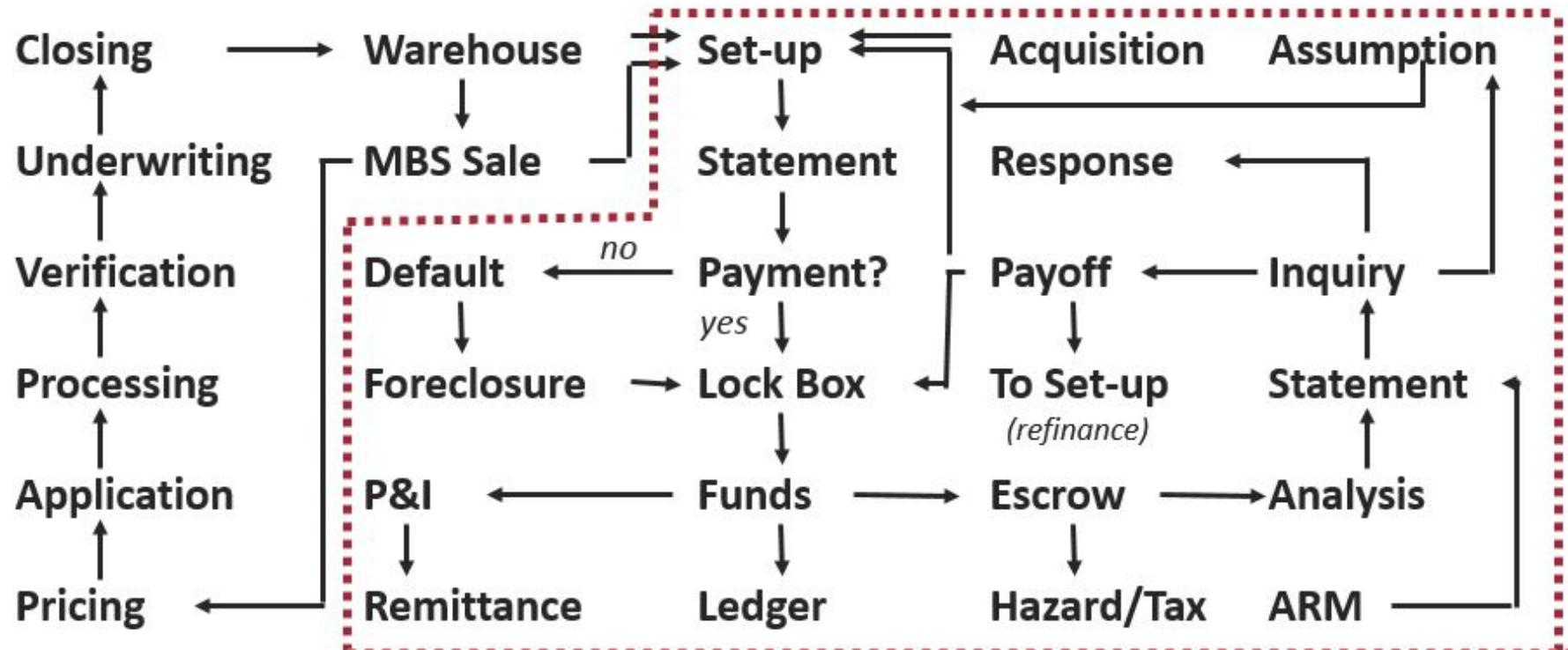
Cash Flow Report
(In Millions)

	Total Cash Flow	Delq Serv Expense	Core Serv Expense	Unreimbursed F/C Expense	IOE Expense	Conversion Costs	Interest Lost	Advance Costs
0	1,276.8	(119.2)	(113.9)	(17.8)	(6.0)	(17.3)	(44.2)	(6.8)
1	13.1	(4.1)	(2.4)	(0.8)	(0.2)	(17.4)	(1.5)	(0.2)
2	30.3	(4.0)	(2.4)	(0.7)	(0.2)	-	(1.6)	(0.2)
3	29.8	(3.9)	(2.3)	(0.7)	(0.1)	-	(1.8)	(0.2)
4	28.9	(3.8)	(2.3)	(0.7)	(0.1)	-	(1.7)	(0.2)
5	28.2	(3.6)	(2.2)	(0.7)	(0.1)	-	(1.6)	(0.2)
6	27.6	(3.5)	(2.2)	(0.6)	(0.1)	-	(1.4)	(0.2)
7	27.2	(3.5)	(2.2)	(0.6)	(0.1)	-	(1.3)	(0.2)
8	26.8	(3.4)	(2.1)	(0.6)	(0.1)	-	(1.1)	(0.2)
9	26.4	(3.3)	(2.1)	(0.6)	(0.1)	-	(1.0)	(0.2)
10	25.8	(3.2)	(2.1)	(0.6)	(0.1)	-	(1.0)	(0.2)
11	25.4	(3.1)	(2.0)	(0.5)	(0.1)	-	(1.1)	(0.2)
12	24.9	(3.1)	(2.0)	(0.5)	(0.1)	-	(1.1)	(0.2)

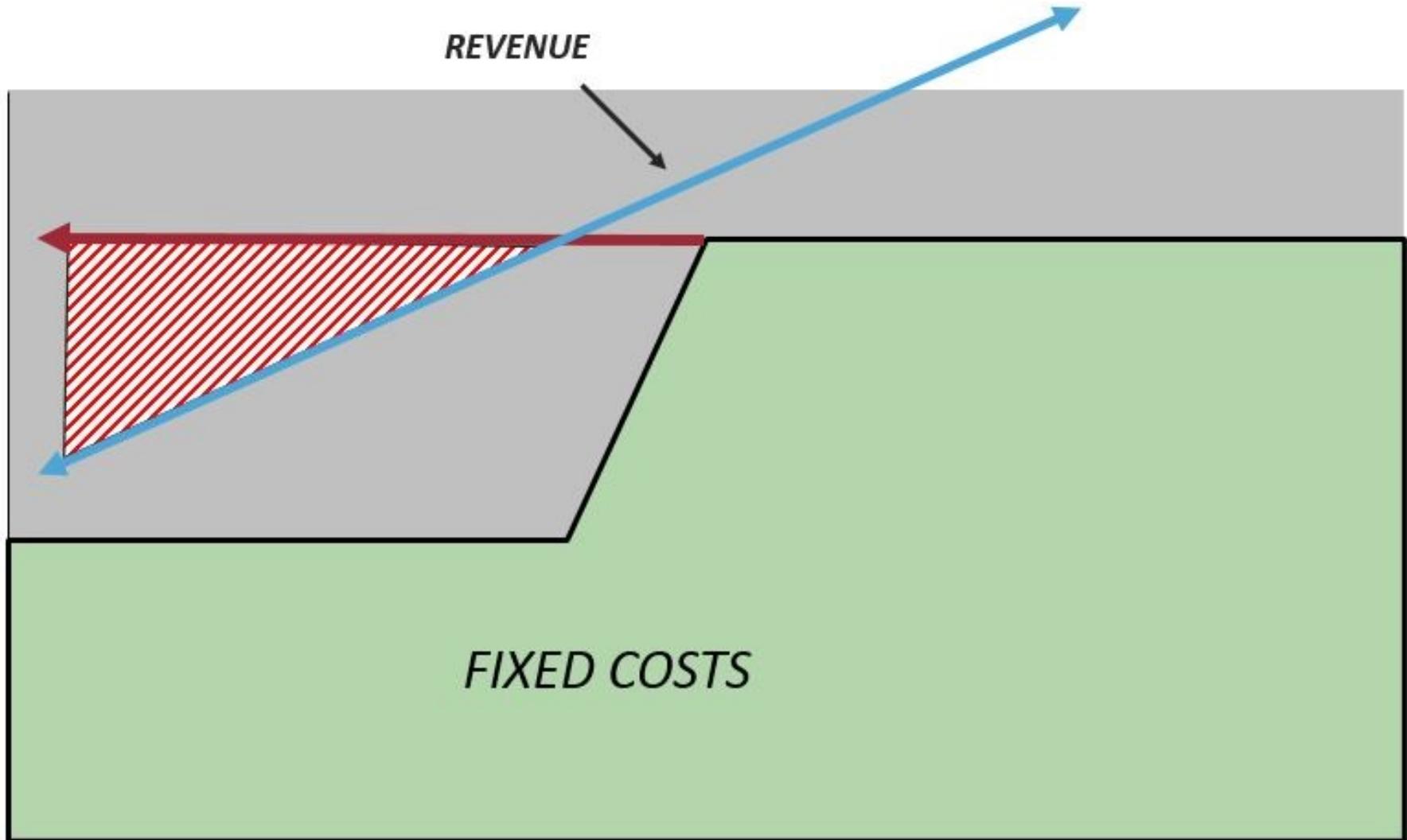
Economies of Scale



Mortgage Banking Flow Chart



Grow or Exit the Industry

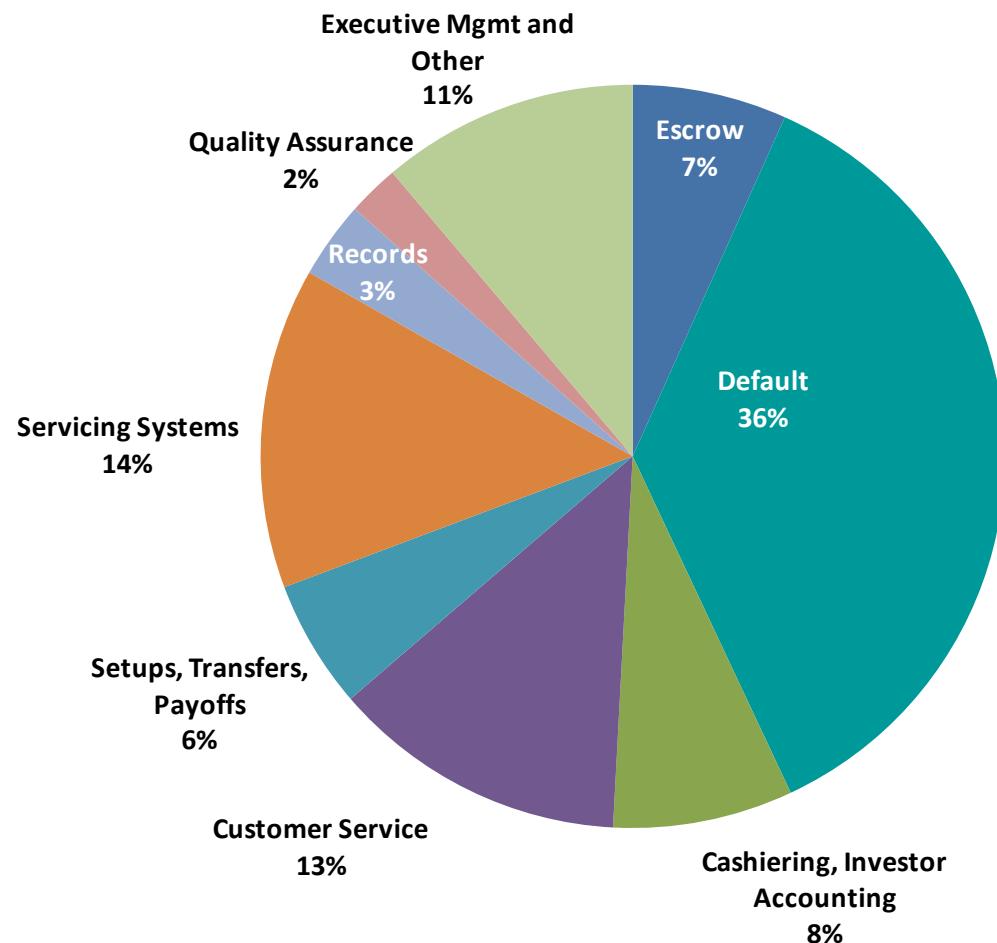


Costs are Cumulative

- Product type
- State
- Status (Delinquency)
- Investor

Status:	"A"		Non-prime	
Current	94%	\$75	83%	\$150
30 days	5%	\$150	10%	\$300
60 days	1%	\$250	5%	\$500
90 days	0%	500	2%	\$750
Total	100%	\$80.5	100%	\$217

Servicing Costs by Function – Prime Servicers



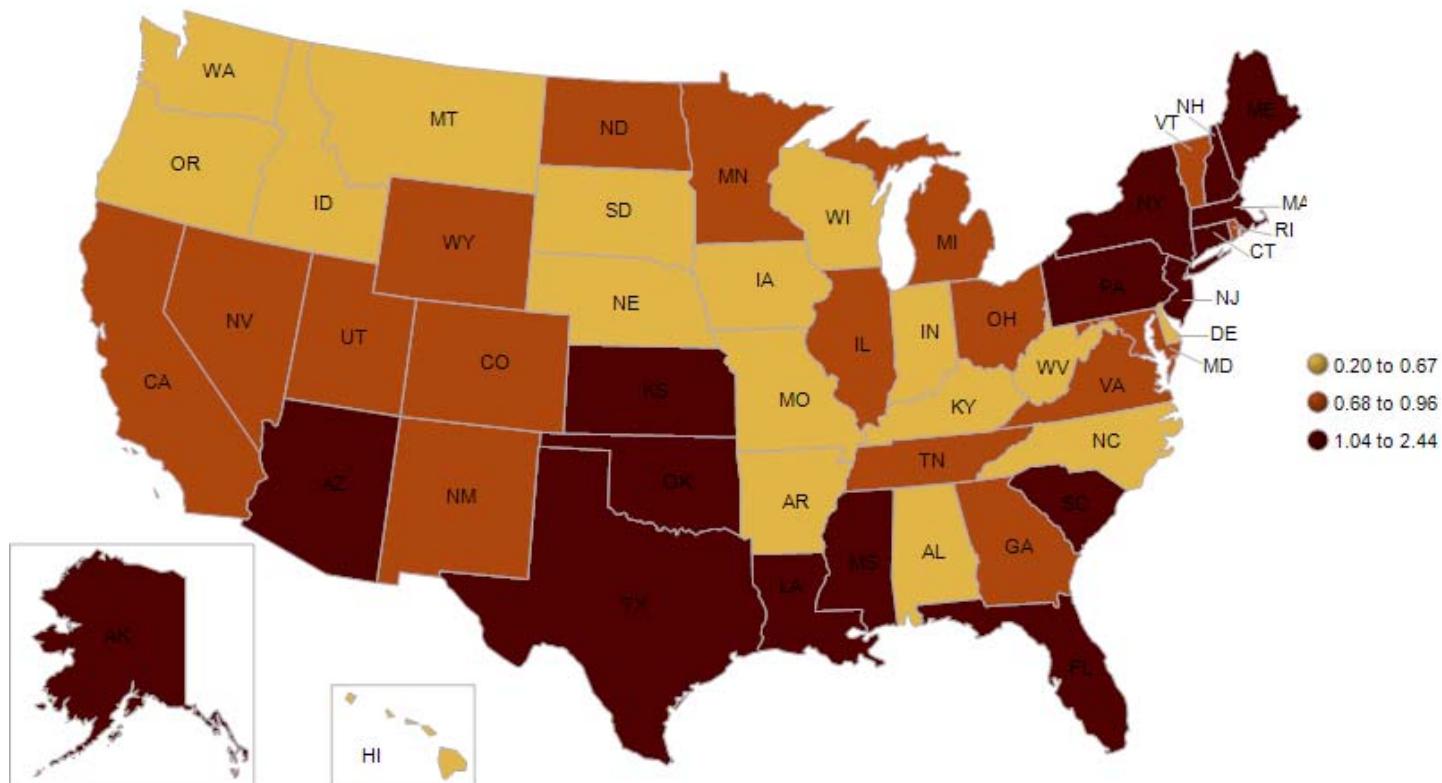
Source: MBA's Servicing Operations Study, Prime Servicers

