

# The Quarterly Review of Interest Rate Risk

Office of Examinations, Supervision, and Consumer Protection  
Risk Modeling and Analysis Division



### Special points of interest:

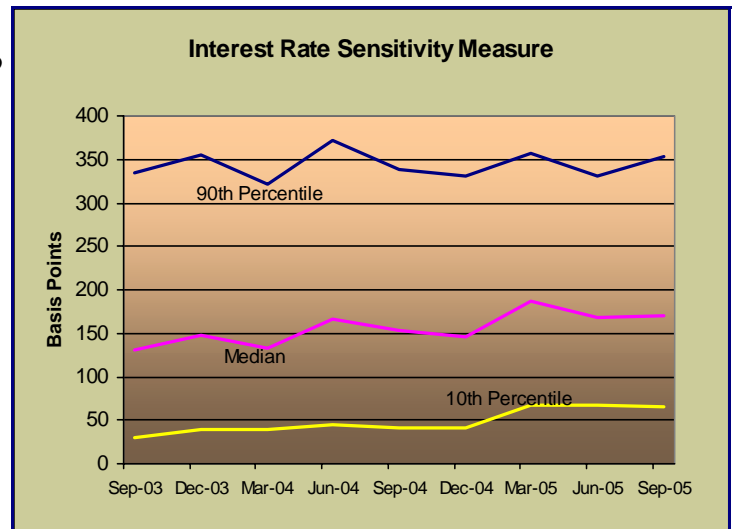
- 30-yr mortgage commitment rate rises
- Treasury yield curve flattens in the third quarter
- Third quarter median interest rate sensitivity rises slightly
- Asset duration rises
- Comparative Regional Analysis
- Feature Article on Option ARMs: Part Two

## Third Quarter Sees Small Rise in Sensitivity

Third quarter median interest rate sensitivity rose to 171 basis points, up slightly from 168 basis points in the second quarter. The increase in median sensitivity was due to a shift in the yield curve in the third quarter that increased the duration gap between assets and liabilities for the industry.

The median pre-shock Net Portfolio Value (NPV) ratio rose, while the median post-shock NPV ratio fell in the third quarter.

The third quarter saw the Treasury yield curve continue to flatten. Between the second and third quarter of this year, rates rose more at the



shorter end than at the longer end of the yield curve. For example, the six-month yield rose by 59 basis points, while

the 30-year yield rose by 37 basis points.

More evidence of a con-  
(Continued on page 3)

### Charts in this issue:

Interest Rates and Yield Curves	4
ARM Market Share of Originations	4
ARM Share of Thrift Portfolios	4
Duration and NPV Measures	5
Industry Risk Measures and TB13a S-Rating Matrix	6
Comparative Trends in the Four OTS Regions	7
Aggregate and Regional Appendices	8-12

## Option ARMs: Part Two

In the previous issue's feature article, we took a look at option ARMs, a type of nontraditional mortgage product that has garnered a lot of attention lately. We examined the option ARM and discussed its growing popularity among consumers and discussed the option ARM's origins and the extent to which it is a new mortgage product.

We also addressed the implications of this mortgage product for risk management at financial institutions, including the extent to which there might be new, or unusual, challenges related to

credit risk, systemic risk, geographic and portfolio concentration risk, and underwriting practices.

Given the potential for substantial payment shock and negative amortization in conjunction with changing consumer attitudes toward mortgage debt, option ARMs probably present risks that have not been confronted with other types of mortgage products in the past.

While option ARMs have been available in similar forms for many years, the risk layering inherent in underwriting this mortgage product along

with the unprecedented consumer demand for this nontraditional mortgage today has compelled regulators to take a closer look at the risks associated with option ARMs.

In this issue, we discuss supervisory concerns surrounding option ARMs and several recent initiatives by the federal banking agencies.

### Supervisory Concerns and Initiatives

Option ARMs provide borrowers with the flexibility to select one of four different

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## Option ARMs: Part Two (continued)

(Continued from page 1)

mortgage payment options each month. The borrower can choose between amortizing payments based on a 15- or 30-year amortization schedule, an interest-only payment, or a minimum payment tied to an initial start, or teaser, rate.

Under the terms of the option ARM note, the borrower is obligated only to make the minimum monthly payment. Instead, the monthly mortgage statement provides the borrower with the other three payment options for debt management purposes.

For federal banking regulators, the major supervisory concerns deal with safety and soundness issues, related to underwriting and risk management, and consumer suitability. The payment shock and negative amortization associated with option ARMs are of particular supervisory concern for safety and soundness and suitability reasons.

With regard to safety and soundness issues, it would be prudent for lenders to follow strict underwriting standards in originating all mortgages. This is especially true for option ARMs, where the cumulative effects of risk layering can be a real concern.

As a result, lenders should pay special attention to LTV ratio, credit score, debt to income ratio (DTI), the level of documentation, and the financial sophistication of the borrower when underwriting option ARMs. Also, special

attention should be paid to qualifying borrowers at the fully indexed mortgage rate in assessing a borrower's ability to repay the outstanding balances for these mortgages.

At this point in time, it is difficult to gauge accurately the credit performance of option ARMs, since they are a relatively new mortgage product with little historical performance data to examine. Given this, it would be prudent for lenders to be cautious when originating and keeping option ARMs on their balance sheets.

With regard to consumer suitability, it is important that lenders make sure that option ARMs are marketed to consumers who fully understand the nature of negatively amortizing ARMs. This is particularly true for consumers with low FICO scores or high DTI ratios, who need to be warned of the payment shock risks inherent in option ARMs.

As is the case with any financial product, option ARMs are not appropriate mortgages for every consumer. If lenders market option ARMs to financially strapped and/or subprime borrowers, who do not understand the risks inherent in choosing the minimum payment option, this could substantially increase the credit risk exposure of those depository institutions that hold these loans in portfolio.

The Office of Thrift Supervision (OTS) has undertaken a couple of initiatives

to make lenders aware of the risks inherent in nontraditional mortgage loans with the potential for negative amortization (Neg Am), such as option ARMs.

First, the OTS *Examination Handbook*, Section 212, was updated in June 2005 to include an appendix on Neg Am mortgages. This handbook section discusses the risks of these mortgages and lays out best practices for managing the risks inherent in mortgages, such as option ARMs.

In order to ensure adequate risk management, the handbook instructs that lenders should begin with solid underwriting. Once loans are originated, lenders should carefully track the performance of the entire option ARM portfolio, as well as each loan.

In order to maintain a portfolio that is not exposed to excessive credit risk, lenders are advised to monitor the proportion of borrowers that are making minimum monthly payments that result in accruing negative amortization. A sharp increase in the proportion of borrowers making minimum payments is an indication that credit risk trouble may be looming not too far in the future. In addition, lenders should use loan-level data to track the performance of loans by loan program and origination year.

Tracking loan level performance is important with option ARMs, because point-in-time mortgage delinquency rates may mask

emerging credit troubles, such as an increase in LTVs.

Finally, lenders must also be cautious in marketing risky mortgage products to lower income borrowers. If too much credit risk is concentrated in lower income areas, an increase in negative-amortization leading to greater defaults could erode borrower equity and damage property values in these communities.

Second, OTS plans to start collecting data on negatively amortizing mortgages, such as option ARMs, on Schedule TFR.

Finally, in December 2005, OTS along with the other federal banking agencies issued draft guidelines on nontraditional mortgage products, with a particular focus on option ARMs. Financial institutions are urged to undertake efforts to ensure that their underwriting standards, risk management, and consumer protection practices adequately address the risks associated with nontraditional mortgage products.

In regard to underwriting standards, the guidance addresses (i) appropriate borrower repayment analysis, (ii) below market introductory interest rates, (iii) lending to subprime borrowers, (iv) loans secured by non owner-occupied properties, (v) reduced loan documentation, and (vi) the potential for collateral-dependent loans.

In connection with risk management practices, the guidelines recommend that institutions (i) maintain per-

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## Option ARMs: Part Two(continued)

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formance measures and management reporting systems that warn of potential or increasing risks, (ii) maintain an allowance for loan and lease losses at a level appropriate for portfolio credit quality and conditions affecting collectibility, (iii) maintain capital levels that reflect nontraditional mortgage portfolio characteristics and the effect of stressed economic conditions on collectibility, and (iv) apply sound practices in valuing mortgage servicing rights of nontraditional

mortgages.

