

The Quarterly Review of Interest Rate Risk

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



Special points of interest:

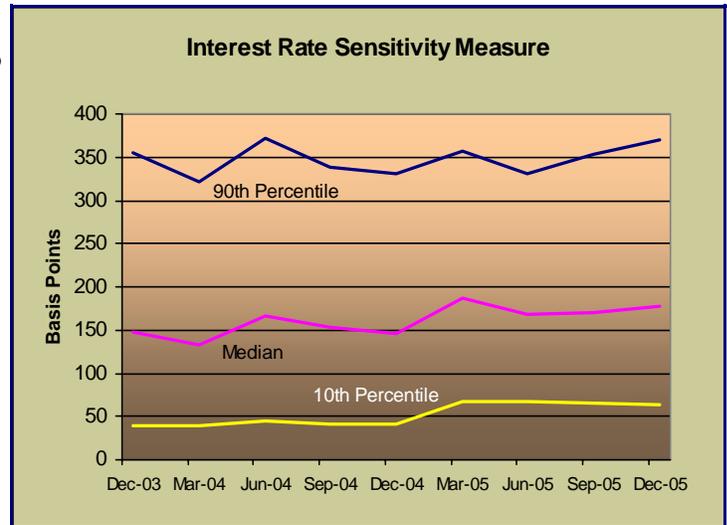
- 30-yr mortgage commitment rate rises
- Treasury yield curve rises and flattens in the fourth quarter
- Fourth quarter median interest rate sensitivity rises
- Asset duration rises
- Comparative Regional Analysis
- Feature Article on The NPV Model: Past and Present

Fourth Quarter Sees Sensitivity Rise

Fourth quarter median interest rate sensitivity rose to 177 basis points, up slightly from 171 basis points in the third quarter. The increase in median sensitivity was due to an upward shift in the yield curve in the fourth quarter that increased the duration gap between assets and liabilities for the industry.

The median pre-shock Net Portfolio Value (NPV) ratio remained unchanged, while the median post-shock NPV ratio fell slightly in the fourth quarter.

The fourth quarter saw the Treasury yield curve continue to flatten. Between the third and fourth quarter of



this year, rates rose at the short end and fell at the long end of the yield curve. For

example, the six-month yield rose by 41 basis points, while
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The NPV Model: Past and Present

This year, OTS's Net Portfolio Value (NPV) Model turns 15 years old, and yet many people still do not fully understand why the model was created, how it works, and know about all the different reports that it generates.

This article will discuss these topics and explain why the NPV Model and OTS's approach to interest rate risk management, as articulated in Thrift Bulletin-13a, *Management of Interest Rate Risk, Investment Securities, and Derivative Activities*, is still relevant today. It will also set the stage for next quarter's feature article that discusses the excit-

ing steps OTS is taking to modernize the NPV Model and improve the Agency's supervisory process.

The Genesis of the NPV Model

For the first 50 years of its existence, the thrift industry operated under strict government regulations. Federally chartered thrifts were prohibited from selling stock, they could serve only local customers, and their product offerings were, for all practical purposes, limited to passbook savings accounts and fixed-rate mortgage loans.

As a result, the traditional thrift, with its heavy reliance on short-term funding and high concentration of 30-year fixed-rate, 1-4 family mortgage loans, was exposed to substantial interest rate risk.

To mitigate this risk and to compensate for the restrictions on portfolio composition, the U.S. Congress created a regulatory system that gave thrifts certain competitive advantages over other types of financial institutions. One such federal regulation controlled what banks and thrifts could pay depositors. This regulation not only kept rates

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The NPV Model: Past and Present (continued)

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paid on deposits artificially low for all insured financial institutions, but it gave thrifts the ability to pay slightly more for deposits than their bank counterparts. These deposit rate caps, coupled with the limited number of low-risk investment opportunities for the average consumer, made it relatively easy for thrifts to attract customers and remain profitable.

In the late 1970s and early 1980s, however, a number of changes took place that drastically altered the operating environment for thrifts. First, the Federal Reserve, in an attempt to deal with price inflation and anemic economic growth, began altering its approach to monetary policy. The change, which involved targeting monetary reserve aggregates instead of short-term interest rates, caused interest rates to skyrocket and drastically increased interest rate volatility. For example, in mid-1980, the interest rate on the three-month Treasury bill rose to nearly 16 percent, fell to 7 percent by the end of 1980, only to rise again to slightly over 16 percent during 1981.

Around the same time, Wall Street firms, including Merrill Lynch, Dean Witter, and American Express, introduced a variety of low-risk investment products, such as money market deposit accounts, that offered investors the opportunity to earn a much higher rate of return than that offered on the typical insured savings account at the local commu-

nity bank. As a result, deposits began flowing out of banks and thrifts at an alarming pace—a process known as *disintermediation*.

In 1981 and 1982, Congress, in an effort to make thrifts more competitive, passed a number of laws that loosened some of the operating restrictions on federal thrifts. These laws, among other things, lifted the restrictions on deposit interest rates and gave thrifts the ability to engage in riskier lines of business, including acquisition, development, and construction lending. Also, Congress finally authorized the issuance of adjustable-rate mortgages and other products that gave thrift executives a greater ability to control interest rate risk. The idea was that, by broadening the range of products and activities, thrifts could engage in, the industry might be able to work its way out of the problem.

Unfortunately, these changes were too little and too late. Thrift executives, faced with mounting losses and a fundamentally flawed asset-liability structure, began engaging in excessive risk taking in an attempt to stay solvent. This excessive risk taking, in turn, led to what is now referred to as the “savings and loan debacle.”

To illustrate how bad things were, consider these facts. In 1980, 30 percent of thrifts reported negative net income. By 1981, that figure jumped to more than 90 percent and the industry’s fixed-rate mortgage portfo-

lio was valued at a only 82 percent of par. Even more shocking were internal government reports indicating that in 1982, there were about 313 GAAP-insolvent thrifts at a time when the Federal Savings & Loan Insurance Corporation’s reserves amounted to only \$6.3 billion.

In one sense, the common belief that most thrifts that failed during the 1980s, failed because of fraud or poor investment decisions is true. The list of mistakes made during the late 1970s and early 1980s is long. It should be understood, however, that the catalyst for the crisis was clearly interest rate risk. It was, in this environment, that thrift regulators began to recognize the need to develop a system for monitoring interest rate risk in the thrift industry. The thought being that, if thrifts with fundamental flaws in their asset-liability structures could be identified early, it would be possible to avoid larger problems in the future.