- Due diligence
- Conversion
- Programming
- Tax service set-up
- Assignment processing

Foreclosure Costs and Credit Risk Factors

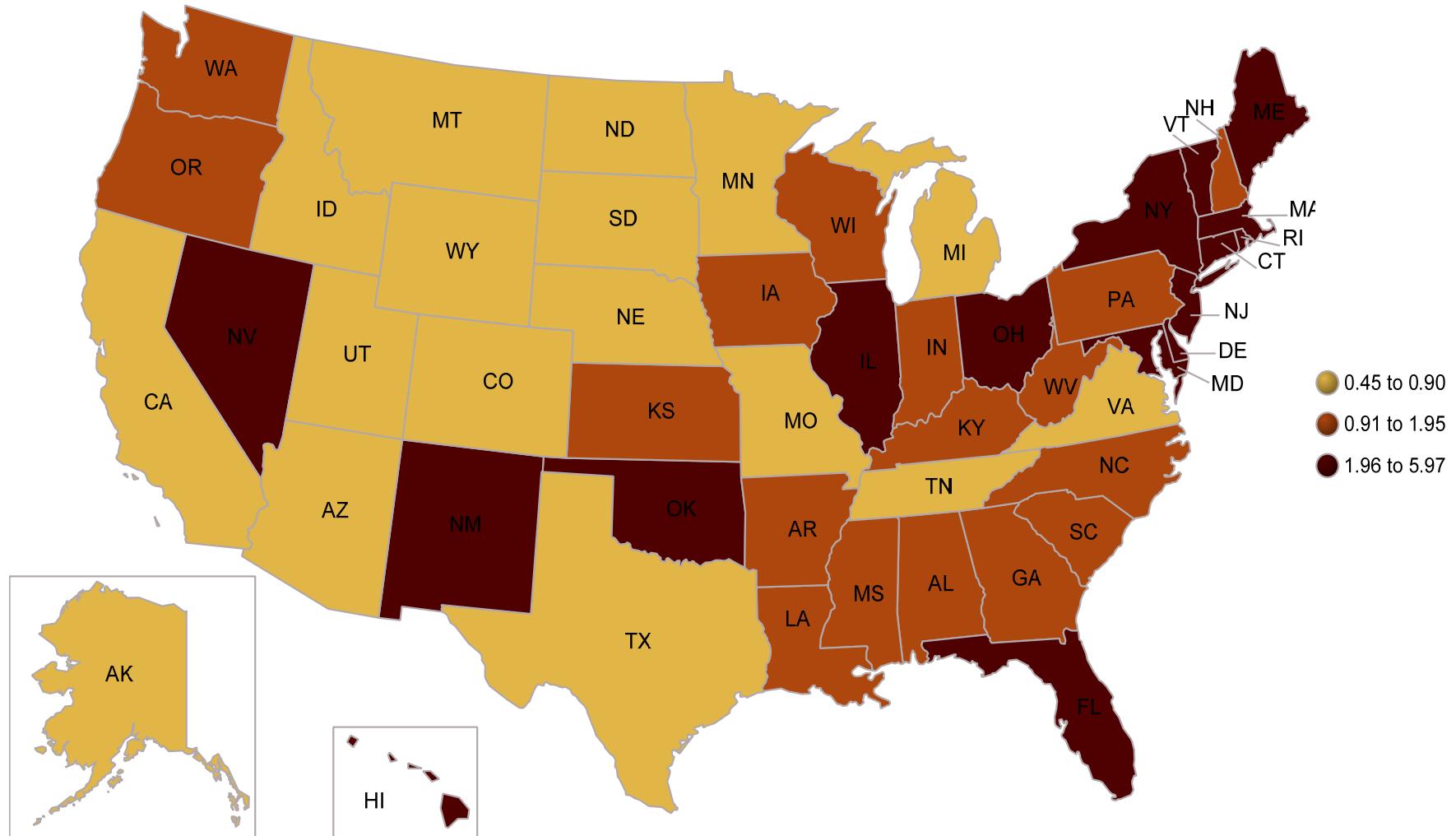
- Foreclosure Probability and Consequences
- Asset Quality
 - Location
 - Age
 - Product type
 - ALTV
 - Credit scores
 - Exogenous variables

Foreclosures as % of Total Loans: Q4 1992



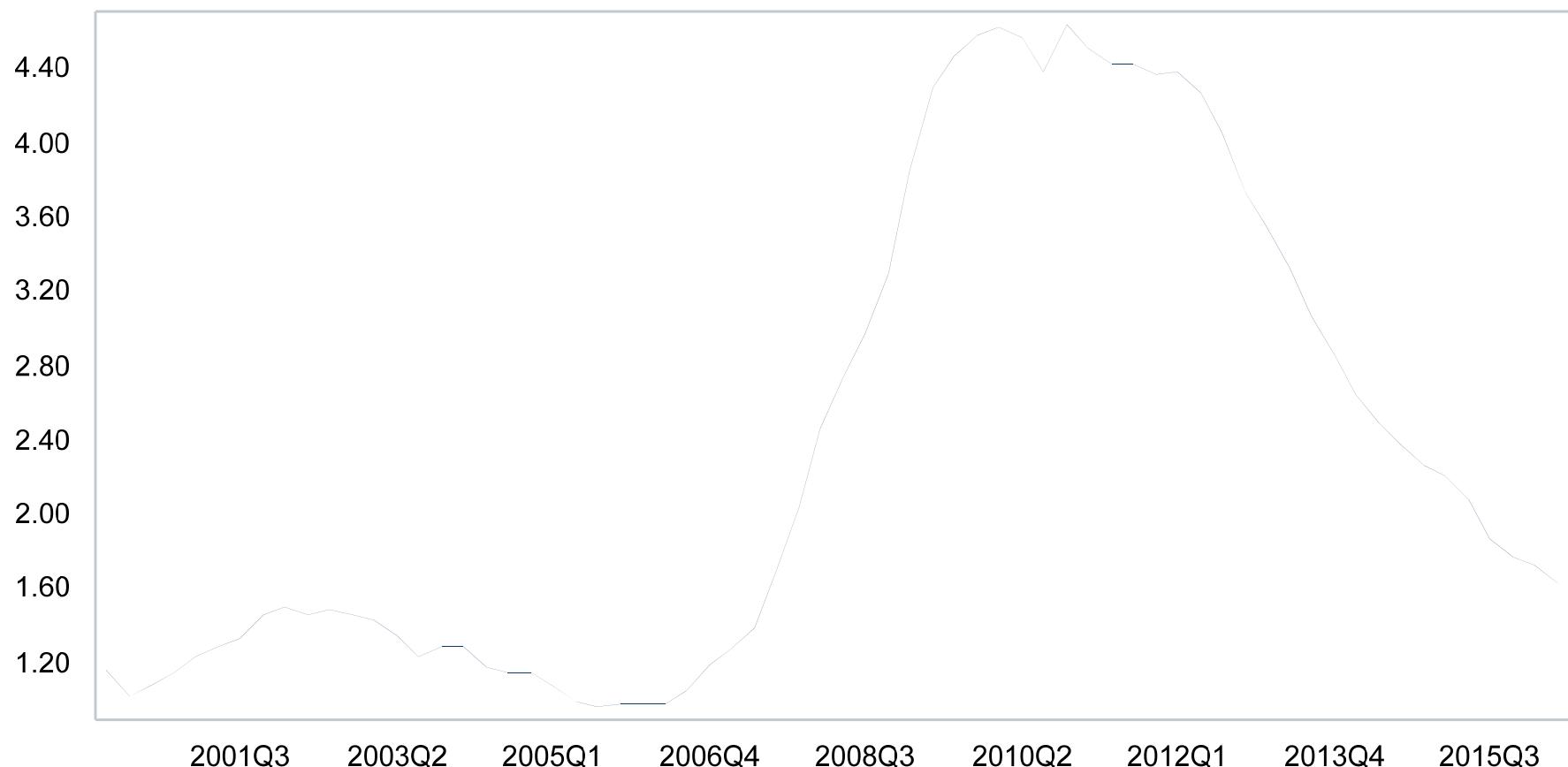
Foreclosures as % of Total Loans: Q4 2016

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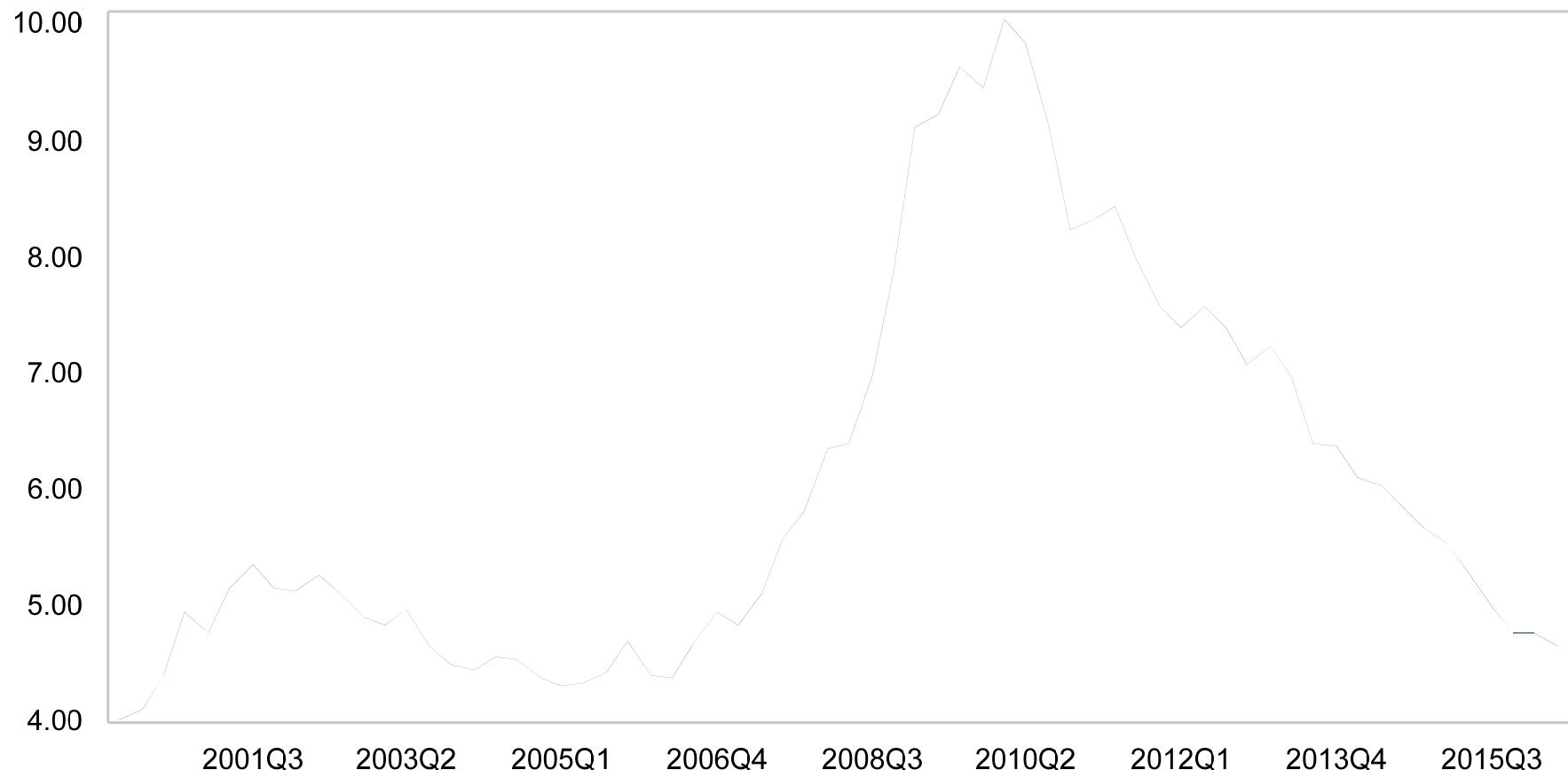
Percent of Loans in Foreclosure - Non-seasonally adjusted

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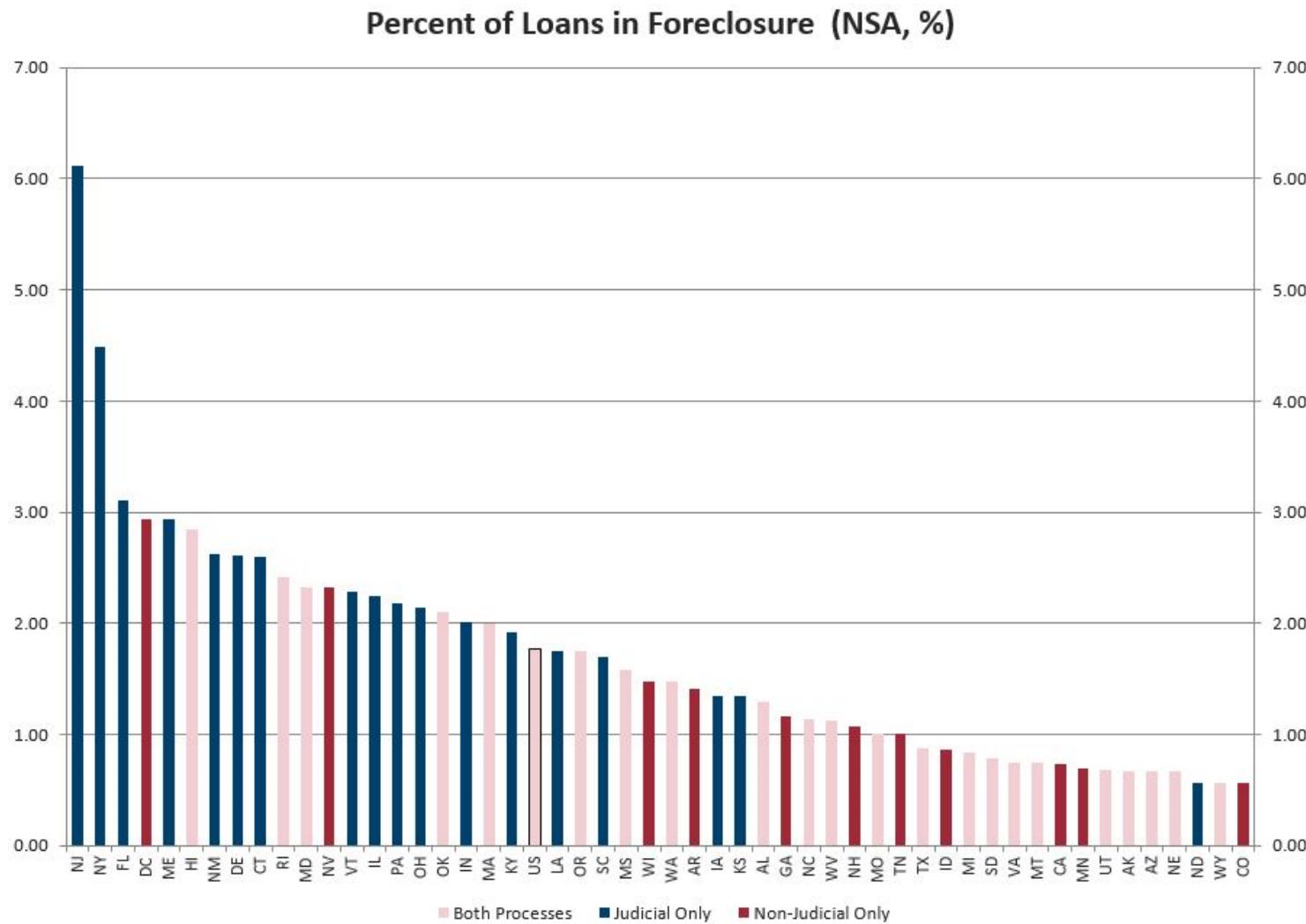
Total Delinquency Rate - SA, excludes Loans in Foreclosure