Lastly, with regard to consumer protection, the proposed guidance stresses that institutions should ensure that consumers are provided clear and balanced information about the relative benefits and risks of nontraditional mortgage products.

These disclosures should be made at a time that will help inform the decision-making processes of consumers. In addition, the guidance discusses recommended practices for promotional materials and

product descriptions, information on monthly payment statements, and the avoidance of practices that obscure significant risks to the consumer.

### Conclusion

The option ARM is a type of nontraditional mortgage that meets the affordability requirements, cash flow needs, and risk tolerances of a wide range of borrowers today. However, due to the potential for payment shock and negative amortization, lenders should

only market option ARMs to consumers who fully understand the risks inherent in this mortgage product.

In addition, this mortgage product is often inappropriate for borrowers with high LTV ratios, high DTI ratios, and low FICO scores.

■

## Third Quarter Sees Small Rise in Sensitivity (continued)

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siderably flatter yield curve is provided by the difference between the two-year and 10-year yields. In June 2005, this difference was 29 basis points. By the end of September 2005, this difference fell to 16 basis points. Some market observers expect the yield curve to become inverted in 2006. Indeed, at the end of December 2005, the difference between the two-year and 10-year yields fell to one basis point.

The flattening yield curve continued to place downward pressure on net interest margins. Average net interest margin for the thrift industry fell by nine basis points to 276 basis points in the third quarter, down from 285 basis points in the prior quarter. This drop in margins was due to higher liability costs and a flat yield curve.

Total thrift industry

earnings set a new record level in the third quarter. Net income rose to \$4.04 billion, up from \$4.03 billion in the second quarter. This represents the third consecutive quarter where industry earnings were \$4.00 billion or higher.

Despite the increase in net income, thrift profitability fell modestly from the previous quarter. The average return on assets (ROA) for the industry dropped to 1.15 percent in the third quarter, down from 1.18 percent in the second quarter. The third quarter fall in ROA was due largely to lower net interest margin.

The 30-year mortgage rate, as measured by the contract interest rate on Freddie Mac commitments for fixed-rate 30-year mortgages, rose to 5.91 percent at the end of the third quarter, up from 5.53 percent from the prior quarter.

Despite the rise in

longer-term interest rates in the third quarter, the volume of mortgage refinancing rose from the prior quarter. Mortgage refinancing activity accounted for 33.3 percent of thrift originations of single-family mortgages in the third quarter, up from 30.4 percent in the previous quarter. This increase in mortgage refinancing activity for thrifts contrasts with the mortgage refinancing activity of all lenders, where the proportion fell to 44 percent from 45 percent.

Third-quarter 1-4 family mortgage originations by thrifts rose to \$181.3 billion, up from \$169.4 billion in the second quarter. Total mortgage originations by thrifts in the third quarter were \$204.2 billion, up six percent from \$191.8 billion in the second quarter.

The third quarter saw the ARM share of total thrift mortgage originations rise to 43 percent, up from 42 per-

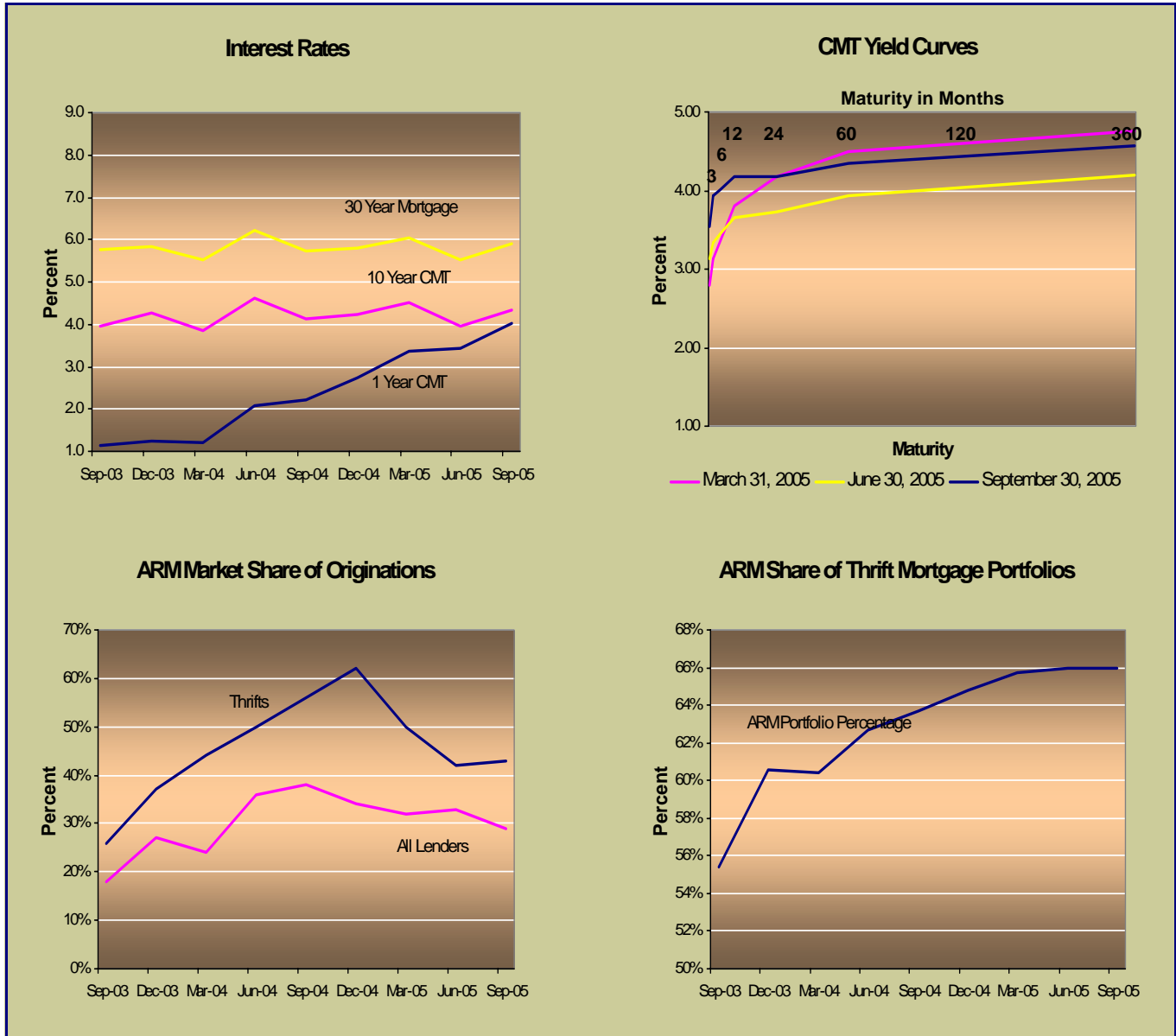
cent in the prior quarter. Despite the rise in the ARM share of mortgage originations, the ARM share of total 1-4 family mortgages held by thrifts in their portfolios remained unchanged at 66.0 percent in the third quarter.

With regard to thrift mortgage pipeline activity, the notional amounts of optional and firm commitments to originate both fixed- and adjustable-rate mortgages in the third quarter were \$79.5 billion and \$5.1 billion, respectively. These notional amounts were essentially unchanged from their levels in the previous quarter.

Between June 2005 and September 2005, thrifts increased their portfolio holdings of single-family adjustable-rate mortgages and mortgage-backed securities from \$486.8 billion to \$492.6 billion.

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### Interest Rates and ARM Market Share



### Third Quarter Sees Small Rise in Sensitivity (continued)

(Continued from page 3)

The portfolio mix of adjustable-rate mortgages also shifted. Between the second and third quarter, thrift portfolio holdings of teaser, lagging index ARMs with a reset frequency of one-month fell 15.8 percent. Over the same period, thrift portfolio holdings of non-teaser lagging index ARMs with a reset fre-

quency of one-month rose 2.17 percent. Lagging indexes used for these ARM products include COFI, federal COF, and MTA.