The effort gained momentum with the passage of the *Financial Institution Reform, Recovery, and Enforcement Act* in 1989 and the *Federal Deposit Insurance Corporation Act* in 1991. These two pieces of legislation greatly increased the capital requirements applicable to all regulated financial institutions, and specifically required all federal banking agencies to review their capital standards to ensure that they adequately accounted for interest rate risk.

The Net Portfolio Value Model and the Market Value of Equity Approach

The first step in developing a formal process for monitoring interest rate risk involved choosing a measurement methodology. At the time, the choices ranged from the simple (e.g., maturity gap models, duration gap models) to the complex (e.g., market value of equity sensitivity models, net interest income models). Gap models, although simple to implement, fail to adequately account for the embedded options found in the typical thrift balance sheet. Net interest income models are often too reliant on assumptions regarding future business activity and reinvestment choices that are too difficult for a regulator to apply uniformly.

Accordingly, OTS decided to use sensitivity analysis based on the market value of equity. This process involves estimating the market value of a firm’s assets, liabilities, and off-balance sheet exposures, and then determining how the market value of these instruments changes under different stress scenarios. Currently, the stress test calls for a +/- 200 bps instantaneous parallel shift in the yield curve.

Based upon the results of this stress test, OTS, using the matrix contained on page 8 of TB-13a, then classifies a particular thrift as having a *minimal*, *moderate*, *significant*, or *high* level of interest rate risk. An institu-

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The NPV Model: Past and Present (continued)

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 tion's risk classification is a function of both its post-shock NPV capital ratio and its interest rate sensitivity measure (i.e., the difference, in basis points, between its pre-shock NPV capital ratio and its post-shock NPV capital ratio).

As such, an institution with a high pre-shock NPV capital ratio can afford to accept a greater degree of interest rate sensitivity (i.e., interest rate risk) than a firm with a lower capital ratio.

To conduct the stress test, OTS relies on the Net Portfolio Value Model. The NPV Model is a comprehensive interest rate risk model that was developed internally by OTS in 1991 to monitor the interest rate exposures of thrift institutions. (The model was subsequently updated in 1993 to price adjustable-rate mortgages and a wide range of financial derivatives, such as swaps, caps, floors, and swaptions.)

The development and implementation of the NPV Model was widely applauded by many industry observers, as well as the noted regulatory watchdog group the *Shadow Regulatory Committee*. In recognition of its efforts, OTS received the *Innovations in American Government Award* from Harvard University in 1995.

From a technical perspective, the NPV Model consists of approximately 250 Fortran programs and a small number of SAS programs. The specific algorithms used in each valua-

tion routine can be found in the *NPV Model Handbook*, which is available on the OTS website at <http://www.ots.treas.gov/npv>. Also, members of the Risk Modeling & Analysis (RM&A) unit in Washington, D.C., are available to answer questions on how position values are generated in the model.

The NPV Model is primarily an early warning supervisory tool that detects industry outliers and trends. It also serves as a starting point for assessing the quality of interest rate risk management practices at individual thrifts. (If an institution has its own internal model that is acceptable to OTS, the results from that model can be used instead of the results from the NPV Model.) From a monitoring perspective, the strength of the NPV Model lies in its ability to spot storm clouds on the horizon.

Unlike other off-site interest rate risk monitoring systems, which are designed to show what has already happened, the NPV Model is capable of showing what *can* happen. In other words, the NPV Model's approach is prospective rather than retrospective. It also has an advantage over other systems in that the results are based on market values rather than on GAAP-accounting values. This allows OTS to see beyond certain accounting conventions that can often mask a firm's true financial condition. Secondly, the NPV Model is a management tool for small institutions that do not have the resources or exper-

tise to acquire and use a third-party interest rate risk model.

The results from the NPV Model are factored into an institution's *Sensitivity (S)* examination rating. They are not, however, the sole determinant of an institution's rating. The final S examination rating is based on a combination of quantitative and qualitative factors, as outlined in TB-13a.

Schedule CMR

The key to OTS's interest rate risk monitoring effort is Schedule CMR that most thrifts submit at the end of each quarter. This is a reporting form that collects, among other things, detailed information on the repricing characteristics of all instruments on a thrift's balance sheet. To minimize the reporting burden, information collected on Schedule CMR is highly aggregated. Thrifts seeking more valuation accuracy, however, can choose to fill out optional reporting forms on Schedule CMR that contain detailed information on certain types of assets and liabilities.

At this time, the NPV Model is not capable of valuing all instrument types. For instance, currently there are no routines for valuing Collateralized Mortgage Obligations (CMOs), structured FHLB advances, and non-mortgage securities with embedded options (e.g., callable bonds). Institutions must self-value these instrument types on third-party software and then report these values to OTS on

Schedule CMR where they are aggregated with NPV Model results.

Filing Schedule CMR is not mandatory for all thrifts. Thrifts with total assets less than \$300 million and with risk-based capital ratios over 12 percent for two consecutive quarters are exempt from having to file. Filing statistics, however, suggest that most thrift executives widely embrace the NPV Model. As of June 30, 2005, 58.5 percent of the 821 institutions that filed Schedule CMR were *voluntary* filers. Furthermore, 91 percent of thrifts that are not required to file Schedule CMR do so voluntarily.

Interest Rate Risk Reports at OTS

The information collected on Schedule CMR is used to produce two confidential, institution-specific reports. The *Interest Rate Risk (IRR) Exposure Report* is a seven-page report that provides a detailed breakdown of an institution's interest rate risk results. It contains an estimate of the current market value of approximately 125 instrument types and an estimate of how those market values change when interest rates change. The second report, the *Executive Summary Report*, is a two-page color report that shows how an institution's interest rate risk results compare to industry medians. The *IRR Exposure Report* is made available to institutions through a secure extranet system within 24 to

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The NPV Model: Past and Present (continued)

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48 hours after the filing of Schedule CMR data. The *Executive Summary Report* is available at quarter end, after all CMR filings and output results have been checked for accuracy.