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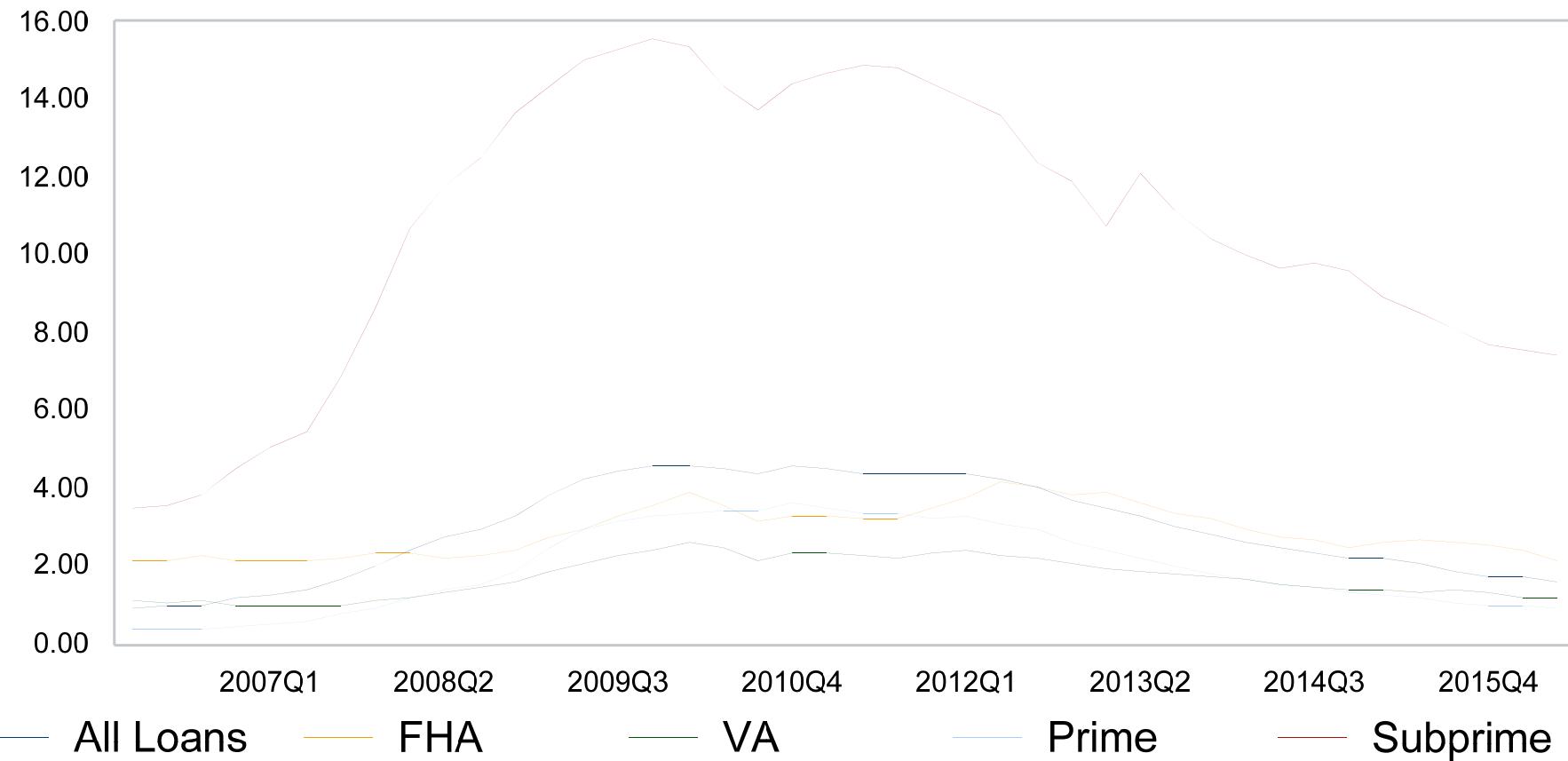
Percent of Loans in Foreclosure (NSA, %)

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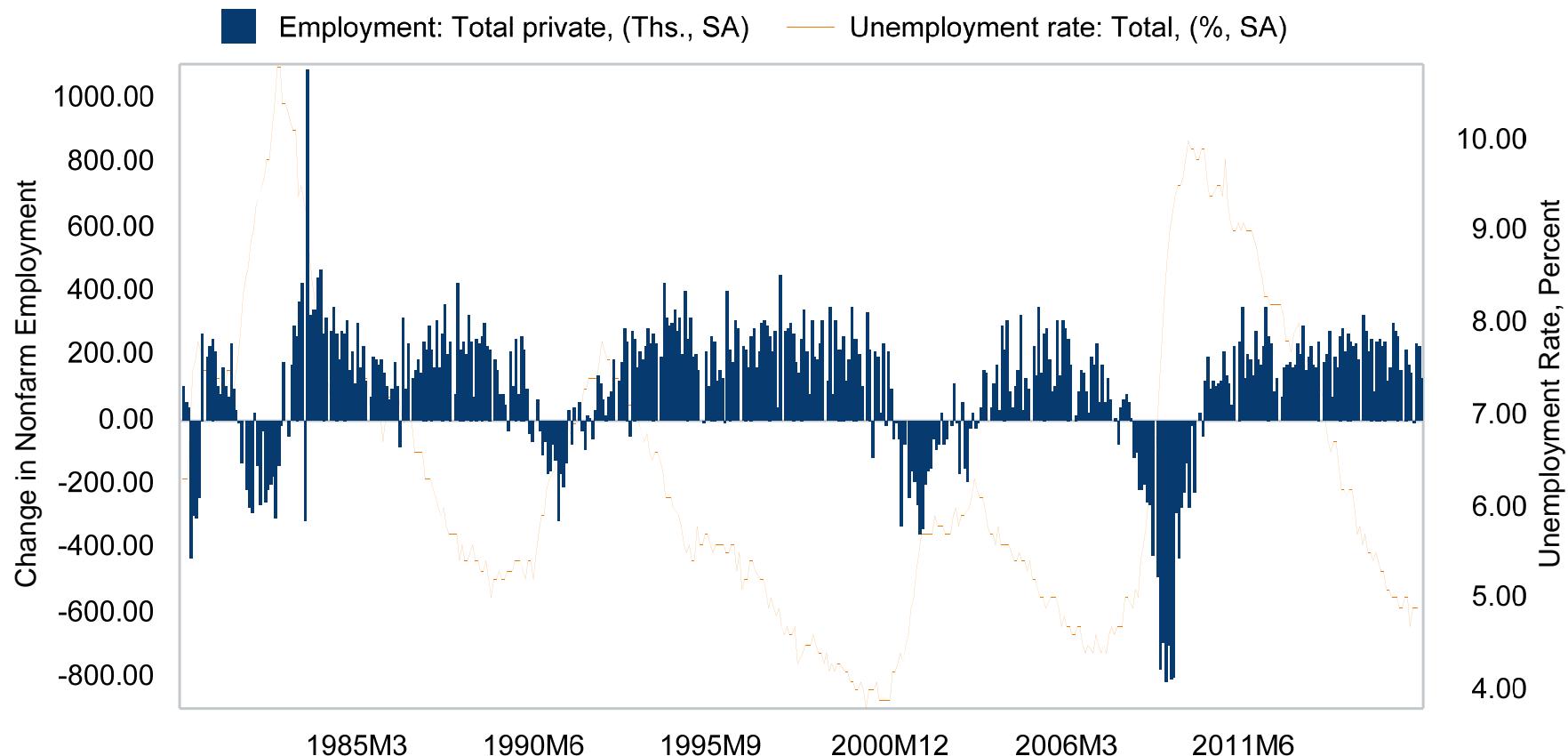
Foreclosure Inventory by Loan Type

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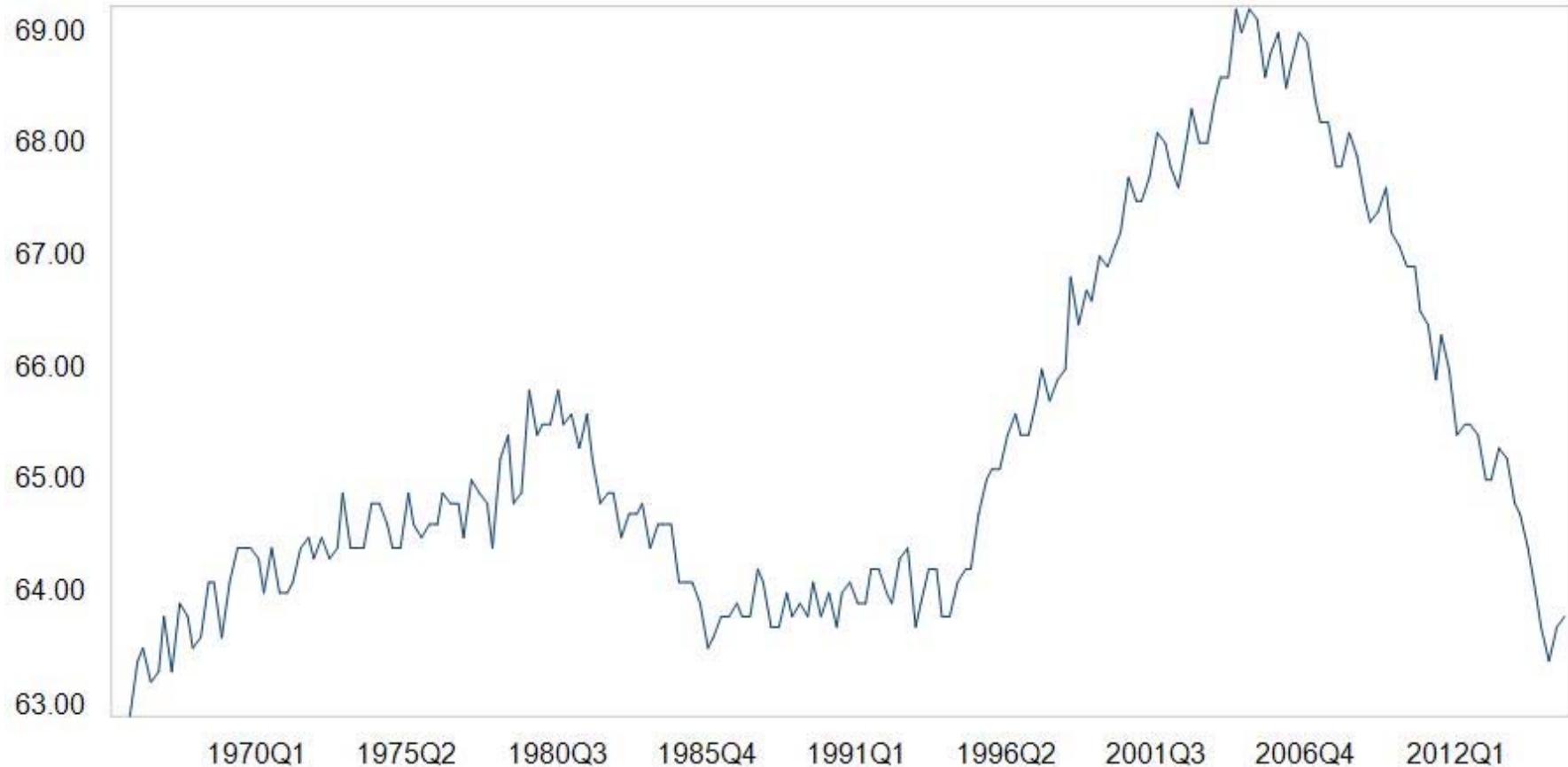
Unemployment Rate – National

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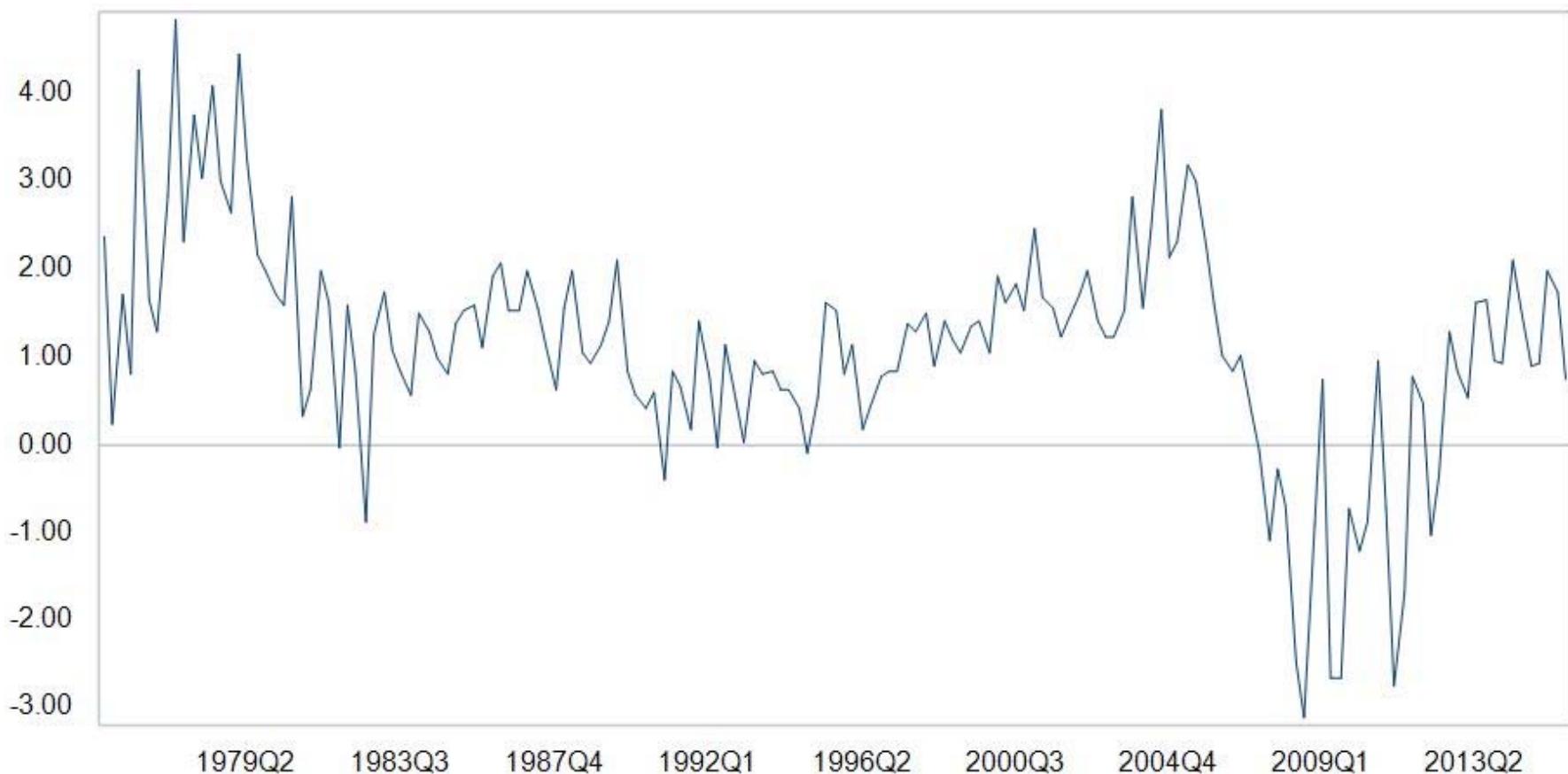
Homeownership Rates

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FHFA Home Price Index

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- Location
- Age
- Product type
- ALTV
- Credit scores
- Exogenous variables