The liabilities side of the balance sheet for thrifts witnessed some changes between the second and third quarter. Total variable-rate borrowings rose from \$204.9 billion to \$224.1 billion. Over the

same period, total fixed-rate, fixed-maturity deposits rose from \$319.4 billion to \$337.7 billion.

The industry's median effective duration of assets rose sharply from 1.80 to 1.93 between June 2005 and September 2005. With the increase in longer-term interest rates during the third quarter, the rate of projected mortgage

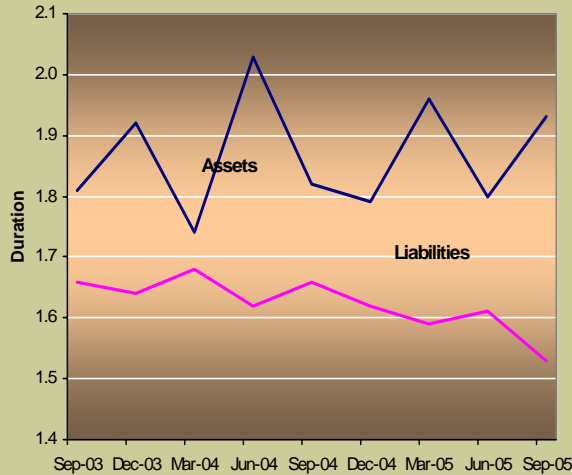
prepayments fell. As a result of the fall in prepayments, the durations of both mortgages and total assets rose.

With the recent heavy volume of refinancings into mortgage loans with lower coupon rates, the industry can expect to see additional increases in asset duration in the future as prepayment

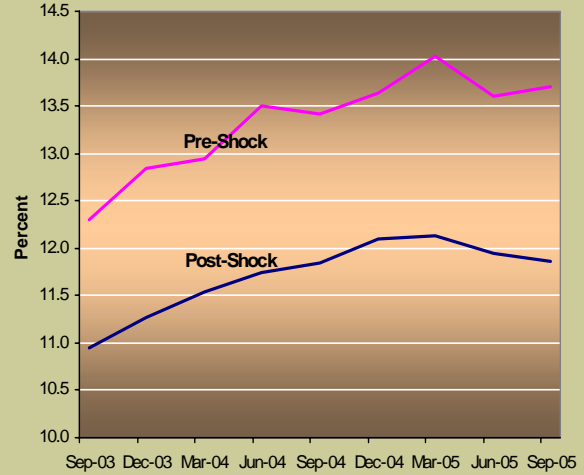
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## Duration and NPV Sensitivity Measures

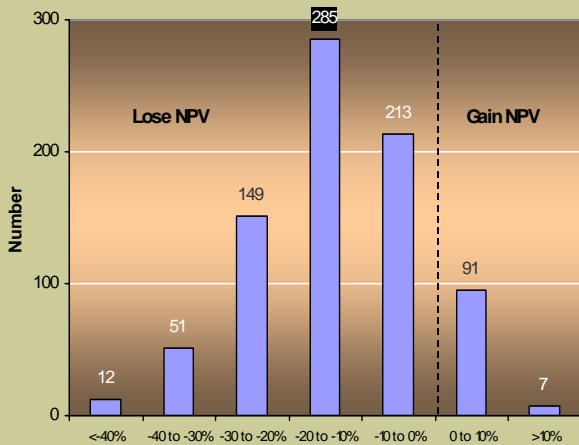
Median Effective Duration



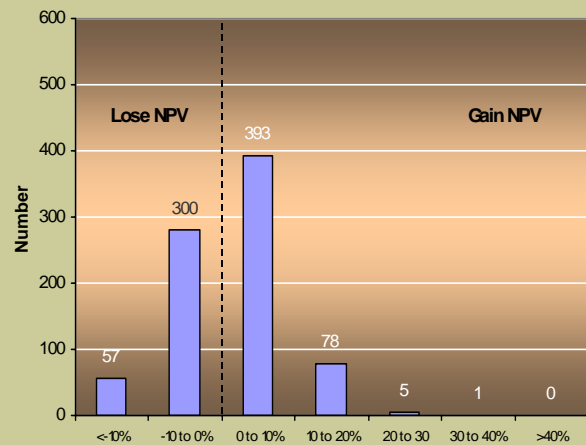
Median Pre- and Post-Shock NPV Ratios



Estimated Change in NPV: +200bp Rate Change



Estimated Change in NPV: -200bp Rate Change



### Third Quarter Sees Small Rise in Sensitivity (continued)

(Continued from page 4)  
 speeds start to slow due to a weaker incentive to refinance. This would be especially true if interest rates continue to go up. According to Bear Stearns & Co., the aggregate prepayment speed for 30-year fixed-rate mortgages in Fannie Mae mortgage-backed securities was recently the

lowest in five years.

The aggregate CMR data for 30-year fixed-rate single-family mortgages lend support to the observation made by Bear Stearns.

At the end of the third quarter, 47.9 percent of balances reported for 30-year fixed-rate mortgages had a WAC under 6 percent, while

32.5 percent of balances had a WAC between 6 and 7 percent. The market coupon rate for 30-year fixed-rate mortgages was 6.16 percent at quarter-end.

As a result of the slowdown in prepayments, interest rate sensitivity for thrifts can be expected to rise over the next several quarters due to

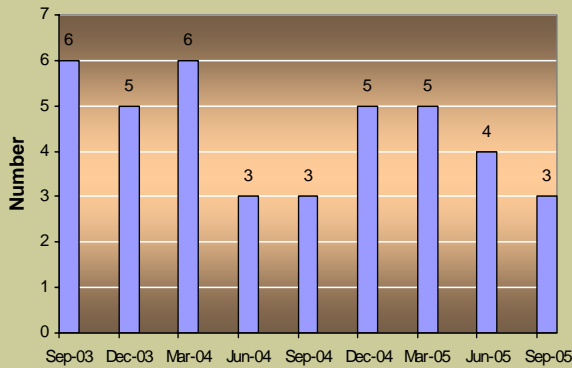
increased asset duration. The industry's median effective duration of liabilities fell from 1.61 to 1.53 in the third quarter.

The median pre-shock NPV ratio for the industry rose slightly to 13.7 percent in the third quarter, up from 13.6 percent in the prior quarter.

(Continued on page 6)

## Interest Rate Risk Measures

**Thriffs with Post-Shock NPV Ratios Under 4 Percent**



**Interest Rate Risk Measures Industry Aggregates Last Two Quarters**

	NPV as % of PV of Assets		% Change in NPV	
	Jun-05	Sep-05	Jun-05	Sep-05
<b>+300</b>	9.00%	8.33%	-25%	-28%
<b>+200</b>	10.08%	9.42%	-15%	-17%
<b>+100</b>	10.95%	10.32%	-6%	-8%
<b>Base</b>	11.56%	11.03%	0%	0%
<b>-100</b>	11.65%	11.33%	1%	3%
<b>-200</b>	11.32	11.11	-1%	2%
<b>-300</b>	N/A	N/A	N/A	N/A

**Post-Shock NPV Ratio and Sensitivity Measure Matrix June 2005**

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
<b>Over 10%</b>	148	228	191	29	596
<b>6% to 10%</b>	40	81	81	5	207
<b>4% to 6%</b>	1	4	5	2	12
<b>Below 4%</b>	0	1	2	1	4
<b>Total</b>	189	314	279	37	819

Minimal   Moderate   Significant   High

**Post-Shock NPV Ratio and Sensitivity Measure Matrix September 2005**

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
<b>Over 10%</b>	156	209	191	34	590
<b>6% to 10%</b>	34	75	89	8	206
<b>4% to 6%</b>	1	2	8	4	15
<b>Below 4%</b>	0	0	2	1	3
<b>Total</b>	191	286	290	47	814

Minimal   Moderate   Significant   High

### Third Quarter Sees Small Rise in Sensitivity (continued)

(Continued from page 5)  
 ter. The median post-shock NPV ratio dropped, falling from 12.0 percent in the previous quarter to 11.9 percent in the third quarter. And the number of thrifts with a post-shock NPV ratio below 4 percent fell from four to three institutions.

In the third quarter, the

thrift industry would have lost 15.7 percent of its net portfolio value if rates rose by a 200 basis points. The industry would have gained two percent if rates fell by 200 basis points.