OTS also produces a series of publicly available aggregate interest rate risk reports that are very useful to industry observers. The current list of aggregate interest rate risk reports includes reports for the entire industry, as well as reports for OTS regions, certain states, and the 11th Federal Home Loan Bank District. Finally, OTS produces the *Interest Rate Risk Measures* report that contains useful statistics for several measures of interest rate risk. The *Interest Rate Risk Measures* report and the various aggregate *IRR Exposure Reports* are available on the OTS website near quarter-end.

Running the NPV Model

Each quarter, before any *IRR Exposure Report* is generated, the NPV Model is subjected to a *market calibration* process. In connection with this process, RM&A updates more than 100 assumptions that are used by the NPV Model. The assumptions are based on quarter-end information received from a wide variety of sources, including several Wall Street firms, the Federal Reserve, and financial pricing services such as *Bloomberg*.

The NPV Model assumptions are posted each quarter on the OTS website

(see *Selected Asset and Liability Price Tables*). This market calibration process can take up to one week.

To ensure data quality and model integrity, OTS has developed a series of edit and tolerance checks for the NPV Model and related systems. These checks are designed to detect data-reporting errors on Schedule CMR, as well as errors in the market calibration process. An OTS analyst must review and clear all edits before a thrift's *IRR Exposure Report* is released. In any one quarter, staff will identify as many as 75 to 100 data-reporting errors. When an error is identified, thrifts are asked to correct the error and submit an amended Schedule CMR. In any one quarter, OTS can receive up to 100 amended Schedule CMR reports.

The system used to administer the NPV Model is the *Risk Exposure Analysis and Reporting System* (REAR). Using REAR, an OTS analyst and/or administrator can access historical IRR-related reports, coordinate daily model runs, view tolerance errors, and review certain NPV Model log files. REAR also provides OTS employees with the ability to run "what-if" scenarios using an institution's Schedule CMR report.

Using this "what-if" analysis, institutions contemplating putting significant transactions on their balance sheets or portfolio restructuring can see how those changes may impact their *IRR Exposure Report*. This REAR feature is especially popular with smaller

firms that do not have internal risk models.

Conclusion

Many books and academic articles have addressed the savings and loan crisis. Although reasonable people can disagree on what went wrong and when, virtually all well-informed observers agree that interest rate risk was a large part of the problem. OTS's NPV Model is an important supervisory tool in the agency's toolkit for assessing the interest rate risk exposure and the quality of risk management practices of thrifts.

Evidence suggests that OTS's supervisory efforts have paid off. Over the past 15 years, risk management at thrifts has improved, and the need for a well-crafted asset-liability management strategy has been ingrained in the minds of most thrift executives.

Results from the NPV Model also support the notion that the industry is better managed now than 15 years ago. The current interest rate environment is challenging, even for the most sophisticated financial institutions. The yield curve continues to flatten and profits continue to be squeezed as a result. Nonetheless, only 25 OTS-regulated firms were classified as having high or significant levels of interest rate risk as of fourth-quarter 2005. These results stand in stark contrast to results from December 1999, when 249 thrifts appeared on the high-risk list.

Several factors explain these improving results, in-

cluding more rigorous regulatory oversight, the introduction of more flexible mortgage products, and the wider availability of wholesale funding sources. As a result of the increasing level of sophistication displayed by financial institutions, some industry observers have suggested that the NPV Model is no longer needed. To the contrary, however, OTS believes that the existence of new financial products (e.g., option ARMs, structured FHLB advances) triggers the need for adapting its supervisory practices and enhancing its off-site monitoring efforts.

Although the NPV Model is useful, it has not received a significant upgrade since 1993. Since that time, the industry has evolved considerably. Today, thrifts offer a wide variety of mortgage products and have entered several new lines of business (e.g., consumer lending). Also, OTS recognizes that a parallel interest rate shock of +/- 200 basis points, although useful, is not always the most appropriate stress scenario for determining the potential impact of interest rate changes on the value and earnings of a firm. Clearly, there are ample opportunities for improvement.

To that end, OTS has begun a comprehensive effort to upgrade the NPV Model and to revisit its supervisory approach to monitoring interest rate risk. In the next issue of this publication, we will discuss these efforts. ■

Fourth Quarter Sees Sensitivity Rise (continued)

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the 30-year yield fell by 5 basis points.

During the fourth quarter, the Federal Reserve increased the target rate for federal funds twice. As a result, the yield curve continued to flatten.

Evidence of a considerably flatter yield curve is provided by the difference between the two-year and 10-year yields. In September 2005, this difference was 16 basis points. By the end of December 2005, this difference fell to less than one basis point.

In early 2006, the yield curve became inverted for a brief time. The inversion was minor, however, and the curve returned to being upward-sloping by March.

The flattening yield curve continued to place downward pressure on net interest margins at individual institutions, but did not affect aggregate measures. Average net interest margin for the thrift industry remained unchanged at 276 basis points between the third and fourth quarter.

Total thrift industry earnings set a new record level in the fourth quarter. Net income rose to \$4.34 billion, up from \$4.04 billion in the third quarter. This represents the fourth consecutive quarter where industry earnings were \$4.00 billion or higher.

Annual net income also reached a new record level of \$16.42 billion in 2005. This represents an 18 percent increase from the previous record level of \$13.96 billion in 2004.

Along with the increase in net income, thrift profitability rose from the previous quarter. The average return on assets (ROA) for the industry rose to 1.20 percent in the fourth quarter, up from 1.15 percent in the third quarter.

The fourth quarter rise in ROA was due largely to higher fee income and other noninterest income. Total fee income, which includes mortgage loan servicing fee income and other fee income, increased to 1.38 percent of average assets from 1.22 in the third quarter.

In the fourth quarter, other noninterest income was 0.51 percent of average assets, up from 0.41 percent in the third quarter. Other noninterest is typically volatile, because it reflects gains and losses on assets sold and balance sheet restructurings. Other noninterest income includes income generated from the sales of assets and leasing of office space.

The 30-year mortgage rate, as measured by the contract interest rate on Freddie Mac commitments for fixed-rate 30-year mortgages, rose to 6.22 percent at the end of the fourth quarter, up from 5.91 percent from the prior quarter.

With the rise in mortgage rates, the volume of mortgage refinancing fell in the fourth quarter. Mortgage refinancing volume was \$64.1 billion in the fourth quarter, down 6 percent from the third quarter.