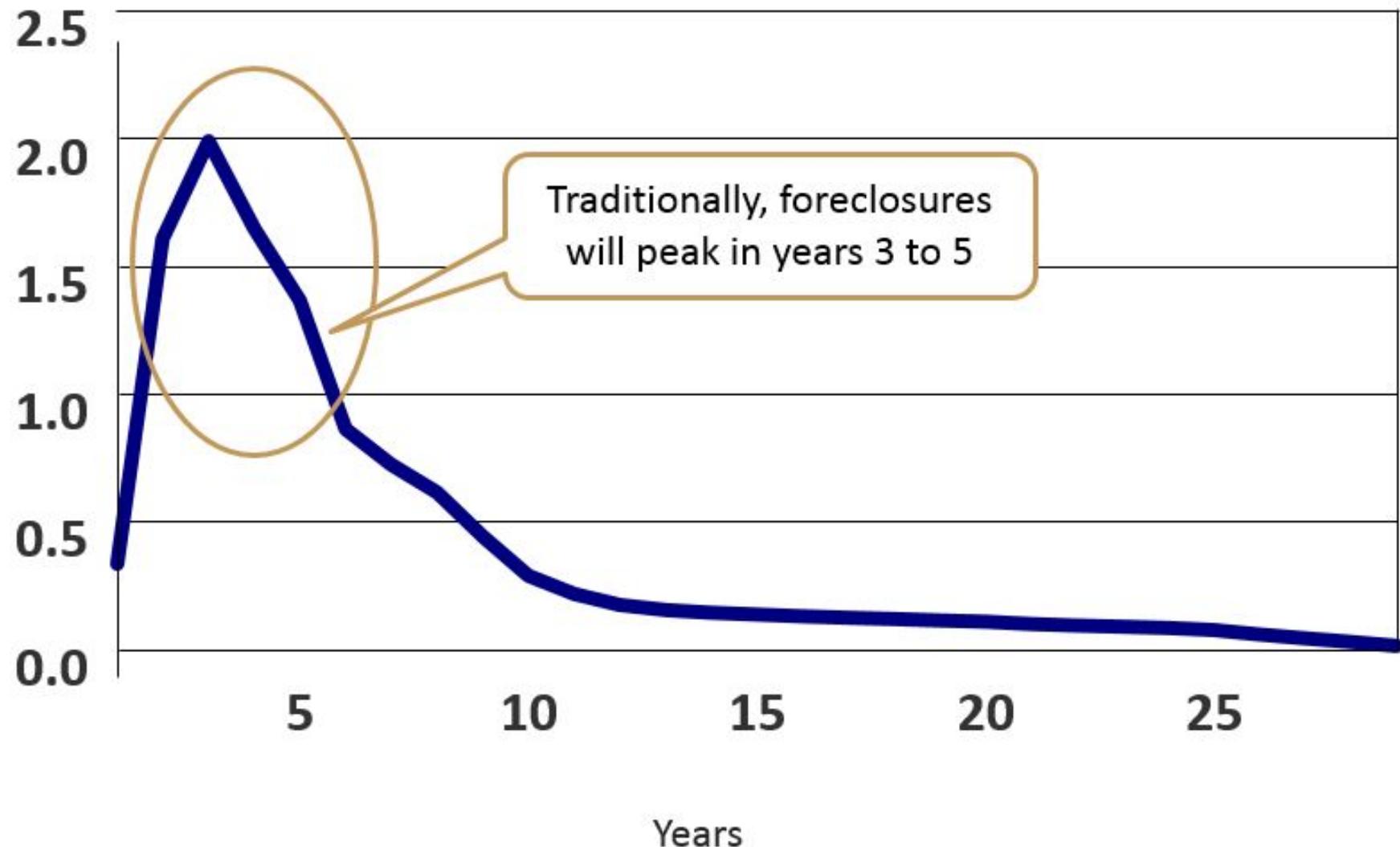
Natural Disaster Risk



Source: www.PredictiveData.Info

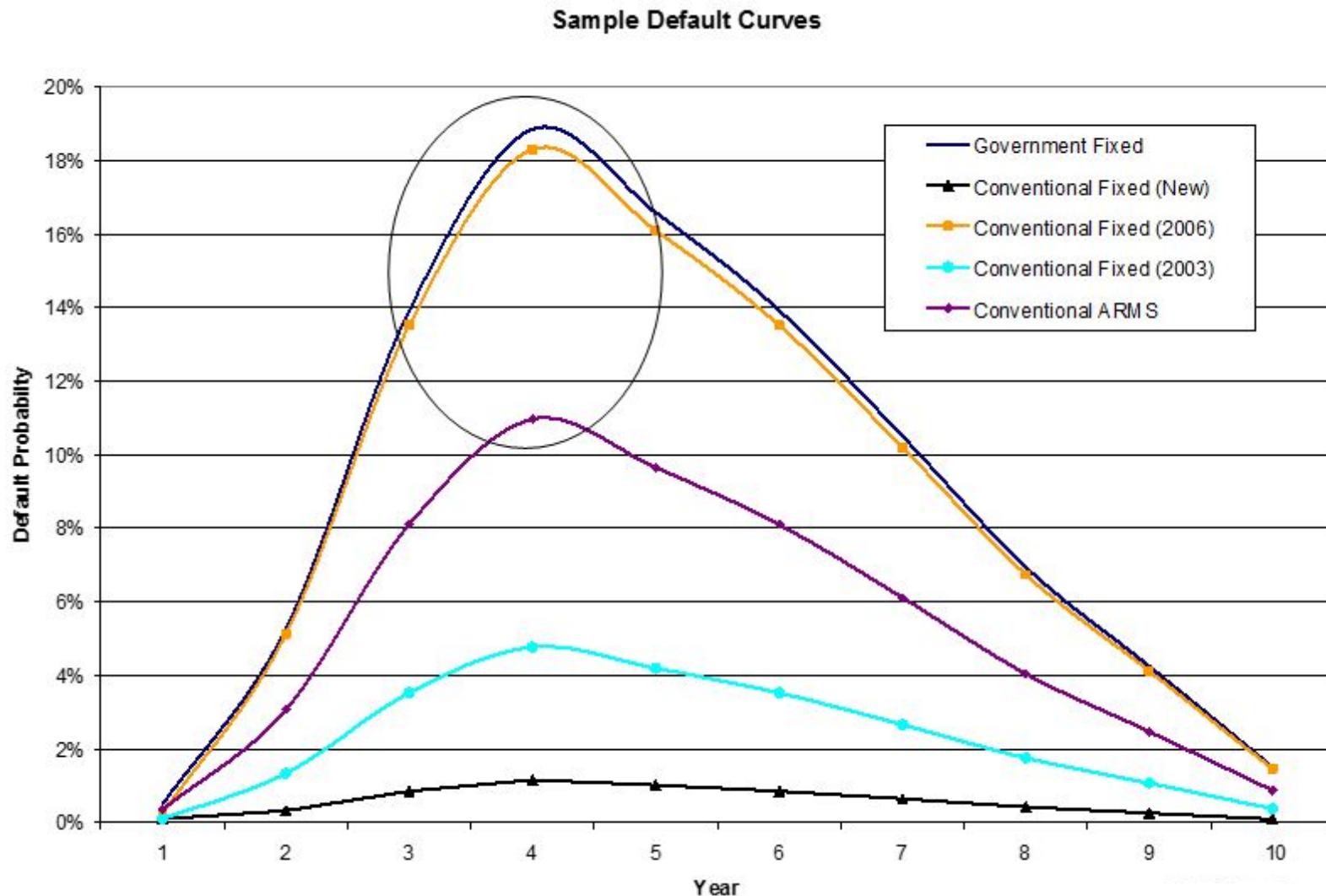
- Location
- Age
- Product type
- ALTV
- Credit scores
- Exogenous variables

Traditional View – Foreclosures



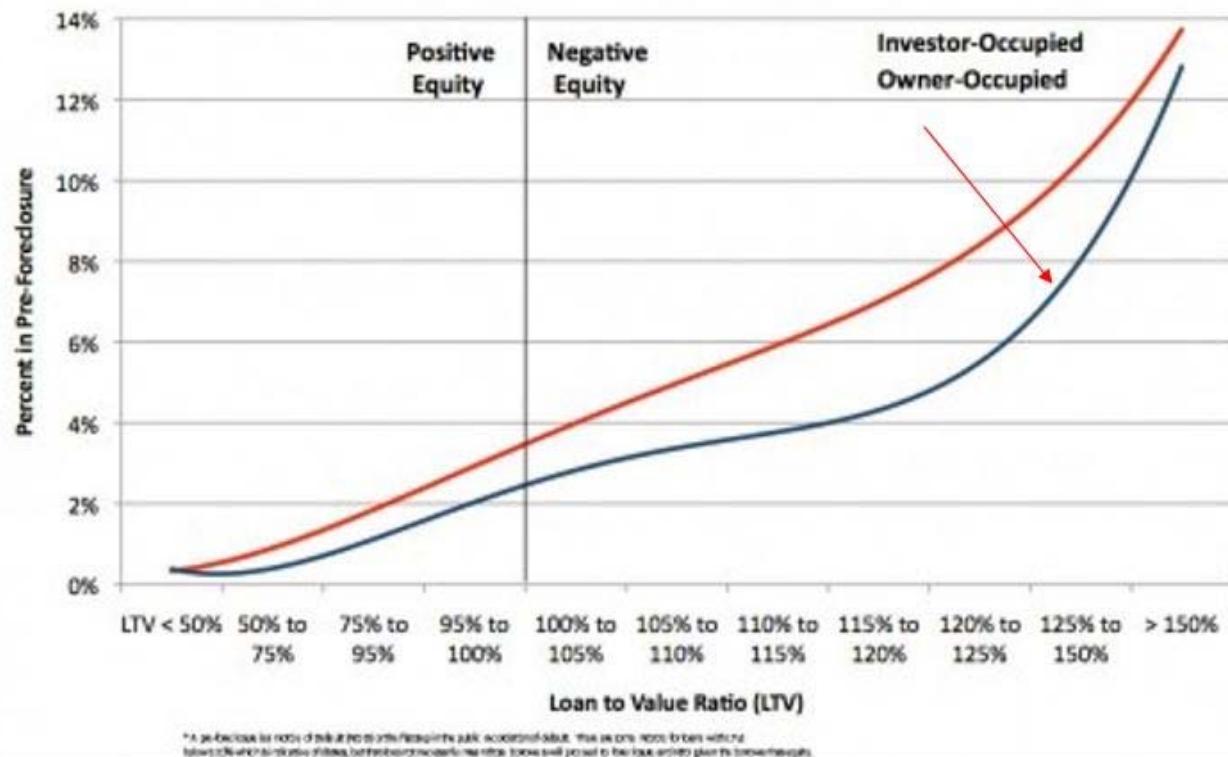
- Location
- Age
- **Product type**
- ALTV
- Credit scores
- Exogenous variables

Sample Product Level Default Curves



Foreclosure Rates: Occupancy

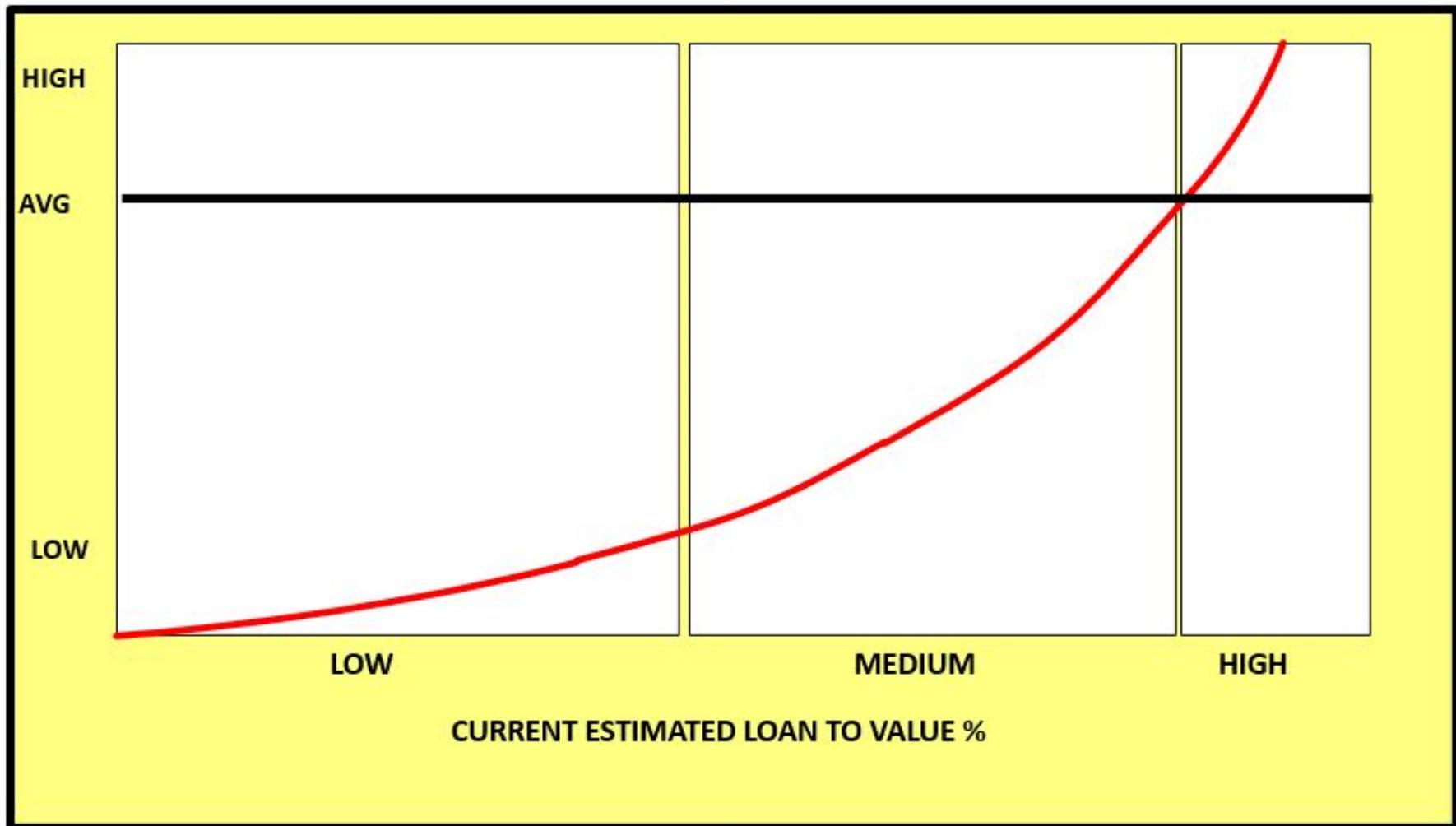
Figure 4: Pre-Foreclosure* Rate by Equity and Owner Type