The number of thrifts with a post-shock NPV ratio below 6 percent rose to 18 institutions in the third quar-

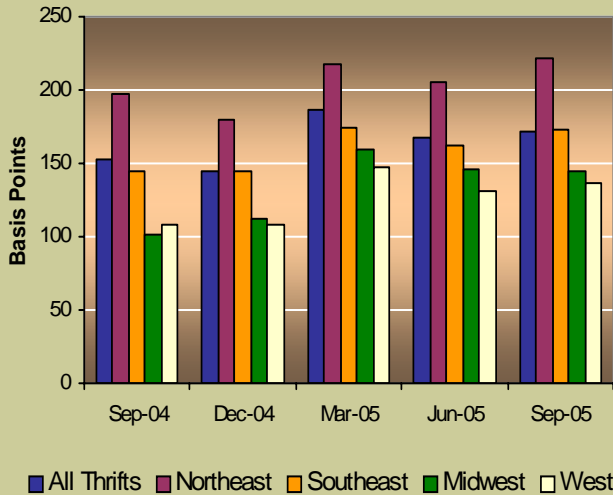
ter, up from 16 in the prior quarter. The number of thrifts with over 400 basis points in interest rate sensitivity rose to 47 thrifts in the third quarter from 37 thrifts in the prior quarter.

Based on TB 13a guidance for the "S" rating, 666 thrifts (81.8 percent) would initially be assigned a mini-

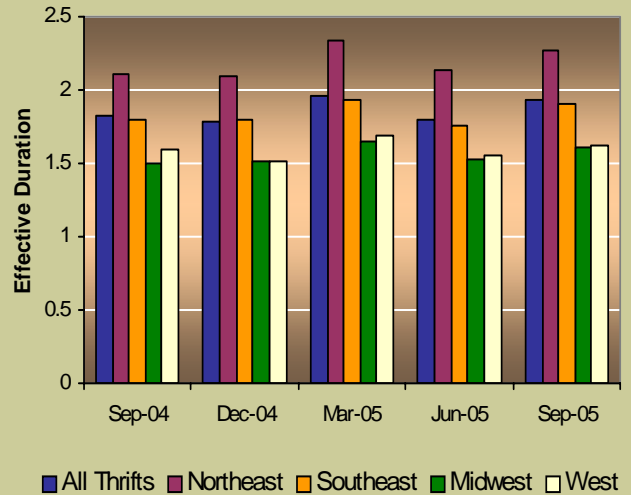
mal interest rate risk rating, 125 thrifts (15.4 percent) a moderate rating, 16 thrifts (2.0 percent) a significant rating, and seven thrifts (0.8 percent) a high rating in the third quarter. The number of thrifts with significant or high interest rate risk rose to 23 in the third quarter, up from 16 in the prior quarter. ■

### Comparative Trends in the Four OTS Regions

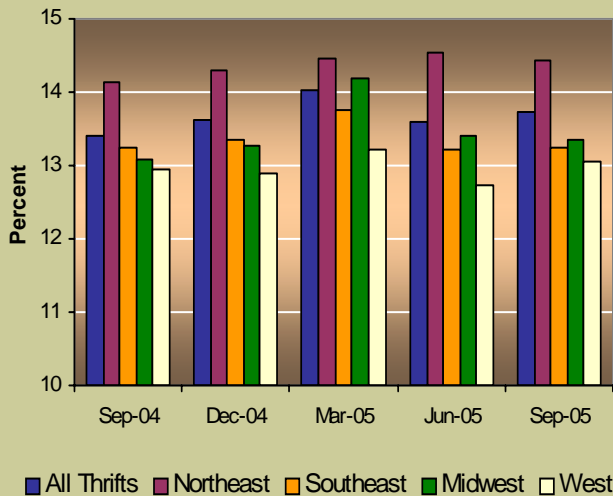
Median Sensitivity by OTS Region



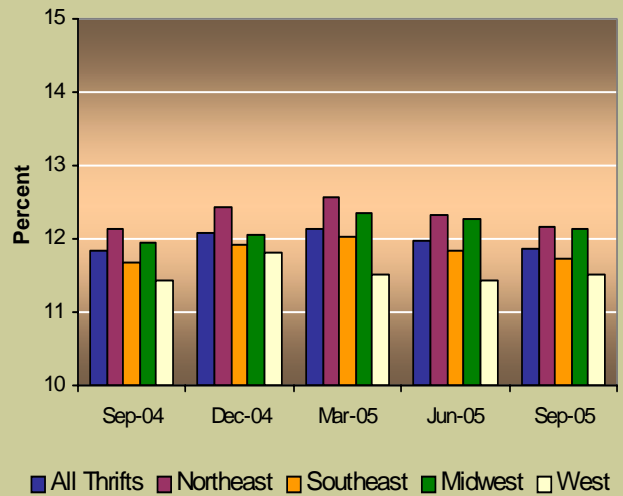
Median Assets Duration by OTS Region



Median Pre-Shock NPV Ratio by OTS Region



Median Post-Shock NPV Ratio by OTS Region



### Regional Comparisons

At the end of the third quarter, the Northeast Region had the highest median sensitivity at 221 basis points, while the West Region had the lowest median sensitivity at 131 basis points.

Three of the four OTS regions experienced an increase in their median sensi-

tivities. The Northeast, Southeast, West Regions saw their sensitivities rise by 7.3 percent, 5.6 percent, and 3.8 percent, respectively, while the Midwest Region saw its sensitivity fall by 0.7 percent.