While the volume of mortgage refinancings fell, mortgage refinancing activity accounted for 34.3 per-

cent of thrift originations of single-family mortgages in the fourth quarter, up from 33.4 percent in the previous quarter. This increase in mortgage refinancing activity for thrifts is consistent with the mortgage refinancing activity of all lenders, where the proportion rose to 45 percent from 44 percent.

Fourth-quarter 1-4 family mortgage originations by thrifts fell to \$163.9 billion, down from \$181.3 billion in the third quarter. This represents a 10 percent decline. Total mortgage originations by thrifts in the fourth quarter were \$187.1 billion, down five percent from \$204.2 billion in the third quarter. The fourth quarter saw the ARM share of total thrift mortgage originations rise to 50 percent, up from 43 percent in the prior 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 fourth quarter were \$62.1 billion and \$5.1 billion, respectively. While the notional amount for firm commitments remained unchanged from the level in the previous quarter, the notional amount for optional commitments fell 28 percent.

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 declined from 66.0 percent to 64.4 percent in the fourth quarter. Between September 2005 and

December 2005, thrifts decreased their portfolio holdings of single-family adjustable-rate mortgages and mortgage-backed securities from \$492.6 billion to \$486.4 billion.

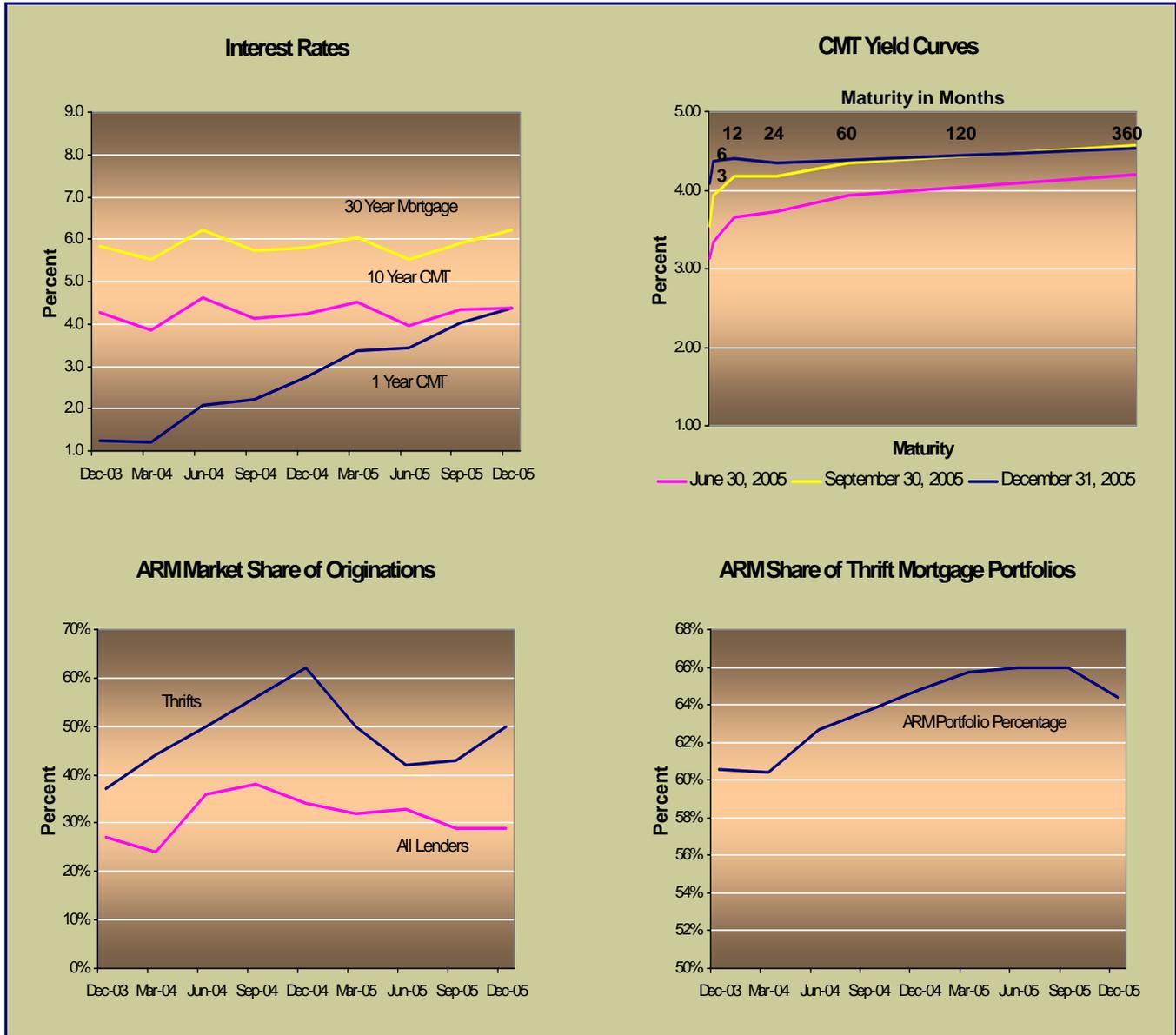
In addition to the percentage decline in portfolio holdings of adjustable-rate mortgages, the portfolio mix of adjustable-rate mortgages also shifted. Between the third and fourth quarter, thrift portfolio holdings of teaser, lagging index ARMs with a reset frequency of one-month fell 29.9 percent. Over the same period, thrift portfolio holdings of non-teaser lagging index ARMs with a reset frequency of one-month fell 2.33 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 third and fourth quarter. Total variable-rate borrowings rose from \$224.1 billion to \$237.7 billion. Over the same period, total fixed-rate, fixed-maturity deposits rose from \$337.7 billion to \$359.7 billion.

The industry's median effective duration of assets rose from 1.93 to 1.97 between September 2005 and December 2005. With the increase in longer-term interest rates during the fourth 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.

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Interest Rates and ARM Market Share



Fourth Quarter Sees Sensitivity Rise (continued)

(Continued from page 5)

With the rise in the volume of refinancings into mortgage loans with lower coupon rates, the industry can probably expect to see additional increases in asset duration in the future as prepayment speeds slow due to a weaker incentive to refinance. This would be especially true if interest rates continue to rise.

At the end of the fourth quarter, 41.1 percent of aggregate CMR balances reported for 30-year fixed-rate mortgage loans had a WAC under 6 percent, while 37.9 percent of aggregate balances had a WAC between 6 and 7 percent.