Source: <http://rortybomb.wordpress.com>

- Location
- Age
- Product type
- **ALTV**
- Credit scores
- Exogenous variables

LTV Impact on Foreclosures



- Location
- Age
- Product type
- ALTV
- **Credit scores**
- Exogenous variables

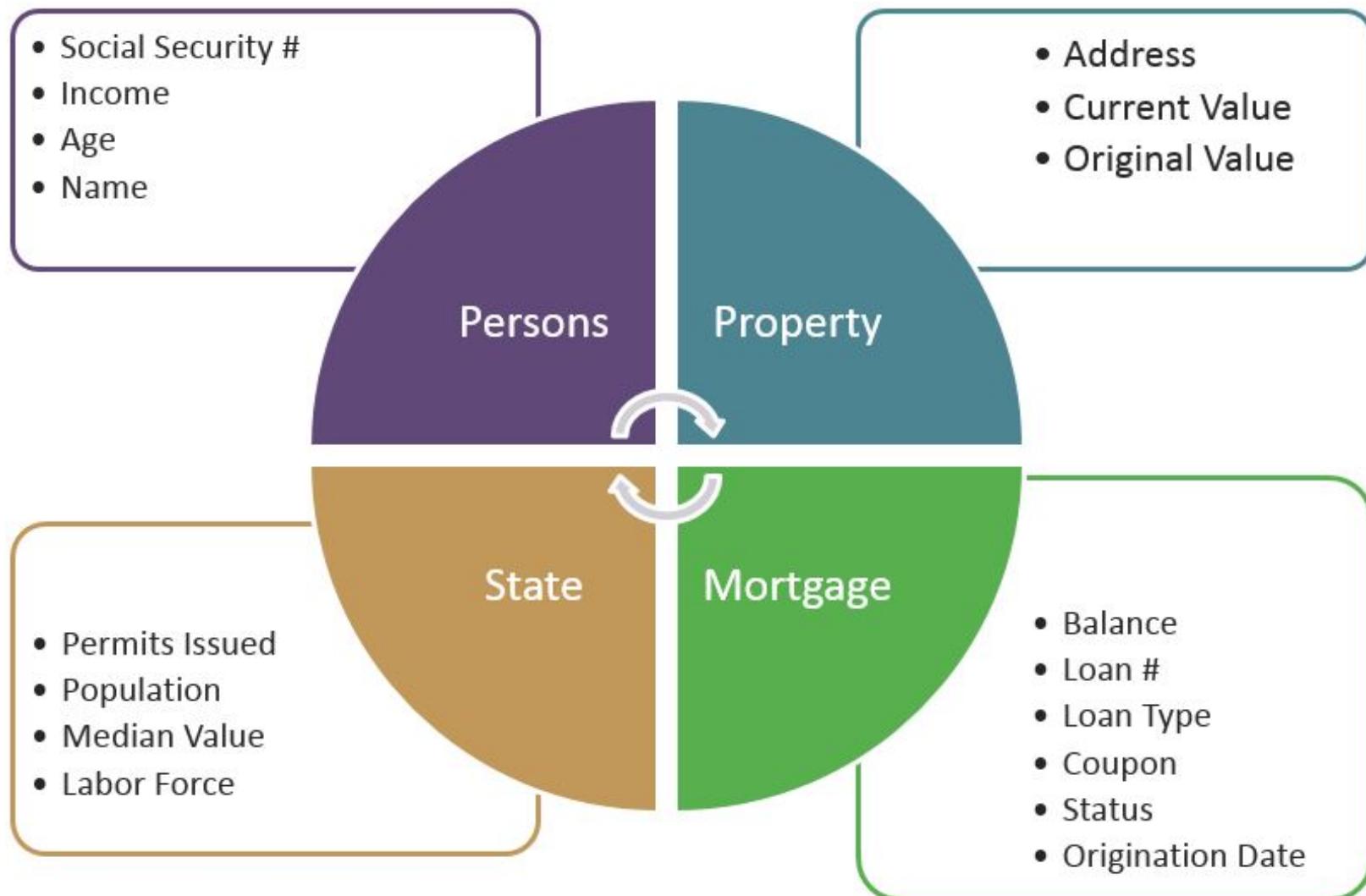
Limitations on FICO Scores



- Half of all credit reports contain errors.
- “Most mortgage applicants with low scores don’t default. But those in delinquency mostly have low credit scores.”
Source: Federal Reserve study
- On seasoned portfolios, credit scores are associative variables not predictive variables!

- Location
- Age
- Product type
- ALTV
- Credit scores
- **Exogenous variables**

Entity Relationships

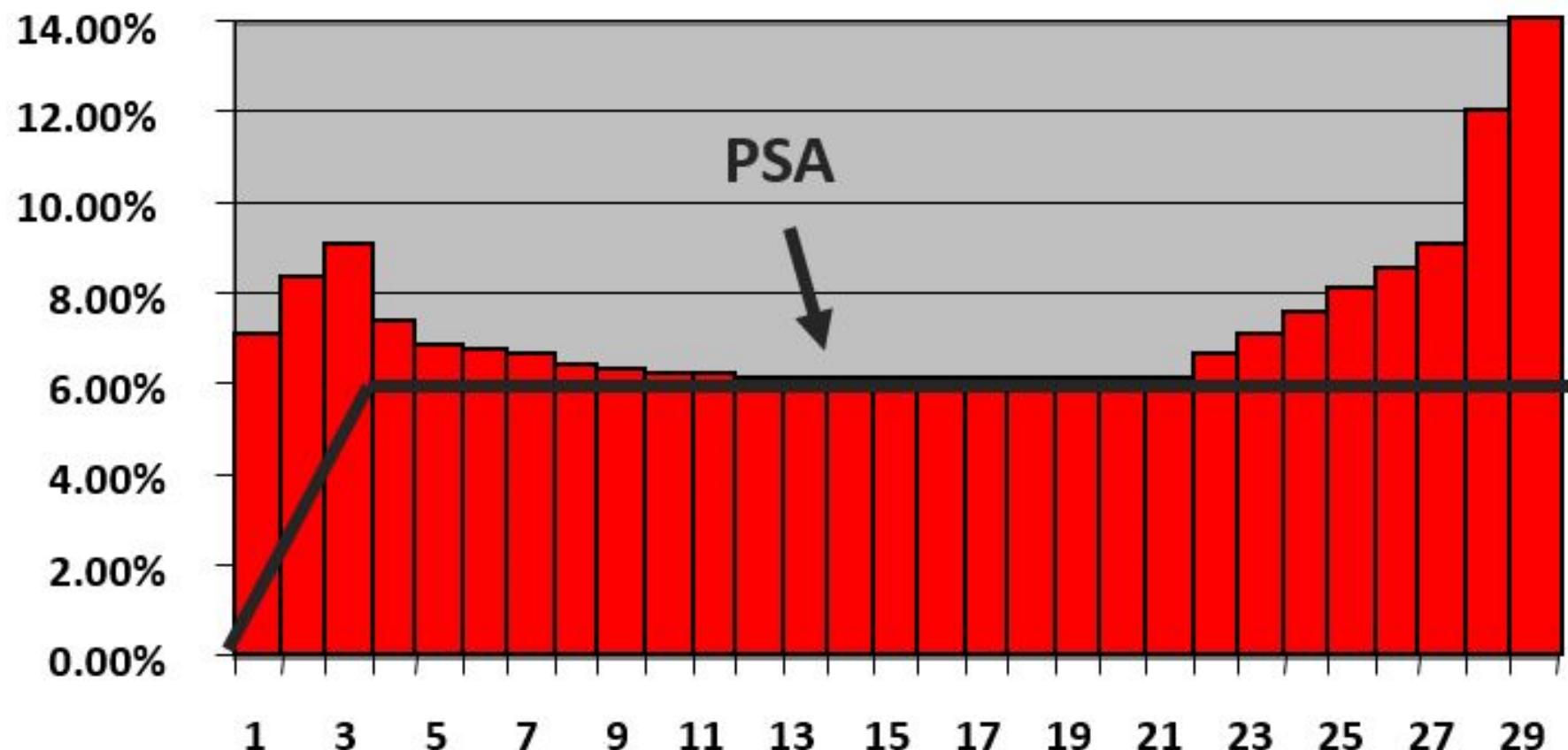


Impact of Prepayments

- Voluntary Prepayments (CPR)
 - Payments
 - Partial Prepayments
- Involuntary Prepayments (CDR)
 - Foreclosure
- Impact of Government Programs
 - HARP
 - Foreclosure moratoriums

- Mortgage loan rate
- Age
- Loan type
- State
- ALTV
- Exogenous variables

FHA Prepayment Experience



PSA/CPR – Another View

	100 PSA	200 PSA	300 PSA	600 PSA	900 PSA
Month					
1	0.2	0.4	0.6	1.2	1.8
2	0.4	0.8	1.2	2.4	3.6
3	0.6	1.2	1.8	3.6	5.4
4	0.8	1.6	2.4	4.8	7.2
5	1.0	2.0	3.0	6.0	9.0
6	1.2	2.4	3.6	7.2	10.8
:					
10	2.0	4.0	6.0	12.0	18.0
:					
18	3.6	7.2	10.8	21.6	32.4
:					
24	4.8	9.6	14.4	28.8	43.2
:					
30	6.0	12.0	18.0	36.0	54.0
31	6.0	12.0	18.0	36.0	54.0
32	6.0	12.0	18.0	36.0	54.0
:					
360	6.0	12.0	18.0	36.0	54.0

Sample Prepayments - Bloomberg



FNCL4 Agency Generic

Data as of 12/31/2015

Source: Bloomberg

Firm	Base PSA	Maturity	WAC	Down 300	Down 200	Down 100	Down 50	Base	Up 50	Up 100	Up 200	Up 300
BAR	196	348	4.6	1028	828	603	440	270	178	137	99	85
BNP	302	325	4.6	701	508	334	234	155	127	114	102	96
BOA	215	341	4.49	633	622	585	499	341	166	113	71	68
CS	161	348	4.6	827	817	622	416	213	163	127	103	89
DB	155	359	4.5	1404	1121	651	435	286	196	151	117	110
JPS	226	347	4.6	862	809	580	427	278	173	130	108	99
MS	162	348	4.55	781	723	609	473	271	152	125	96	76
RBS	274	345	4.48	545	520	434	347	237	146	137	122	120
Average	211			848	744	552	409	256	163	129	102	93
Median	206			804	766	594	431	271	165	129	103	93

FNCL4 Agency Generic

Data as of 12/31/2012

Source: Bloomberg

Firm	Base PSA	Maturity	WAC	Down 300	Down 200	Down 100	Down 50	Base	Up 50	Up 100	Up 200	Up 300
BAR	500	350	4.4	860	860	654	592	500	335	246	135	106
BNP	479	335	4.6	876	876	716	597	479	363	250	136	114
BOA	381	342	4.49	437	436	422	407	381	337	250	125	96
CS	291	338	4.5	656	656	564	455	291	212	160	123	103
DB	657	359	4.5	1055	996	897	804	657	476	324	179	123
JPS	410	335	4.45	779	751	673	549	410	285	190	113	92
MS	712	334	4.49	951	966	946	878	712	497	363	245	142
RBS	424	339	4.5	770	730	639	515	424	316	248	104	82
UBS	326	344	4.47	600	596	552	470	326	211	149	139	138
Average	464			776	763	674	585	464	337	242	144	111
Median	424			779	751	654	549	424	335	248	135	106

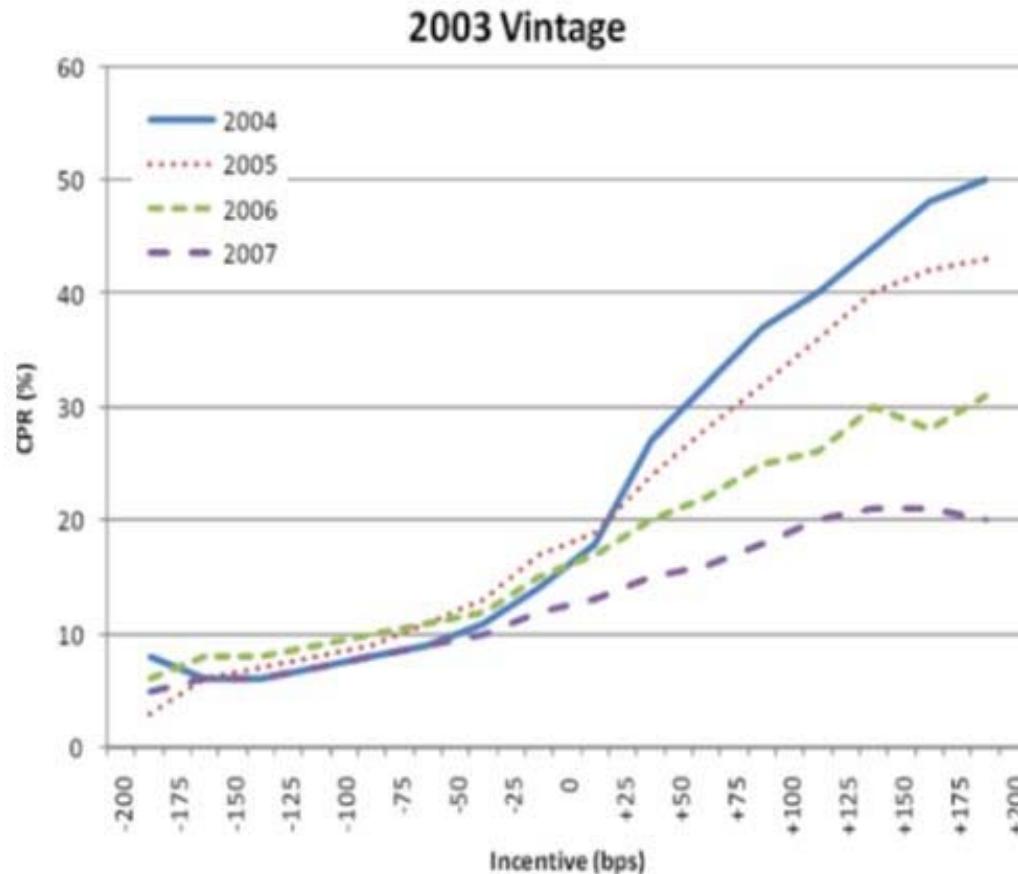
Prepayment by Vintage

As of February 2016		
Coupon	12 Month CPR	Outstanding UPB (In Billions)
2.00	3.0	0.05
2.50	5.60	10.68
3.00	7.60	357.53
3.50	11.30	563.74
4.00	16.70	407.32
4.50	19.80	176.77
5.00	20.90	89.45
5.50	21.10	62.97
6.00	21.10	40.02
6.50	19.20	15.54
7.00	17.10	5.59
7.50	14.60	1.31
8.00	12.80	0.59
8.50	11.60	0.18
9.00	11.60	0.08
9.50	12.90	0.03