The Northeast Region had the highest median pre-shock NPV ratio at 14.4 per-

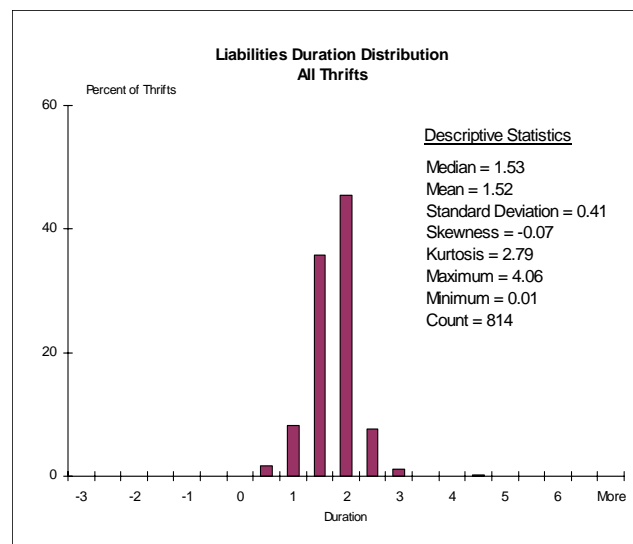
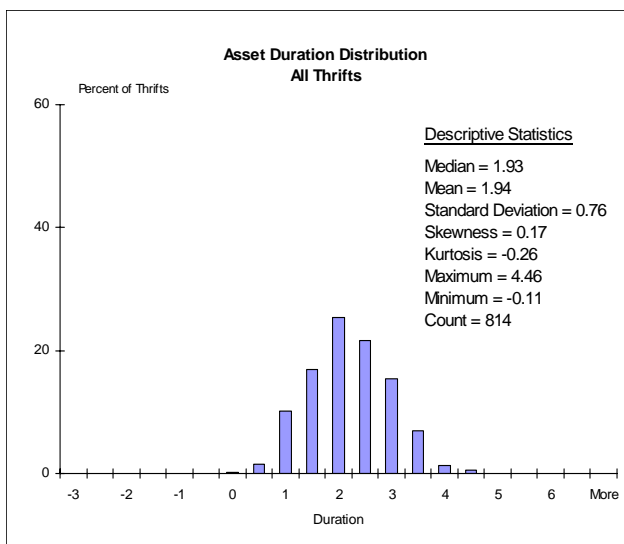
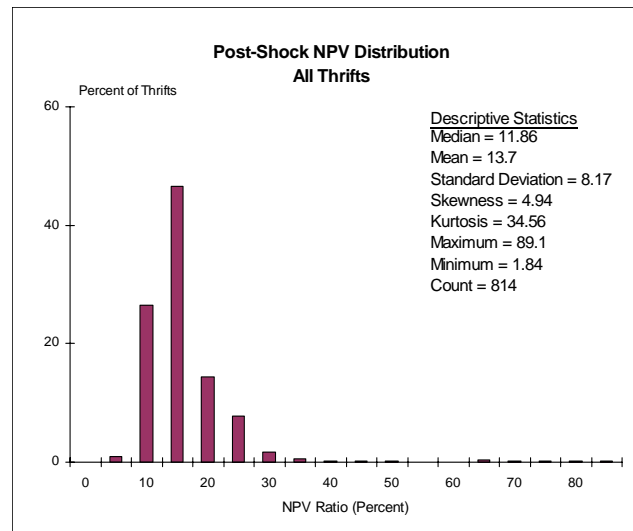
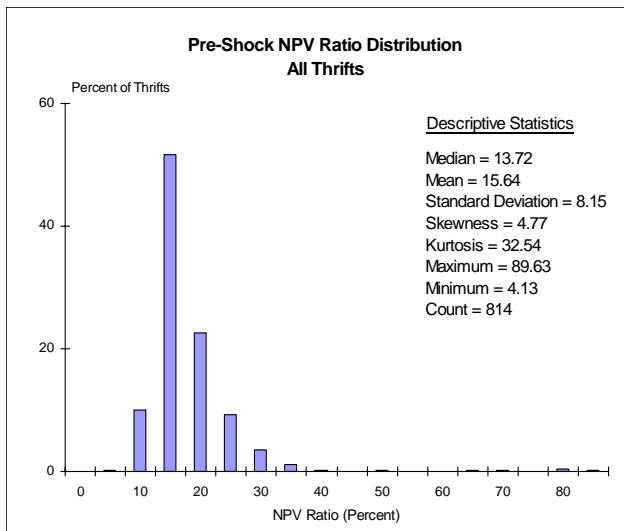
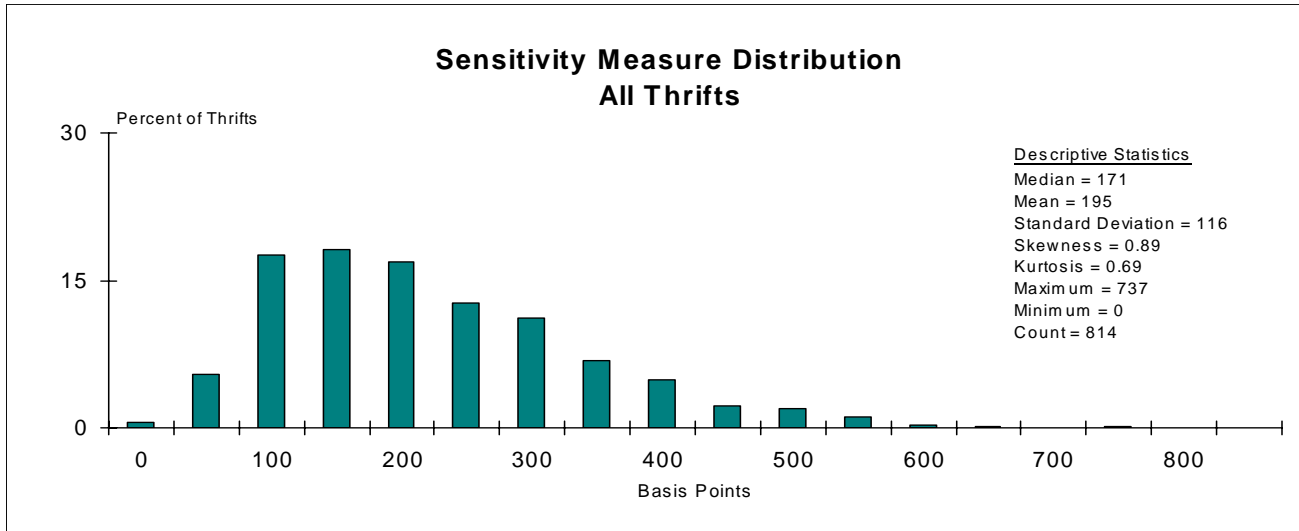
cent, while the West Region had the lowest median pre-shock NPV ratio at 13.1 percent. The Northeast Region also had the highest median post-shock NPV ratio, while the West Region had the lowest.

All four OTS regions saw their median asset dura-

tions rise. The Northeast Region had the highest asset duration, at 2.27, while the Midwest Region had the lowest at 1.61 at the end of the third quarter. Similar to asset durations, all four OTS regions experienced a decrease in their median liability durations in the third quarter. ■

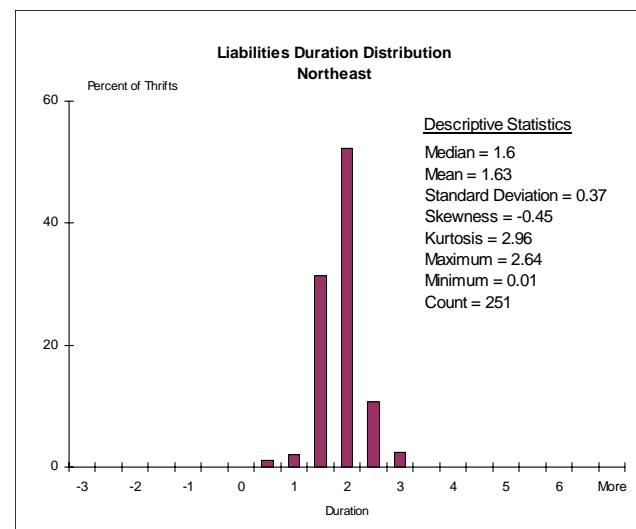
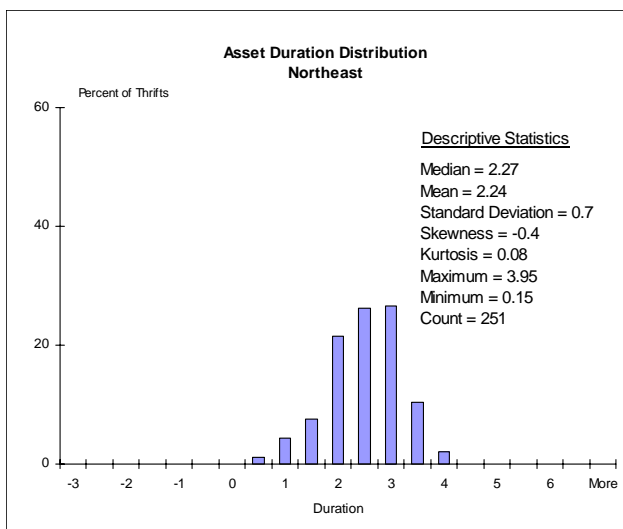
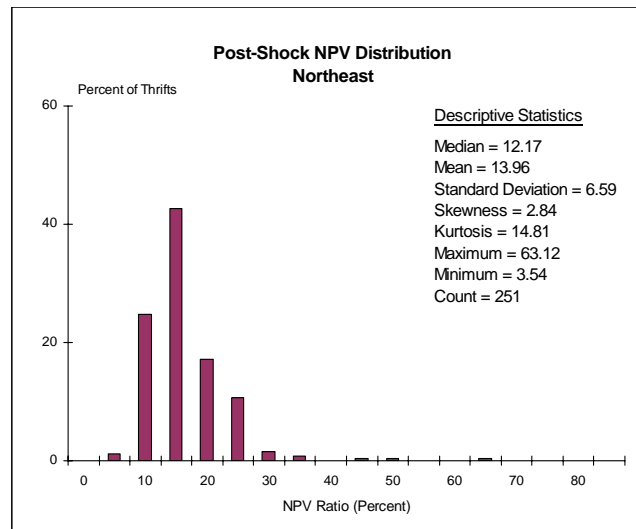
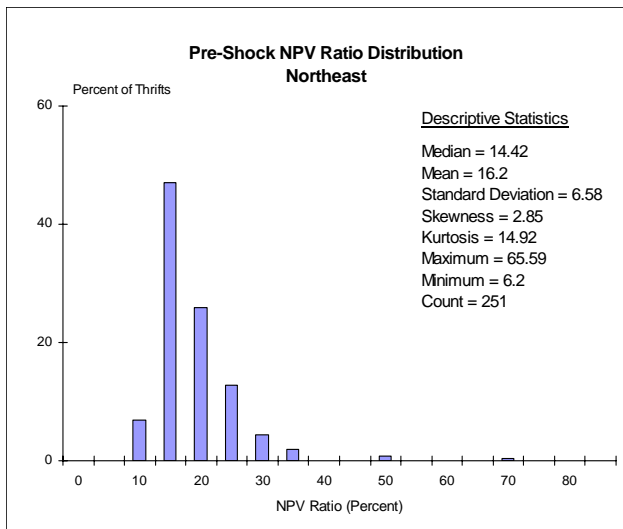
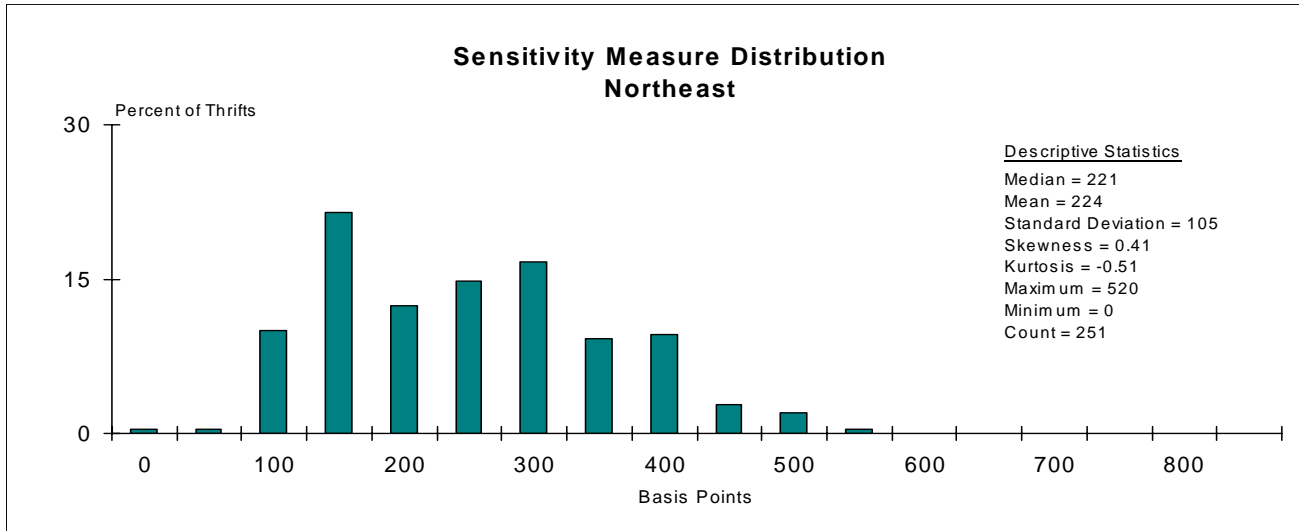