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 1.53 to 1.48 in the fourth quarter. With the rise in

The median pre-shock NPV ratio for the industry remained unchanged at 13.7 percent in the fourth quarter. The median post-shock NPV ratio dropped, falling from

11.9 percent in the previous quarter to 11.8 percent in the fourth quarter.

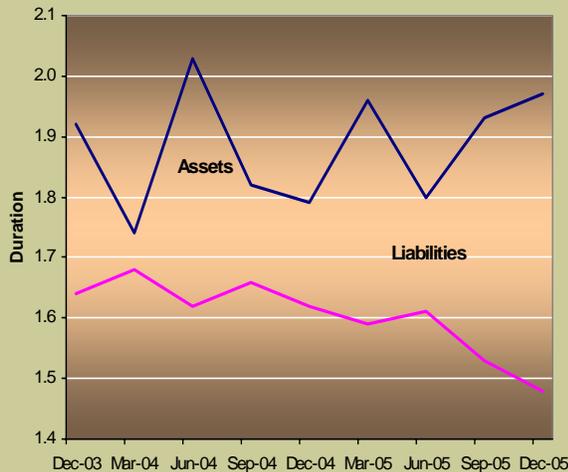
The number of thrifts with a post-shock NPV ratio below 4 percent remained unchanged at three institutions between the third and fourth quarter.

Of the 804 thrifts that submitted Schedule CMR data in the fourth quarter,

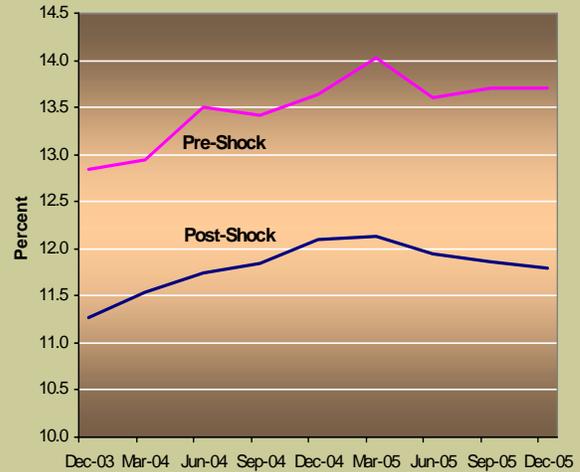
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Duration and NPV Sensitivity Measures

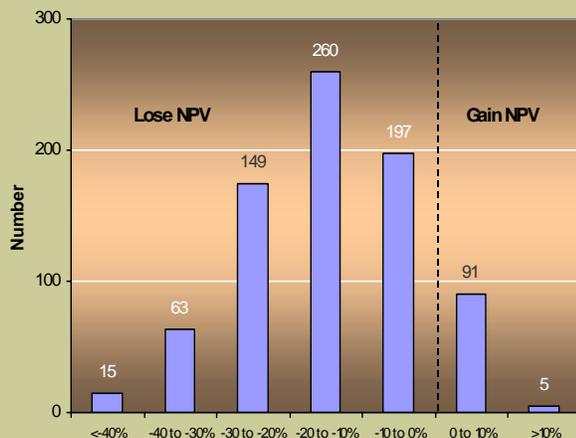
Median Effective Duration



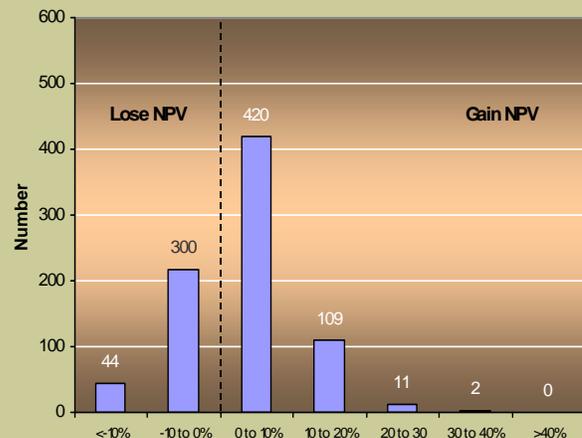
Median Pre- and Post-Shock NPV Ratios



**Estimated Change in NPV:
+200bp Rate Change**



**Estimated Change in NPV:
-200bp Rate Change**



Fourth Quarter Sees Sensitivity Rise (continued)

(Continued from page 6)
about 88 percent would have experienced a loss of net portfolio value if rates rose by 200 basis points. In contrast, if rates fell by 200 basis points, about 57 percent of thrifts would have experienced increases in their net portfolio values.

Overall, the thrift indus-

try would have lost 18.0 percent of its net portfolio value if rates rose by a 200 basis points in the fourth quarter. On the other hand, the industry would have gained three percent if rates fell by 200 basis points.

The number of thrifts with a post-shock NPV ratio below 6 percent fell to 13 in-

stitutions in the fourth quarter, down from 18 in the prior quarter.

The number of thrifts with interest rate sensitivity of 100 basis points or below fell to 182 thrifts in the fourth quarter, down from 191 thrifts in the third quarter.

The number of thrifts with over 400 basis points in

interest rate sensitivity rose to 56 thrifts in the fourth quarter, up from 47 thrifts in the prior quarter.

These results are consistent with an overall increase in the interest rate sensitivity of the industry in the fourth quarter.