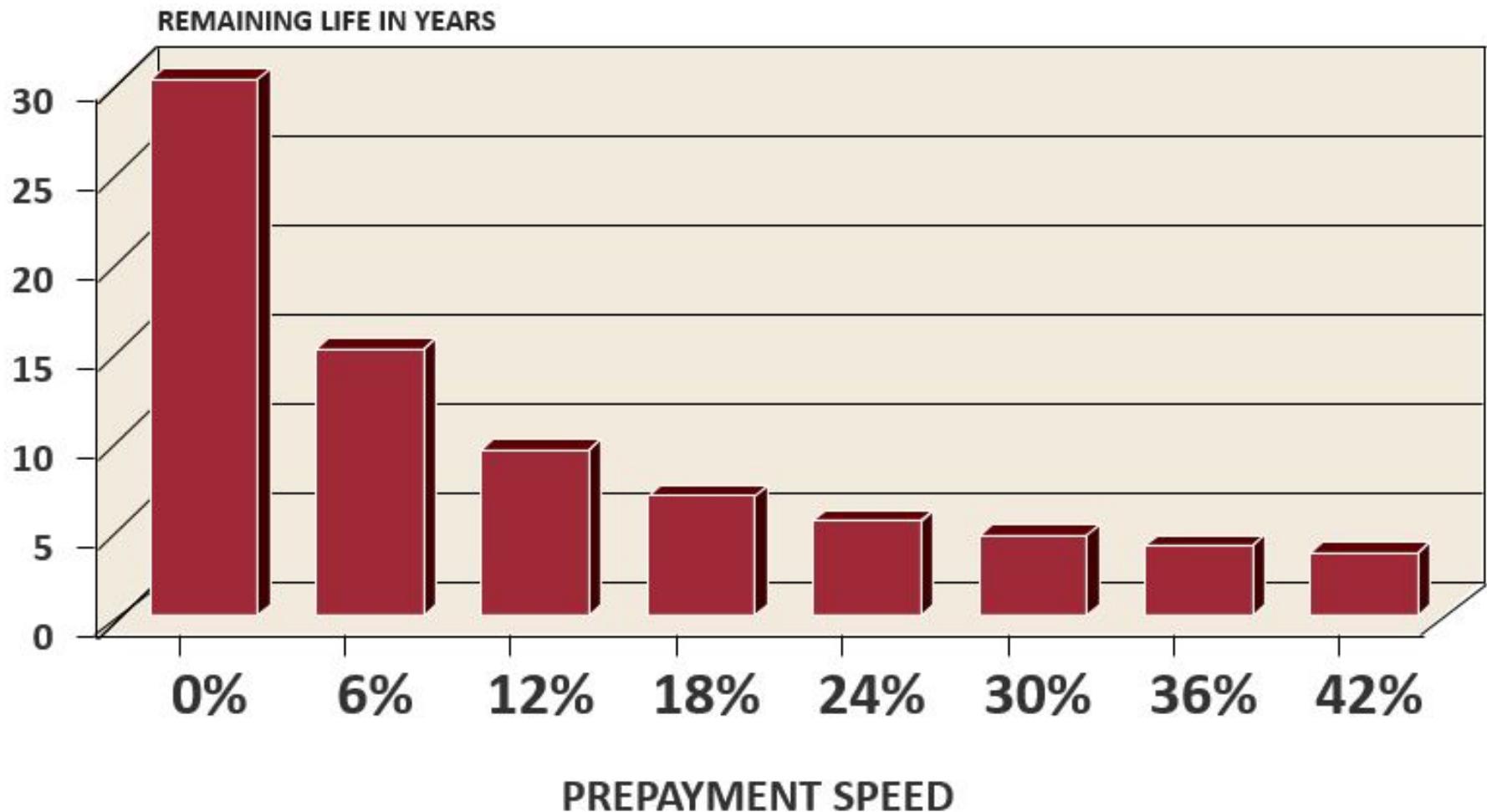
As of December 2014		
Coupon	12 Month CPR	Outstanding UPB (In Billions)
		No Data
2.50	3.80	11.16
3.00	4.90	324.22
3.50	7.00	394.34
4.00	10.70	428.19
4.50	14.70	225.42
5.00	18.40	120.20
5.50	22.10	85.38
6.00	24.20	54.23
6.50	22.60	20.59
7.00	20.80	7.26
7.50	16.90	1.68
8.00	13.60	0.75
8.50	11.90	0.24
9.00	11.60	0.11
9.50	11.70	0.05

As of December 2013		
Coupon	12 Month CPR	Outstanding UPB (In Billions)
2.50	No Data	
3.00	No Data	
3.50	No Data	
4.0	7.50	315.94
4.5	13.00	237.48
5.0	19.70	150.16
5.5	26.60	115.50
6.0	30.70	75.48
6.5	29.00	28.13
7.0	26.30	9.63
7.5	19.10	2.16
8.0	14.40	0.94
8.5	15.40	0.30
9.0	14.00	0.14
9.5	9.80	0.07
10.0	11.20	0.03

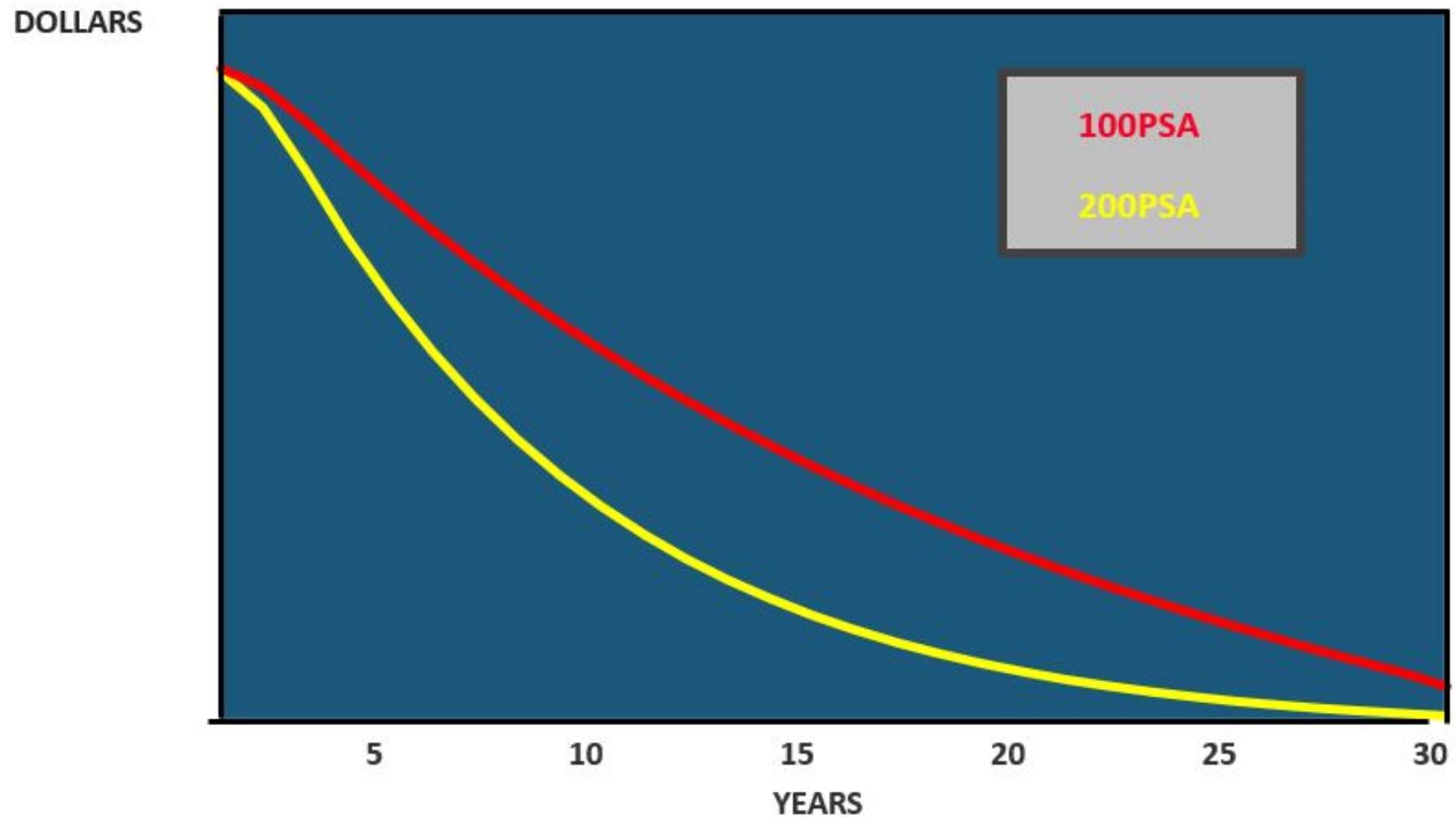
Prepayment Burnout



Source: FNMA & Amherst Securities



Servicing Cash Flows



In – house models/data

- Need staff and large portfolio

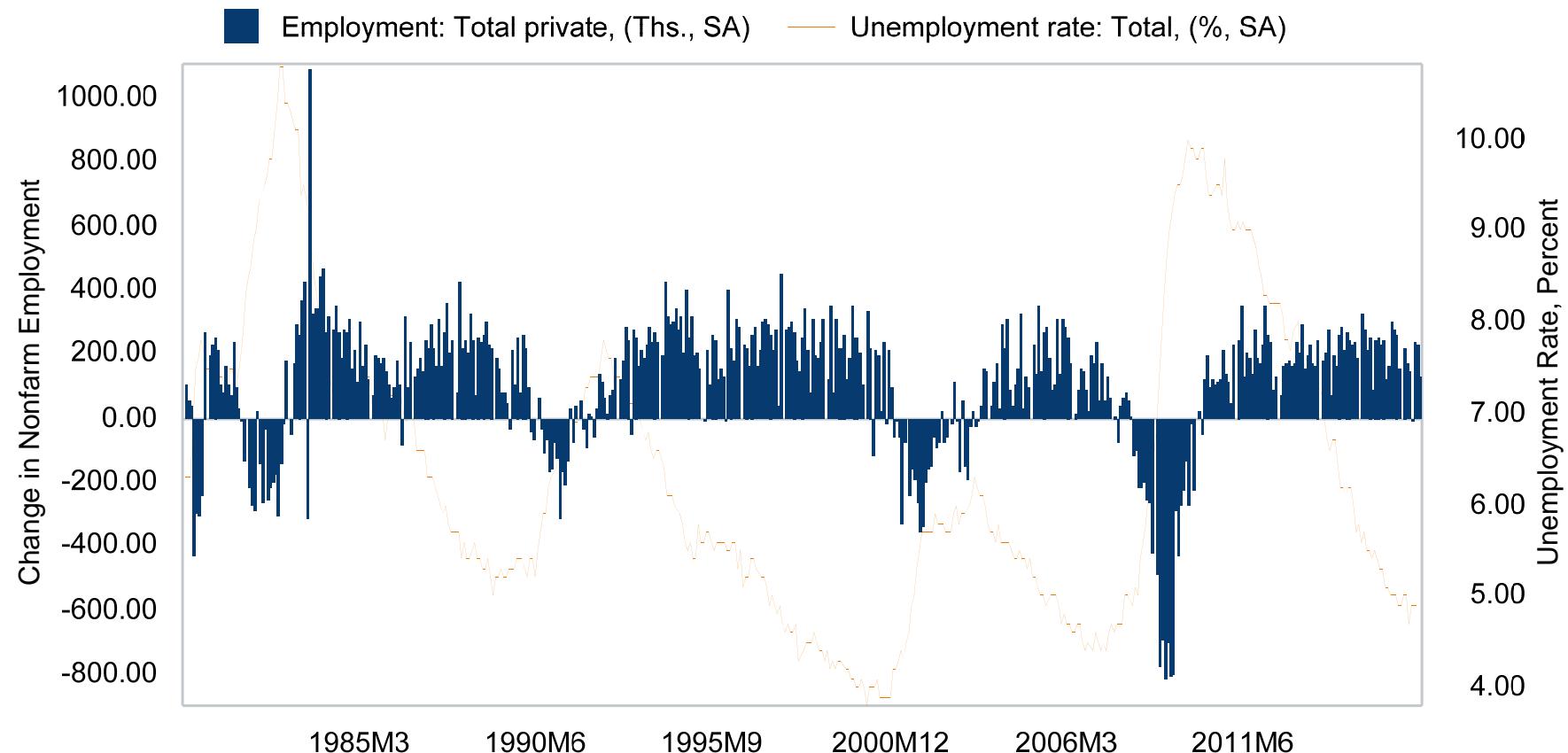
Commercially available models

- Andrew Davidson (ADCO)
- AFT
- Bloomberg median speeds
- Wall Street Research

- LTV
- Economic conditions
 - Unemployment rates
- State
 - Foreclosure timelines are different
- Life Events
 - Divorce, loss of job

Unemployment Rate – National

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Impact of Default



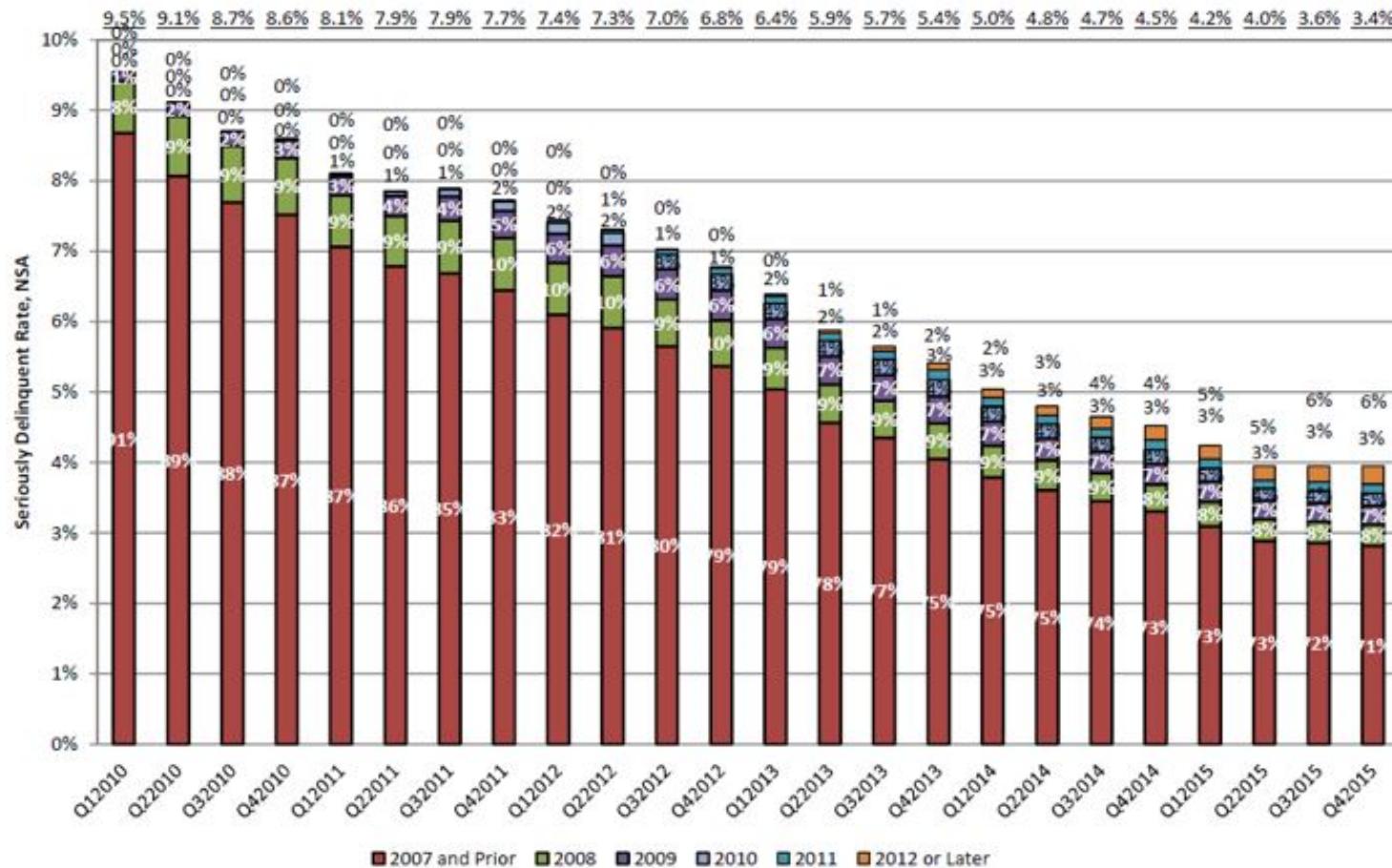
- Intense area of focus
- Modeling behavior of borrower based on:
 - Cumulative LTV
 - State
 - Age
 - Payment history
 - FICO
 - Property type
- Overall economic conditions

Please see handout for current data

Please see handout for current data

Delinquency by Vintage

All Loans: Trend in the composition of seriously delinquent loans by origination year



Source: Mortgage Bankers Association (MBA) - National Delinquency Survey: 3rd Quarter 2015 Preliminary Origination Year Analysis Materials

Yield Requirements

- Typically benchmarked to a specific rate/curve point
 - 10 year Treasury plus 600 bps (base)
- Set at the investor and product level
 - FNMA, GNMA, Private
 - ARM, Fixed, Balloon
- Must consider corporate hurdle rate
- Can be set using pre- or post- tax rate
- Benchmarked to survey data/independent valuations

- Set to a spread over a specific curve
 - 700 bps above the LIBOR or Treasury curve
- Adjustments for products likely
- Must consider corporate hurdle rate
- Tends to be used to solve for market price
 - OAS is adjusted to get back to market
 - Assumes that price is known
- Benchmarked to survey, independent valuations or interest only securities

- Alternative Investments

- Risk

- Liquidity

- Expected Remaining Term

- Corporate “Hurdle” Rate

$$K = K^* + IP + DRP + LP + MRP$$

k = nominal rate of interest

K^* = "real" rate of interest

IP = inflation premium

DRP = default risk premium

LP = liquidity/marketability premium

MRP = maturity risk premium

After-tax Cash Flows for Two Competing Products

YEAR	<i>Project S</i>	<i>Project L</i>
0	-1000	-1000
1	500	100
2	400	300
3	300	400
4	100	600

IRR

14.5%

11.8%

MSR Market

- Two major classifications of transactions are
 - Bulk servicing
 - Flow servicing
- Selling MSRs can be a complicated transaction as the value of servicing changes due to a number of factors.