## Appendix A – All Thrifts

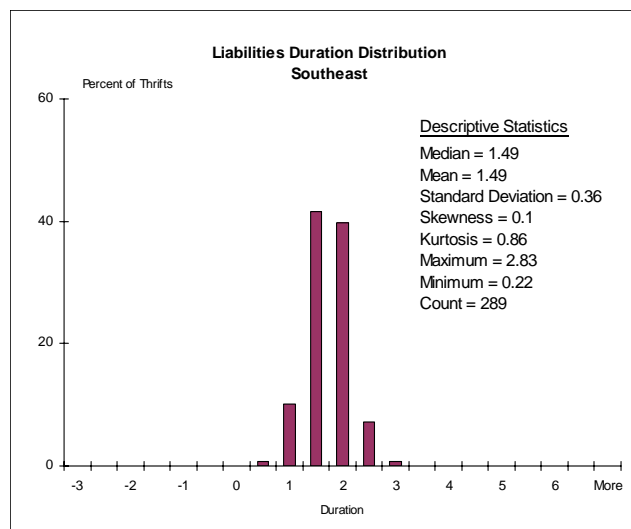
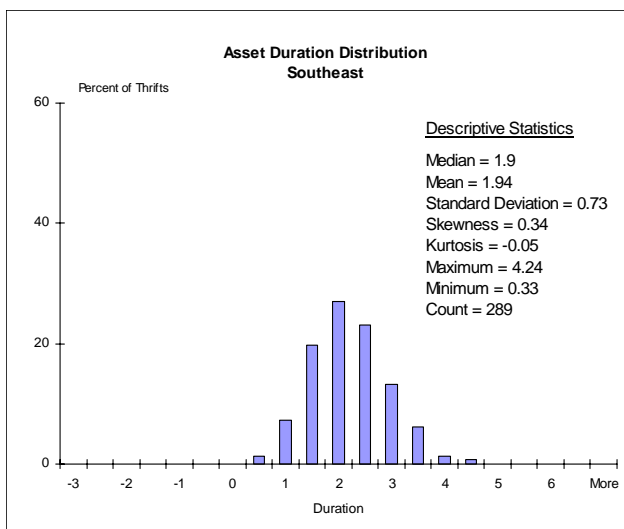
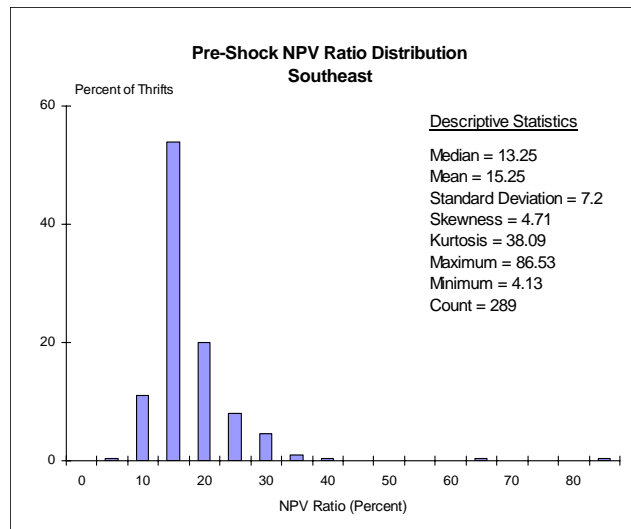
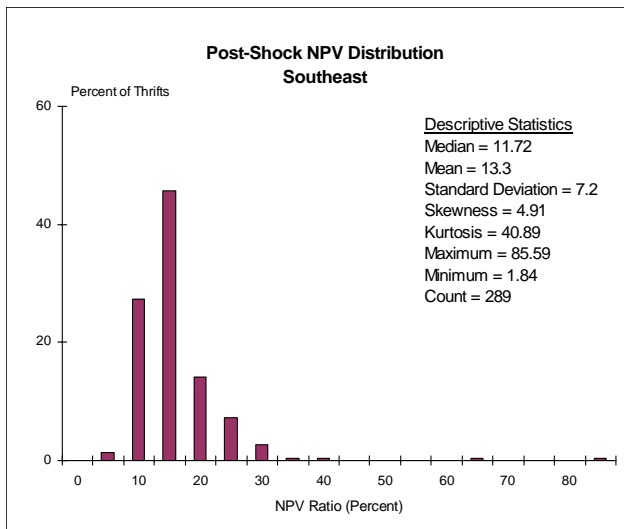
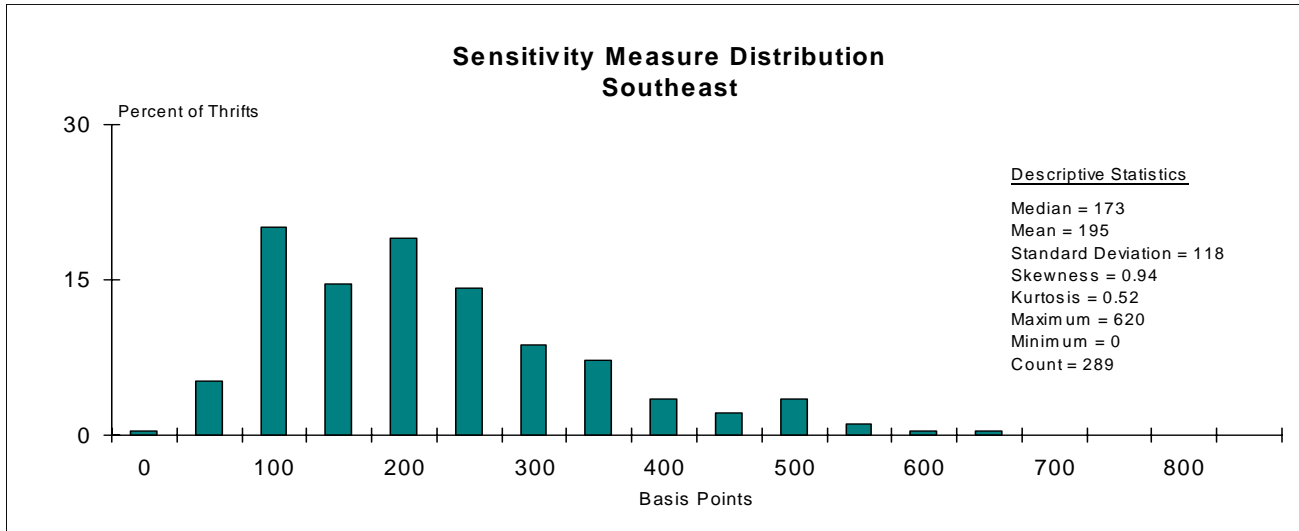