Based on TB 13a guid-

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Interest Rate Risk Measures

Thrifts 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	
	Sep-05	Dec-05	Sep-05	Dec-05
+300	8.33%	8.14%	-28%	-30%
+200	9.42%	9.37%	-17%	-18%
+100	10.32%	10.35%	-8%	-8%
Base	11.03%	11.09%	0%	0%
-100	11.33%	11.44%	3%	4%
-200	11.11%	11.31%	2%	3%
-300	N/A	N/A	N/A	N/A

Post-Shock NPV Ratio and Sensitivity Measure Matrix September 2005

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

Minimal Moderate Significant High

Post-Shock NPV Ratio and Sensitivity Measure Matrix December 2005

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
Over 10%	150	191	190	39	570
6% to 10%	32	73	105	11	221
4% to 6%	0	2	4	4	10
Below 4%	0	0	1	2	3
Total	182	266	300	56	804

Minimal Moderate Significant High

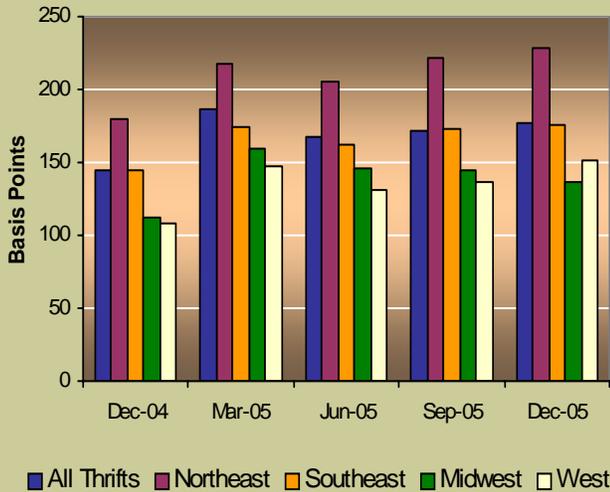
Fourth Quarter Sees Sensitivity Rise (continued)

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 ance for the “S” rating, 636 thrifts (79.1 percent) would initially be assigned a minimal interest rate risk rating, 146 thrifts (18.2 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.

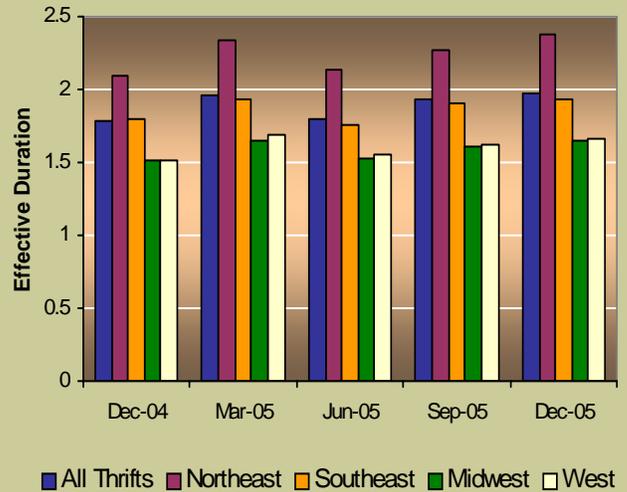
The number of thrifts with significant or high interest rate risk fell to 22 in the fourth quarter, down from 23 in the prior quarter. ■

Comparative Trends in the Four OTS Regions

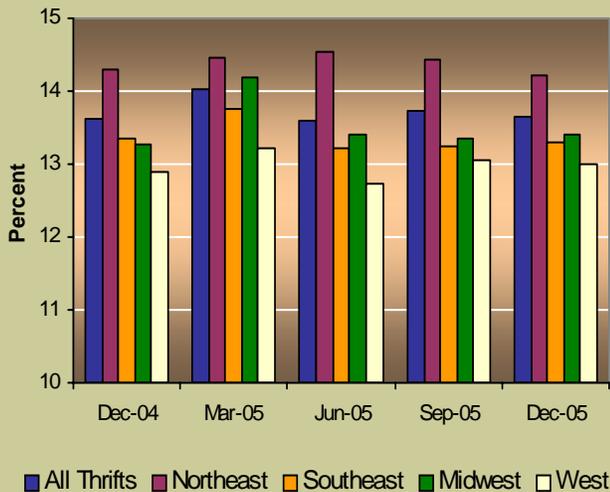
Median Sensitivity by OTS Region



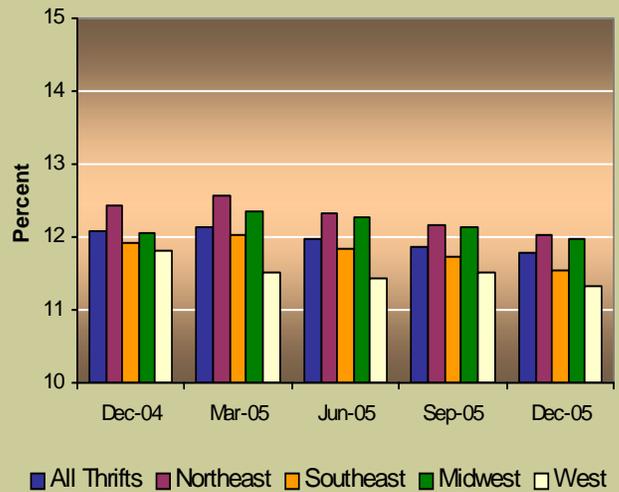
Median Assets Duration by OTS Region



Median Pre-Shock NPV Ratio by OTS Region



Median Post-Shock NPV Ratio by OTS Region



Regional Comparisons

At the end of the fourth quarter, the Northeast Region had the highest median sensitivity at 229 basis points, while the Midwest Region had the lowest median sensitivity at 137 basis points.

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

activities. The Northeast, Southeast, West Regions saw their sensitivities rise by 3.6 percent, 1.7 percent, and 11.8 percent, respectively, while the Midwest Region saw its sensitivity fall by 5.5 percent.