- Defined as servicing that has existed for some period of time (more than 3 to 6 months old)
 - Borrower has made a number of payments to existing servicer
- Bulk packages allow the buyer to see the actual performance and have actual data to analyze as part of the bid process

- A number of items (in addition to price) must be considered in the overall evaluation of bids.
 - Counterparty
 - Servicing system
 - Tax and flood contracts
 - Interim servicing fee
 - Prepayment penalty language

- Defined as less than three months old and often the servicing is sold simultaneously to selling to loan
- Flow packages allow the seller to sell future production based on a prospective view of what the seller is expected to originate

Sample Basic Flow Grid



<u>Loan Amount</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>	<u>Tier 4</u>	<u>Tier 5</u>	<u>Tier 6</u>	<u>Tier 7</u>
-	-	-	-	-	-	-	-
\$417,001 - Limit	119	116	113	108	102	101	95
\$275,000 - \$417,000	135	132	129	124	118	117	111
\$225,000 - \$274,999	132	129	126	121	115	114	108
\$190,000 - \$224,999	131	128	125	120	114	113	107
\$160,000 - \$189,999	129	126	123	118	112	111	105
\$130,000 - \$159,999	126	123	120	115	109	108	102
\$110,000 - \$129,999	123	120	117	112	106	105	99
\$90,000 - \$109,999	119	116	113	108	102	101	95
\$70,000 - \$89,999	113	110	107	102	96	95	89
\$50,000 - \$69,999	103	100	97	92	86	85	79
\$0 - \$49,999	84	81	78	73	67	66	60

Each tier represents a different set of states.

Source Phoenix Capital

Common Co-Issue/Flow Adjustors



- A Co-Issue grid in addition to the states adjustors will include a number of other adjustments including:
 - Par rate language
 - Excess service fee
 - Remittance
 - FICO
 - LTV
 - Product

- Take time to complete
 - Typical timeline is approximately three months
- Require formal investor approval
- RESPA rules must be followed

Additional Topics



Additional Topics



- Servicing Sensitivities
- Shock Profiles
- Hedging
- LOCOM Amortization

Fifth Third Servicing Sensitivities



At September 30, 2015, the sensitivity of the current fair value of residual cash flows to immediate 10%, 20% and 50% adverse changes in prepayment speed assumptions and immediate 10% and 20% adverse changes in other assumptions are as follows:

(\$ in millions) ^(a)	Rate	Fair Value	Weighted-Average Life (in years)	Rate	Prepayment Speed Assumption			Residual Servicing Cash Flows		
					Impact of Adverse Change on Fair Value			OAS Spread (bps)	Impact of Adverse Change on Fair Value	
					10%	20%	50%			
Residential mortgage loans:										
Servicing rights	Fixed	\$ 731	5.7	11.7 %	\$ (34)	(66)	(146)	706	\$ (19)	(37)
Servicing rights	Adjustable	25	2.5	32.7	(2)	(3)	(7)	668	-	(1)

(a) The impact of the weighted-average default rate on the current fair value of residual cash flows for all scenarios is immaterial.

These sensitivities are hypothetical and should be used with caution. As the figures indicate, changes in fair value based on these variations in the assumptions typically cannot be extrapolated because the relationship of the change in assumption to the change in fair value may not be linear. The Bancorp believes variations of these levels are reasonably possible; however, there is the potential that adverse changes in key assumptions could be even greater. Also, in the previous table, the effect of a variation in a particular assumption on the fair value of the interests that continue to be held by the Bancorp is calculated without changing any other assumption; in reality, changes in one factor may result in changes in another (for example, increases in market interest rates may result in lower prepayments), which might magnify or counteract these sensitivities.

Source: Fifth Third 10-Q for Q3 2015

SunTrust Servicing Sensitivities



A summary of the key inputs used to estimate the fair value of the Company's MSR's at September 30, 2015 and December 31, 2014, and the sensitivity of the fair values to immediate 10% and 20% adverse changes in those inputs, are presented in the following table.

(Dollars in millions)	September 30, 2015	December 31, 2014
Fair value of MSRs	\$1,262	\$1,206
Prepayment rate assumption (annual)	11%	11%
Decline in fair value from 10% adverse change	\$51	\$46
Decline in fair value from 20% adverse change	98	88
Option adjusted spread (annual)	8%	10%
Decline in fair value from 10% adverse change	\$55	\$55
Decline in fair value from 20% adverse change	105	105
Weighted-average life (in years)	6.4	6.4
Weighted-average coupon	4.1%	4.2%

These MSR sensitivities are hypothetical and should be used with caution. Changes in fair value based on variations in assumptions generally cannot be extrapolated because (i) the relationship of the change in an assumption to the change in fair value may not be linear and (ii) changes in one assumption may result in changes in another, which might magnify or counteract the sensitivities. The sensitivities do not reflect the effect of hedging activity undertaken by the Company to offset changes in the fair value of MSR's. See Note 13, "Derivative Financial Instruments," for further information regarding these hedging activities.

Consumer Loan Servicing Rights

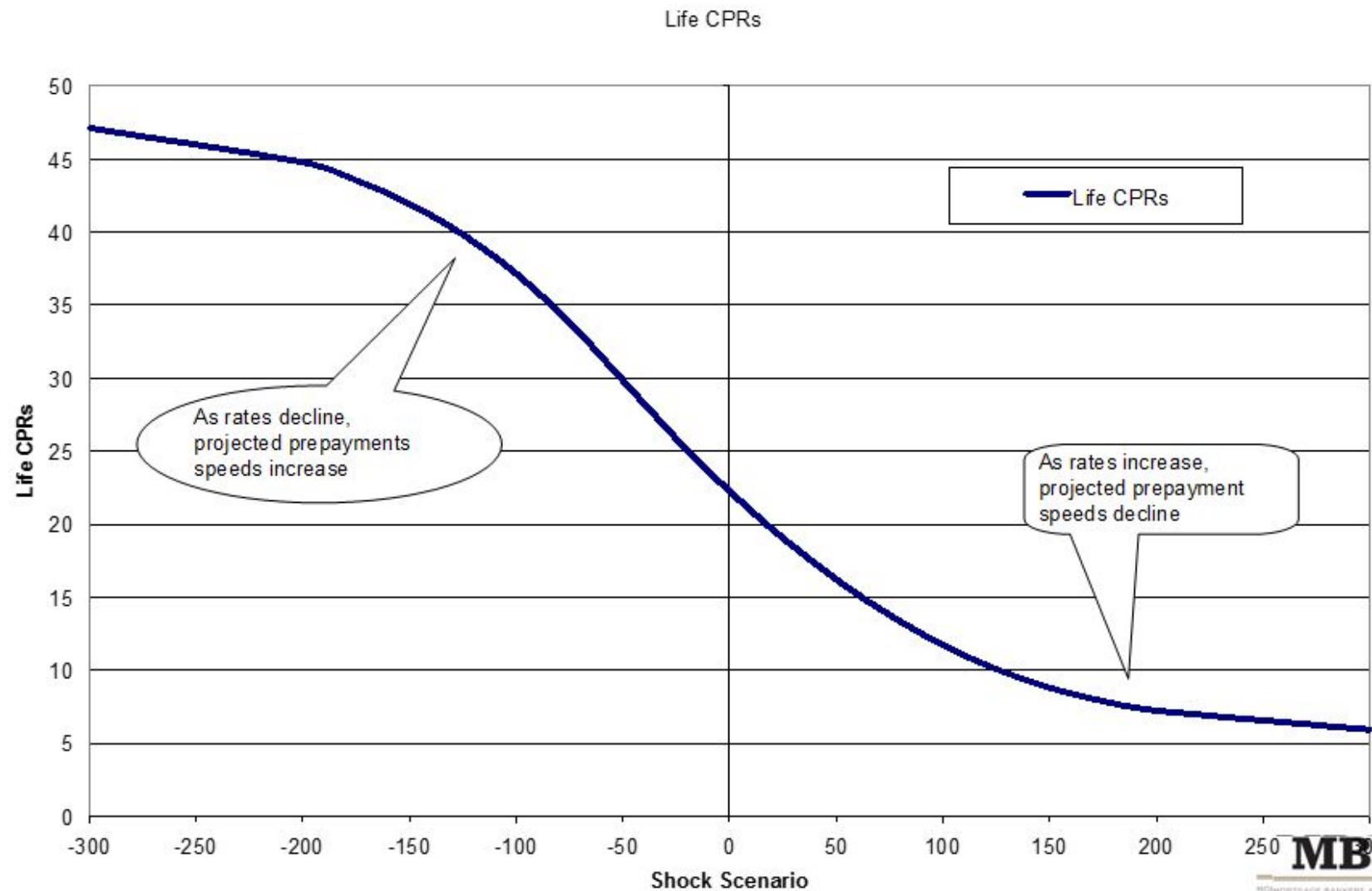
In June 2015, the Company completed the securitization of \$1.0 billion of indirect auto loans, with servicing rights retained, and recognized a \$13 million servicing asset at the time of sale. See Note 8, "Certain Transfers of Financial Assets and Variable Interest Entities," for additional information on the Company's securitization transactions.

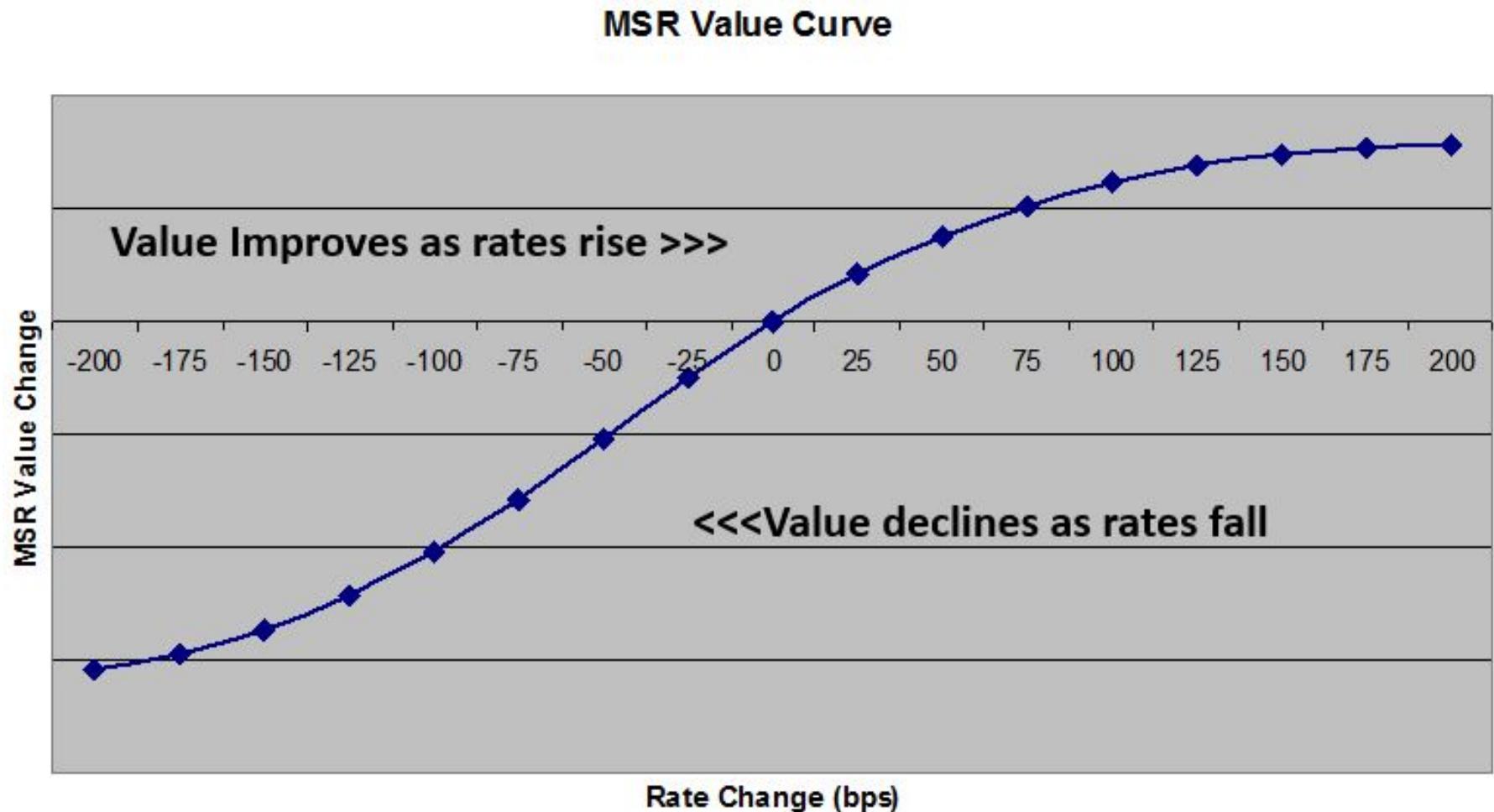
Income earned by the Company on its consumer loan servicing rights is derived primarily from contractually specified servicing fees and other ancillary fees. Such income earned for the three and nine months ended September 30, 2015 was \$2 million and \$3 million, respectively, and is reported in other noninterest income in the Consolidated Statements of Income. There was no income earned on consumer loan servicing rights for the three and nine months ended September 30, 2014.

At September 30, 2015, the total UPB of consumer indirect loans serviced was \$889 million, all of which were serviced for third parties. No consumer loan servicing rights were purchased or sold during the nine months ended September 30, 2015 and 2014.