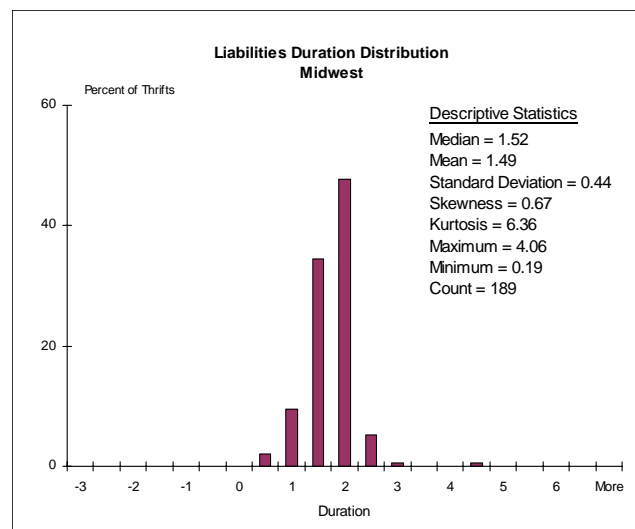
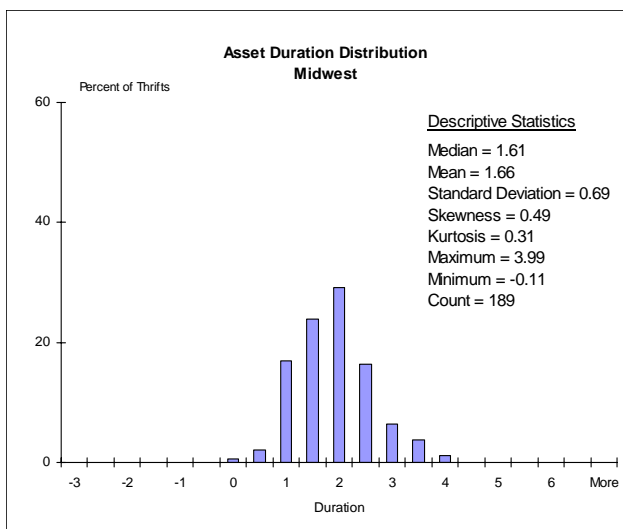
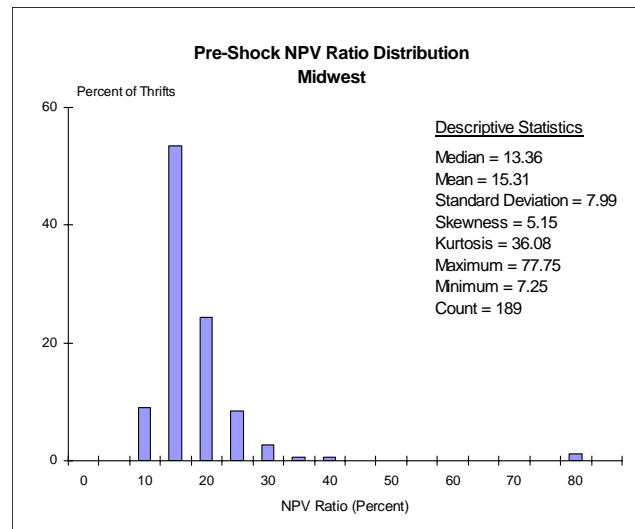
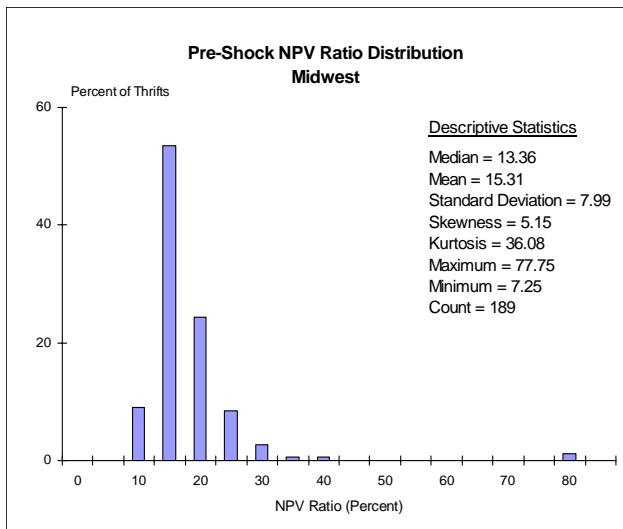
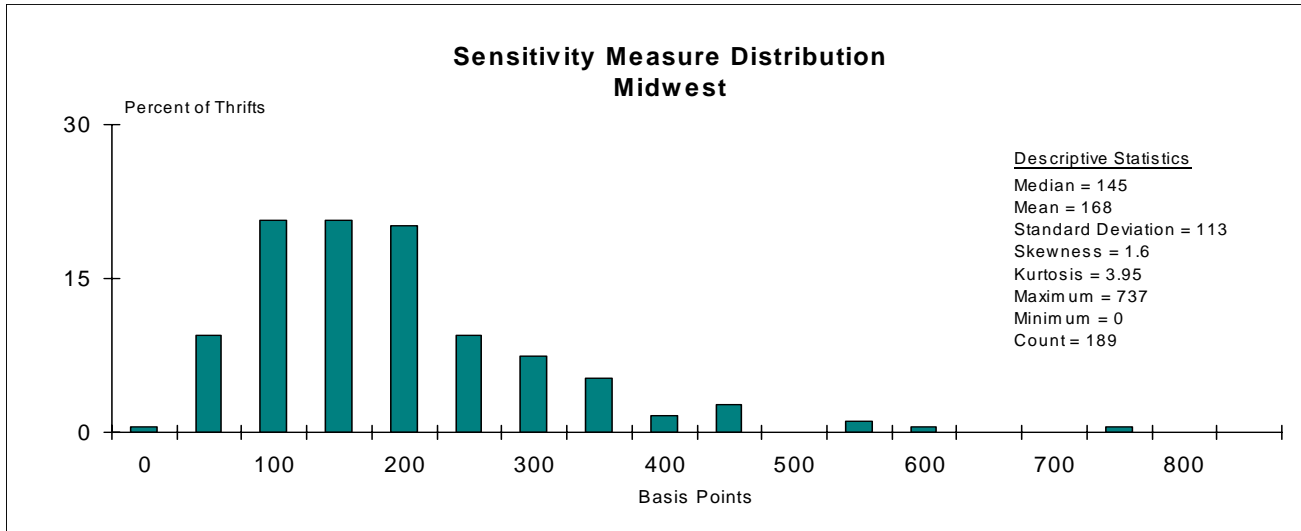
## Appendix B – Northeast Region