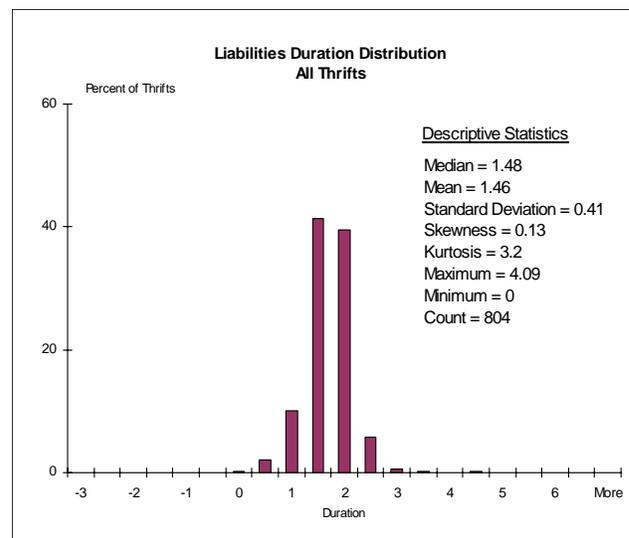
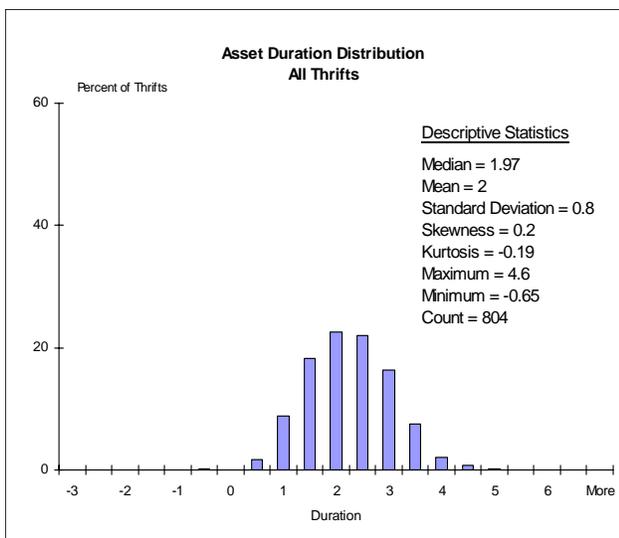
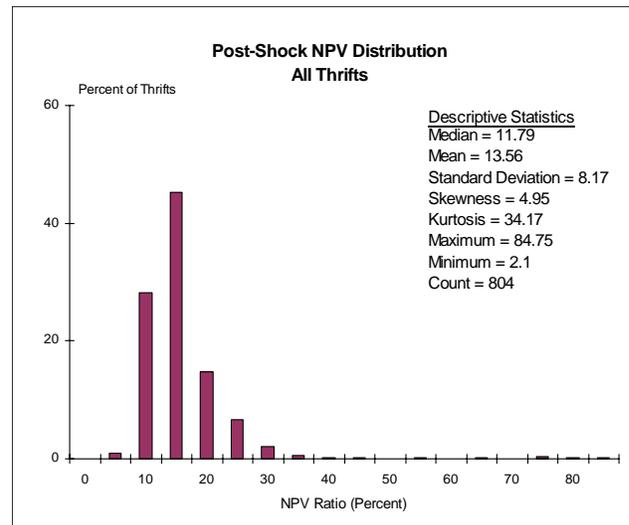
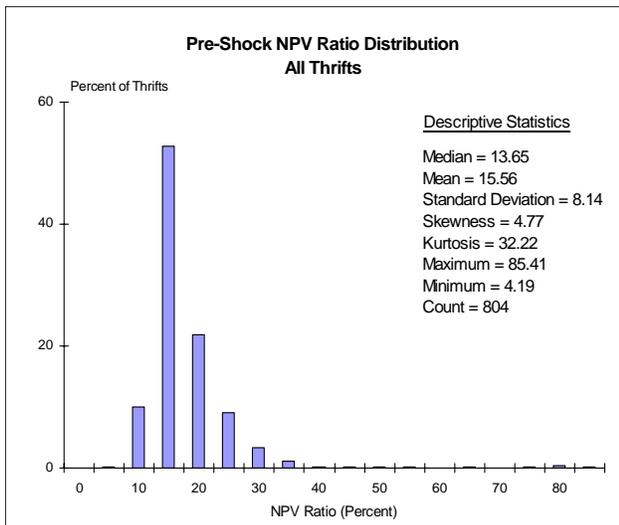
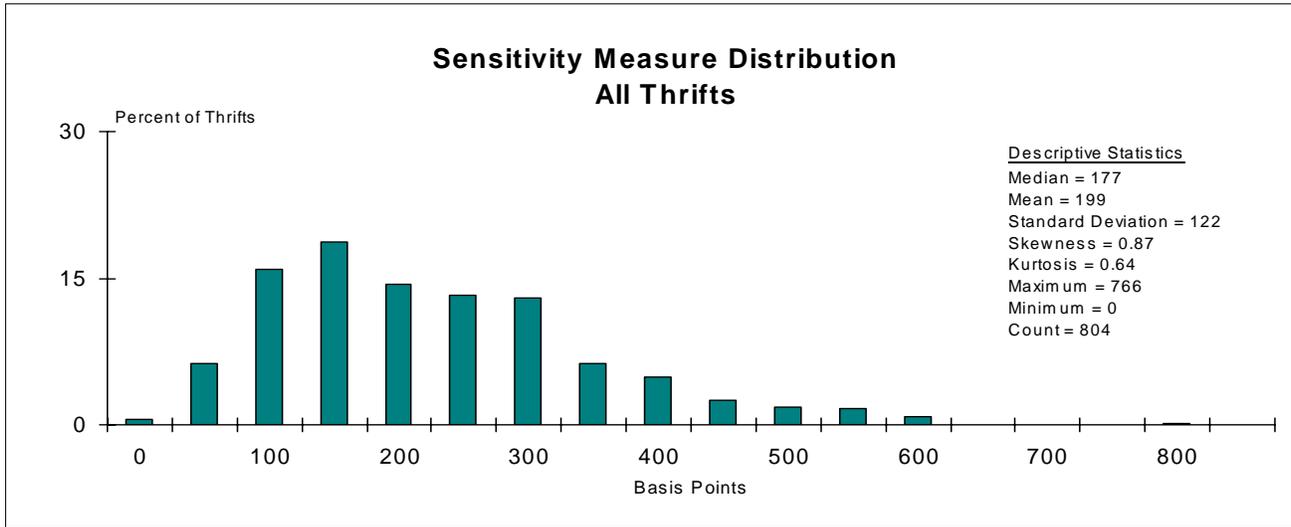
The Northeast Region had the highest median pre-shock NPV ratio at 14.2 per-

cent, while the West Region had the lowest median pre-shock NPV ratio at 13.0 percent. The Northeast Region also had the highest median post-shock NPV ratio, while the West Region had the lowest.