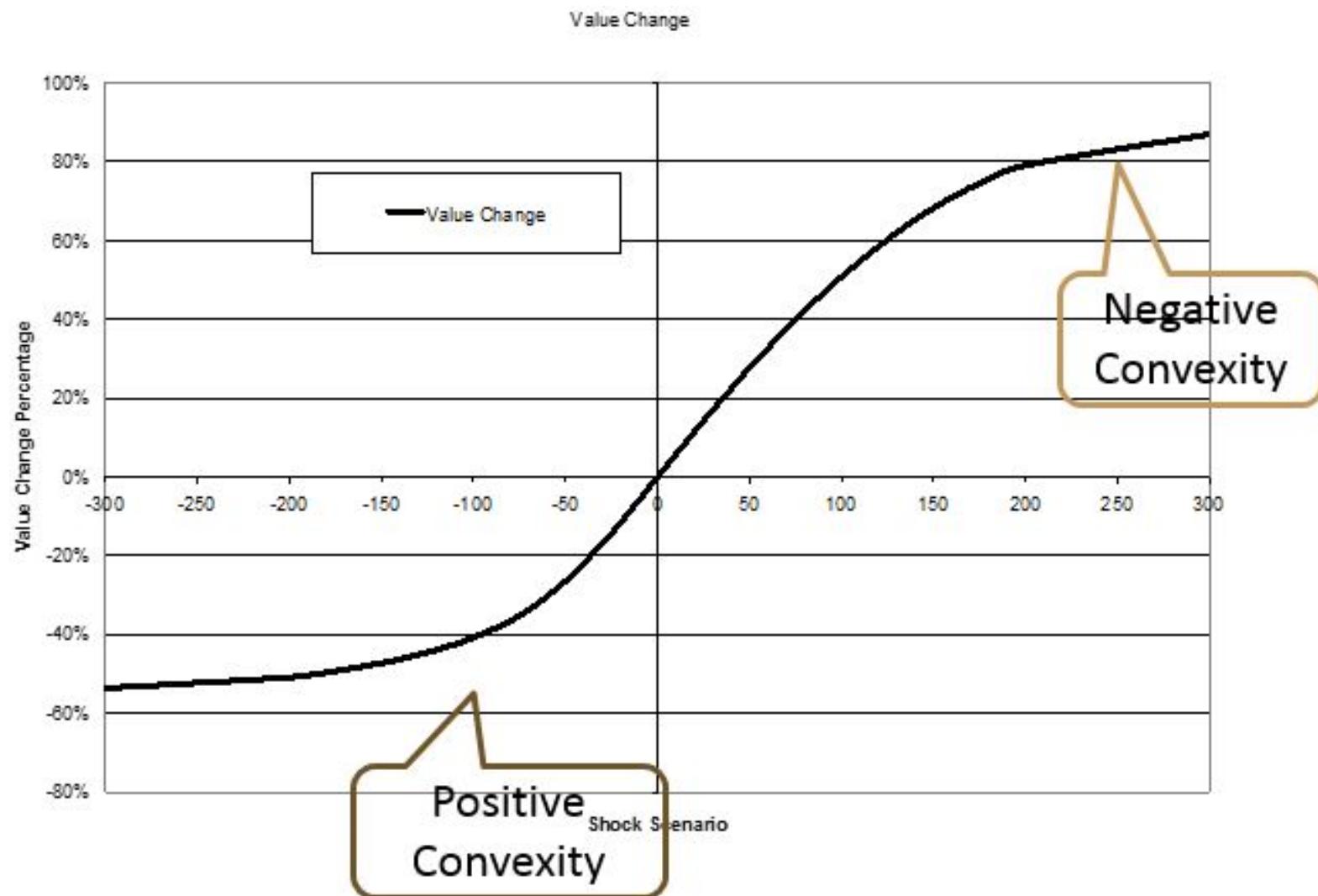
Consumer loan servicing rights are accounted for at amortized cost and are monitored for impairment on an ongoing basis. The Company calculates the fair value of consumer servicing rights using a valuation model that calculates the present value of estimated future net servicing income using prepayment projections and other assumptions. Impairment, if any, is recognized when changes in valuation model inputs reflect a fair value for the servicing asset that is below its respective carrying value. At September 30, 2015, both the amortized cost and the fair value of the Company's consumer loan servicing rights were \$11 million.

Shock Profile – CPRs



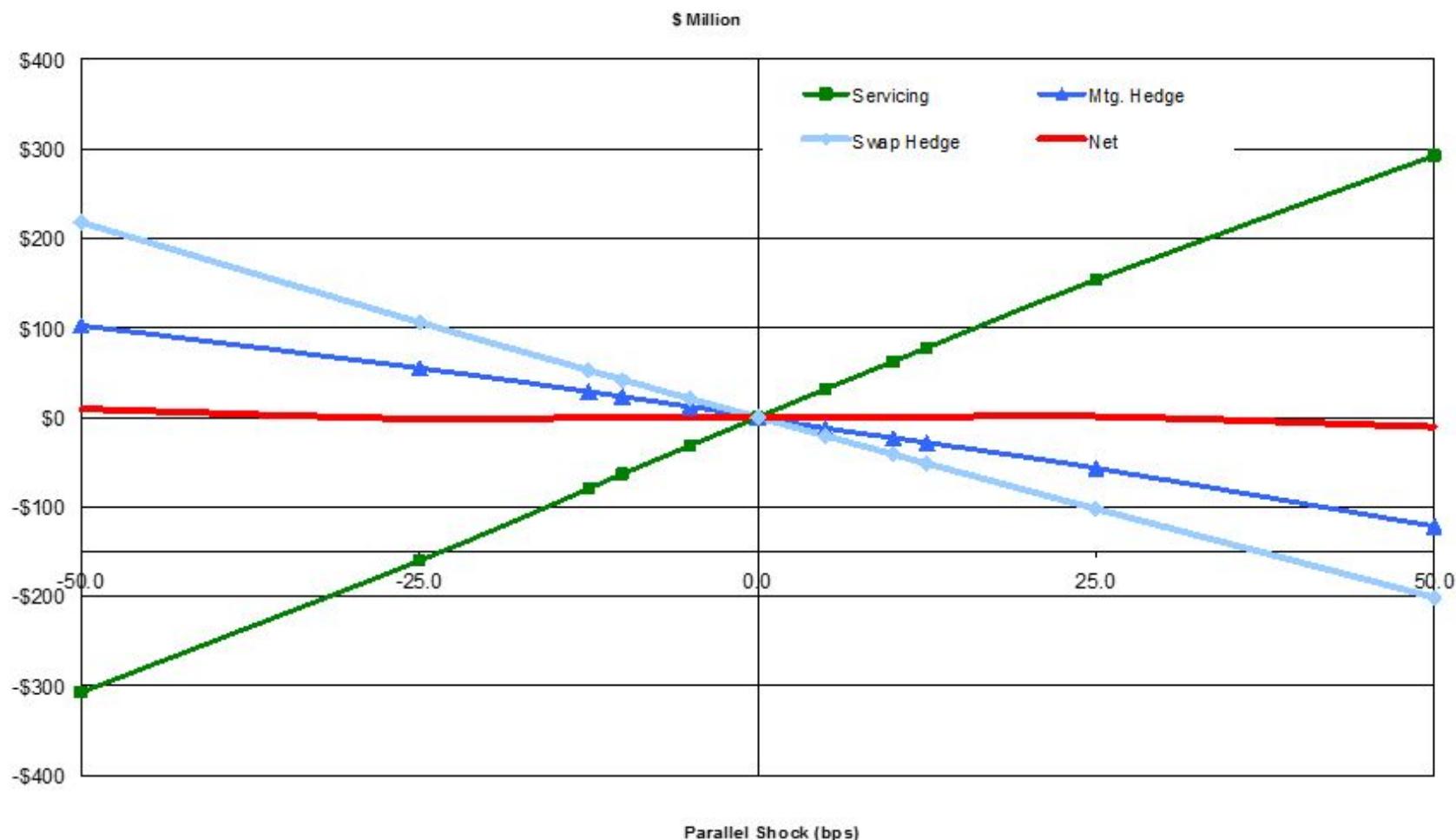


Shock Profile – Value Change



MSR Hedge Profile

MSR Hedge Profile



Amortization Example (Detail)



➤ Initial MSR asset	2,000,000
– (\$200 million @ 1% (MSR value))	
➤ Less Amortization Expense	\$(30,000)
– Month one cash flows divided by total cash flows	
– Example 1.5%	
➤ Ending Book Value	1,970,000
➤ Impairment Test	
– Compare Market Value to Book Value	
– If MV < BV, then have impairment	

Servicing Portfolio Valuation Practice Activities



Review



- Components of a portfolio
- The valuation process
- Income components
- Operating costs
- Foreclosure costs & credit risk factors
- Amortization calculation
- Projecting prepayments
- Yield requirements
- The market for MSRs
- Additional topics

Questions?

The information contained in this presentation is for general informational purposes only and is not intended and should not be construed as legal advice. Please consult an attorney for advice and assistance with your specific legal questions and situations.

Evaluations

Your feedback matters! Please complete the evaluation for this session and hand it in to your facilitator or instructor. It is the last page in this section of your notebook before the next tab.

Appendix

Month	100 PSA	200 PSA	300 PSA	600 PSA	900 PSA
1	0.2	0.4	0.6	1.2	1.8
2	0.4	0.8	1.2	2.4	3.6
3	0.6	1.2	1.8	3.6	5.4
4	0.8	1.6	2.4	4.8	7.2
5	1.0	2.0	3.0	6.0	9.0
6	1.2	2.4	3.6	7.2	10.8
7	1.4	2.8	4.2	8.4	12.6
8	1.6	3.2	4.8	9.6	14.4
9	1.8	3.6	5.4	10.8	16.2
10	2.0	4.0	6.0	12.0	18.0
11	2.2	4.4	6.6	13.2	19.8
12	2.4	4.8	7.2	14.4	21.6
13	2.6	5.2	7.8	15.6	23.4
14	2.8	5.6	8.4	16.8	25.2
15	3.0	6.0	9.0	18.0	27.0
16	3.2	6.4	9.6	19.2	28.8
17	3.4	6.8	10.2	20.4	30.6
18	3.6	7.2	10.8	21.6	32.4
19	3.8	7.6	11.4	22.8	34.2
20	4.0	8.0	12.0	24.0	36.0
21	4.2	8.4	12.6	25.2	37.8
22	4.4	8.8	13.2	26.4	39.6
23	4.6	9.2	13.8	27.6	41.4
24	4.8	9.6	14.4	28.8	43.2
25	5.0	10.0	15.0	30.0	45.0
26	5.2	10.4	15.6	31.2	46.8
27	5.4	10.8	16.2	32.4	48.6
28	5.6	11.2	16.8	33.6	50.4
29	5.8	11.6	17.4	34.8	52.2
30	6.0	12.0	18.0	36.0	54.0
31 - 360	6.0	12.0	18.0	36.0	54.0

➤ Glossary of Acronyms

- IRR Internal Rate of Return
- MIRR Modified Internal Rate of Return
- ROE Return on Equity
- ROA Return on Assets

➤ Other Tests and Measures

- CPR Conditional Prepayment Rate
- OAS Option adjusted spread
- PSA Public Securities Association
- WAM Weighted average maturity
- WAOT Weighted average original term
- WART Weighted average remaining term

Disclaimer



This publication is designed to present, as simply and as accurately as possible, a general explanation of processes and functions within the mortgage industry. It should be noted that the information presented is not all-inclusive. Forms, regulations and overall processes may change because of changes within the industry. This publication should not be used as a substitute for referring to the applicable rules and regulations and is distributed with the understanding that the publisher is not engaged in rendering legal or other personalized professional service. If legal or other expert assistance is required, the services of a competent professional should be sought.

Construction Lending



- Products and players in construction lending
- Key terms and structure of construction loans
- Major risks and rewards of construction lending
- Documentation needed for construction loans
- Administration of construction loans

Introduction to Construction Lending



- Land Acquisition Loan
- Acquisition, Development, and Construction Loan (ADC)
- Forward Commitment
- Mini-perm
- Permanent Loan

Construction Lending Players



- Owner/Borrower/Developer
- General Contractor/Sub-Contractors
- Lender/Servicer
- Various 3rd party vendors

Construction Loan

- Short-term obligation (1-3 years)
 - Evidenced by a note
 - Open-ended 1st mortgage
 - Secured by land and its improvements
- Variable rate
- Interest only

Construction Loan Agreement

- Loan document tie-in
- Advance schedules
- Warranties
- Covenants
- Loan conversion
- Responsibility of all parties
 - i.e. builder/developer, construction lender, and permanent lender

Benefits and Risks of Construction Lending



Why Do Construction Lending?



Rewards:

- Fee income
- Net spread
- Customer support

Risks:

- Construction lending (creating value)
- Loan administration requirements
- Capital requirements:
 - Financial Institution Reform and Recovery Enforcement Act, 1989 (FIRREA)
 - National Association of Insurance Commissioners (NAIC)

Major Risks of Construction Lending



- Project does not get completed
- When project is completed the value will not provide the means for repayment

Project Does Not Get Completed



Insufficient Funds

- Construction cost underestimated
- Shortfall in cash flow from rental activity
- Business failure of developer/borrower or general contractor
- Mechanics (workmen's) lien

Unforeseen Risks

- Site conditions
- Weather
- Hazardous substances
- Management changes
- Unusual business conditions

Miscellaneous

- Labor disputes
- Changes in financial markets
- Adverse community action
- Negative publicity
- Destruction or theft
- Unavailable materials

When project is completed but the value will not support the means of repayment...

➤ **Construction**

- Not completed per contract
- Code violations

➤ **Financial**

- Borrower experiences financial problems
- Inadequate lease-up and achieved rents
- Interest rates vary from assumption
- Bank/lender liquidity

Loan Documentation



- Plans and specifications
- Copies of all contracts (construction contract, major subcontractors)
- Zoning and permits
- Market/feasibility report
- Environmental report (Phase I)
- Appraisal (when completed value)
- Survey and Title insurance
- Hazard insurance (fire and liability)
- Warranties, payment, and/or performance bond
- Borrower financial information
- Construction loan agreement
- Note and security instrument
- Permanent lender forward commitment
- Project pro-forma

Sample Construction Loan Pro Forma



Cost of Project Pro Forma				
Advance	# 1	180,000	Architect/Engineer	150,000
	# 2	220,000	Permits/Bonds/Ins	40,000
	# 3	295,600	Project Management	50,000
	# 4	350,000	Signs/Brochures	45,000
	# 5	79,760	Lender/Broker Fees	80,000
	# 6	18,000	MA1 Appraisal	5,000
	# 7	133,500	Legal and Audit	165,000
	# 8	149,870	Leasing Commission	150,000
	# 9	355,000	Real Estate Tax	75,000
	# 10	275,000	Settlement/Closing	62,000
	# 11	175,000	Developer's Fee	250,000
	# 12	225,000	Contingency	123,500
	0	0	Interest Reserve	385,000
Hard Costs		2,456,730	Soft Costs	1,580,500
Land		450,000		
Total Costs		4,487,230		

Administration of Construction Loans



Administration of Construction Loans



- Software
- Personnel
- Advancing funds
- Property inspection
- Title update
- Insurance update

Administration of Construction Loans, cont.



- Keep the loan in balance
 - Lender must retain sufficient funds to complete construction of the project
- Renew/update underwriting to conform with construction lender and permanent lender requirements

Review



- Products and players in construction lending
- Key terms and structure of construction loans
- Major risks and rewards of construction lending
- Documentation needed for construction loans
- Administration of construction loans

Questions?

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Evaluations

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Disclaimer



This publication is designed to present, as simply and as accurately as possible, a general explanation of processes and functions within the mortgage industry. It should be noted that the information presented is not all-inclusive. Forms, regulations and overall processes may change because of changes within the industry. This publication should not be used as a substitute for referring to the applicable rules and regulations and is distributed with the understanding that the publisher is not engaged in rendering legal or other personalized professional service. If legal or other expert assistance is required, the services of a competent professional should be sought.

Construction Lending



- Products and players in construction lending
- Key terms and structure of construction loans
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Introduction to Construction Lending



- Land Acquisition Loan
- Acquisition, Development, and Construction Loan (ADC)
- Forward Commitment
- Mini-perm
- Permanent Loan

Construction Lending Players



- Owner/Borrower/Developer
- General Contractor/Sub-Contractors
- Lender/Servicer
- Various 3rd party vendors

Construction Loan

- Short-term obligation (1-3 years)
 - Evidenced by a note
 - Open-ended 1st mortgage
 - Secured by land and its improvements
- Variable rate
- Interest only

Construction Loan Agreement

- Loan document tie-in
- Advance schedules
- Warranties
- Covenants
- Loan conversion
- Responsibility of all parties
 - i.e. builder/developer, construction lender, and permanent lender

Benefits and Risks of Construction Lending



Why Do Construction Lending?



Rewards:

- Fee income
- Net spread
- Customer support

Risks:

- Construction lending (creating value)
- Loan administration requirements
- Capital requirements:
 - Financial Institution Reform and Recovery Enforcement Act, 1989 (FIRREA)
 - National Association of Insurance Commissioners (NAIC)

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