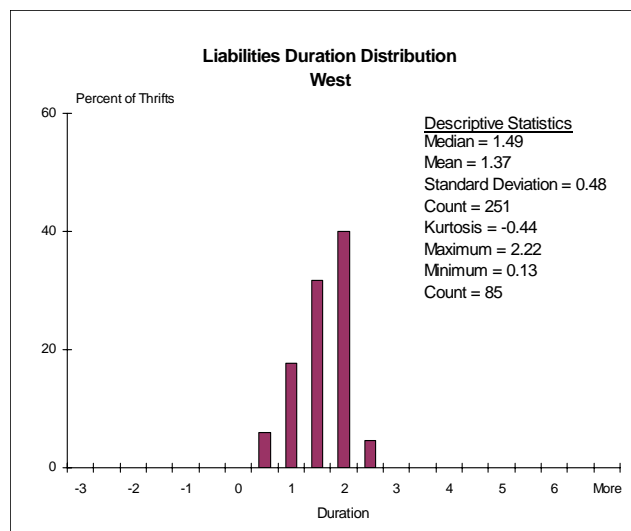
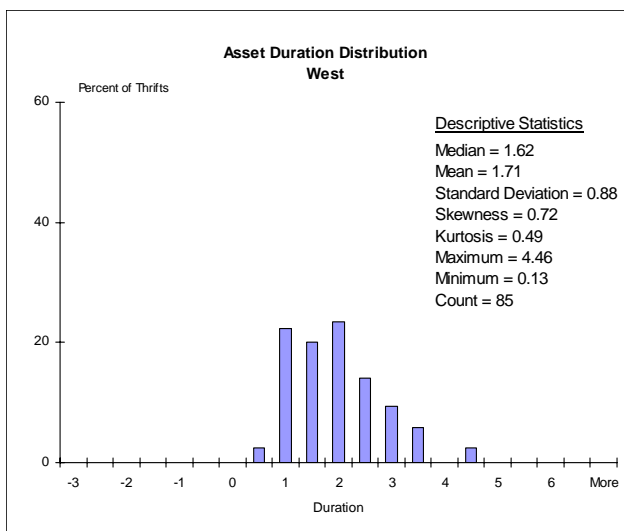
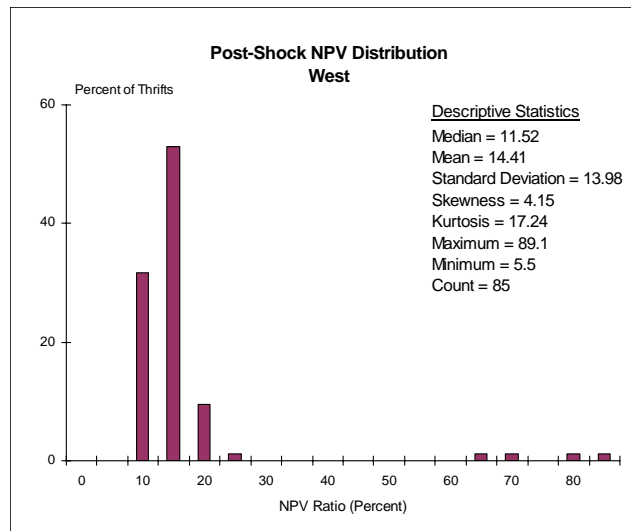
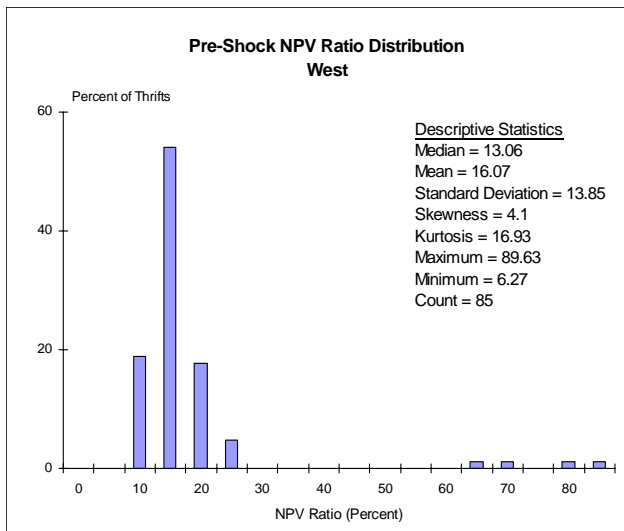
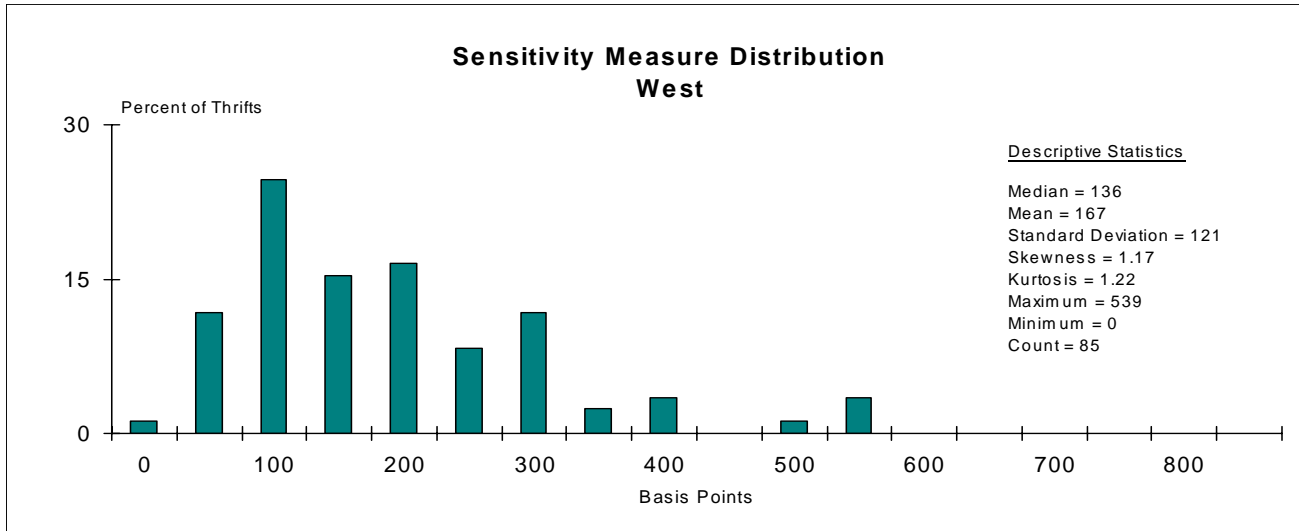
## Appendix C – Southeast Region



## Appendix D – Midwest Region



## Appendix E – West Region



## *Glossary*

**Duration:** A first-order approximation of the price sensitivity of a financial instrument to changes in yield. The higher the duration, the greater the instrument's price sensitivity. For example, an asset with a duration of 1.6 would be predicted to appreciate in value by about 1.6 percent for a 1 percent decline in yield.

**Effective Duration:** The average rate of price change in a financial instrument over a given discrete range from the current market interest rate (usually, +/-100 basis points).

**Estimated Change in NPV:** The percentage change in base case NPV caused by an interest rate shock.

**Kurtosis:** A statistical measure of the tendency of data to be distributed toward the tails, or ends, of the distribution. A normal distribution has a kurtosis statistic of three.

**NPV Model:** Measures how six hypothetical changes in interest rates (three successive 100 basis point increases and three successive 100 basis point decreases, assuming a normal interest rate environment) affect the estimated market value of a thrift's net worth.

**Post-Shock NPV Ratio:** Equity-to-assets ratio, following an adverse 200 basis point interest rate shock (assuming a normal interest rate environment), expressed in present value terms (i.e., post-shock NPV divided by post-shock present value of assets). Also referred to as the exposure ratio.

**Pre-Shock NPV Ratio:** Equity-to-assets expressed in present value terms (i.e., base case NPV divided by base case present value of assets).

**Sensitivity Measure:** The difference between Pre-shock and Post-shock NPV Ratios (expressed in basis points).

**Skewness:** A statistical measure of the degree to which a distribution is more spread out on one side than the other. A distribution that is symmetric will have a skewness statistic of zero.

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## *Risk Modeling and Analysis Division*

Office of Thrift Supervision  
1700 G Street, NW  
Washington, DC 20552

Scott Ciardi  
Director  
Phone: 202-906-6960  
Email: [scott.ciardi@ots.treas.gov](mailto:scott.ciardi@ots.treas.gov)

Jonathan D. Jones  
Senior Financial Economist  
Phone: 202-906-5729  
Email: [jonathan.jones@ots.treas.gov](mailto:jonathan.jones@ots.treas.gov)

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