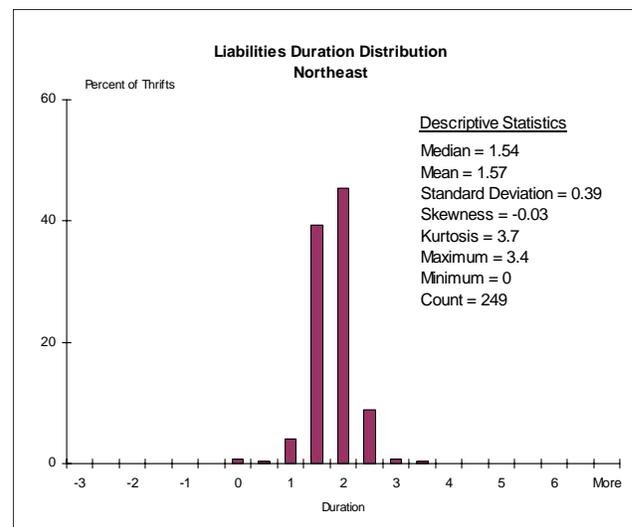
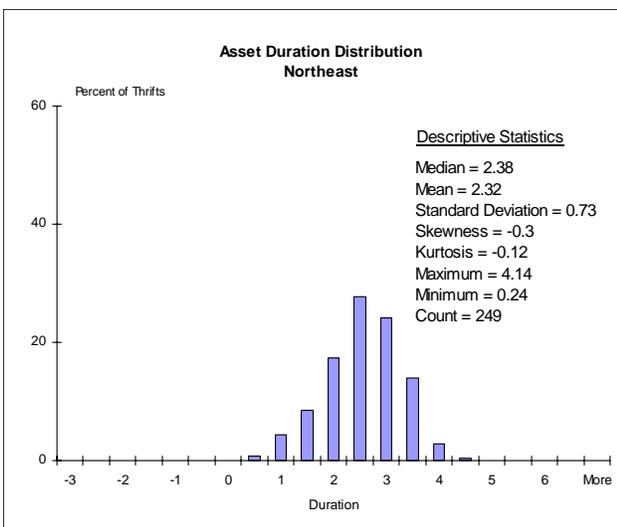
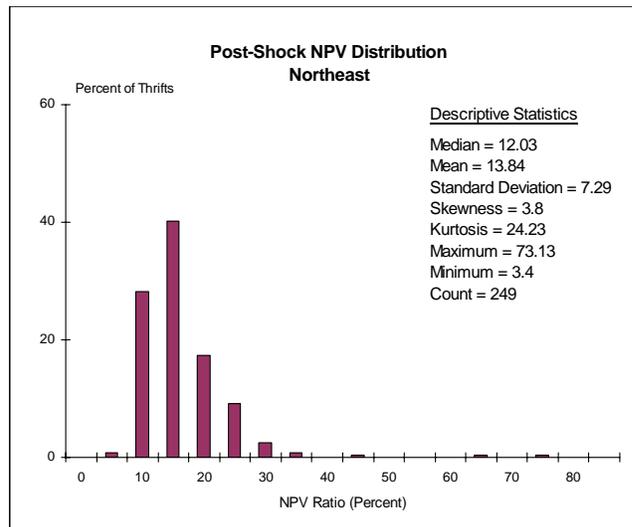
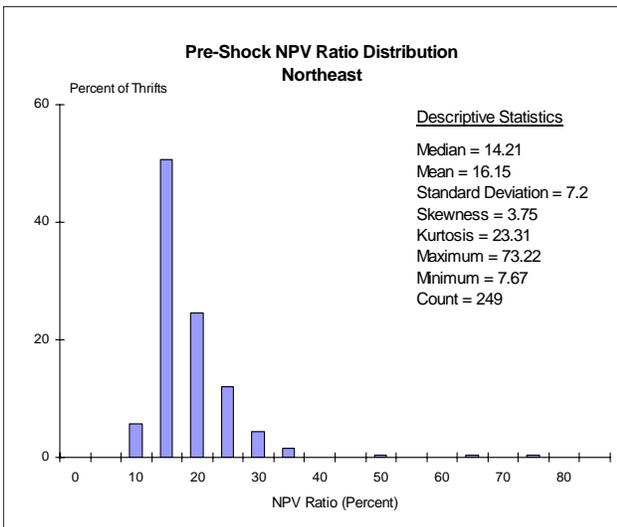
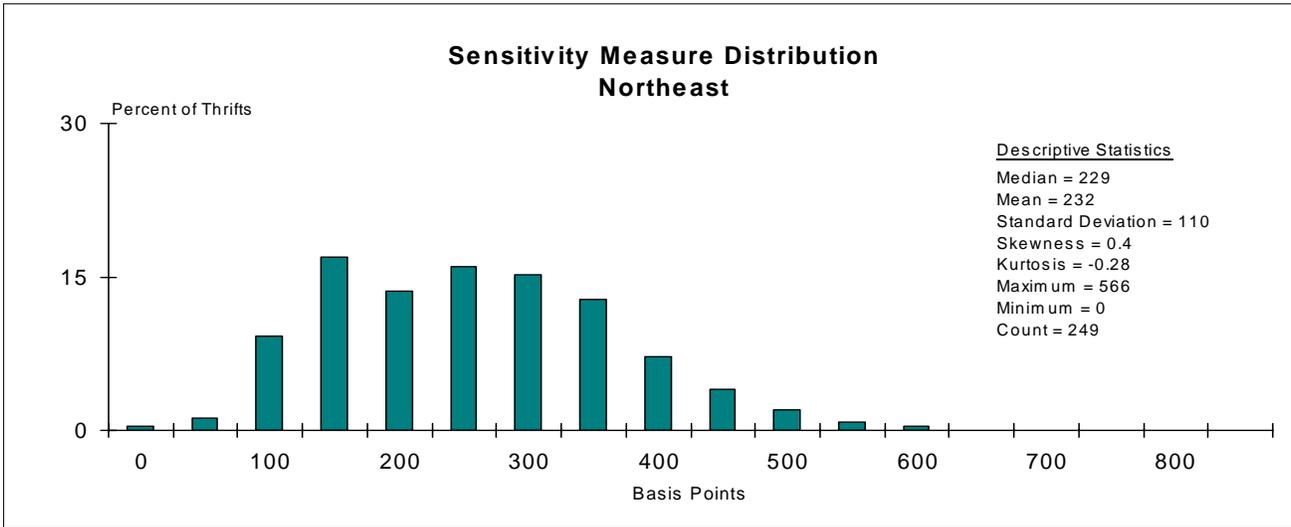
All four OTS regions saw their median asset dura-

tions rise. The Northeast Region had the highest asset duration, at 2.38, while the Midwest Region had the lowest at 1.65 at the end of the fourth quarter. Similar to asset durations, all four OTS regions experienced a decrease in their median liability durations in the fourth quarter. ■

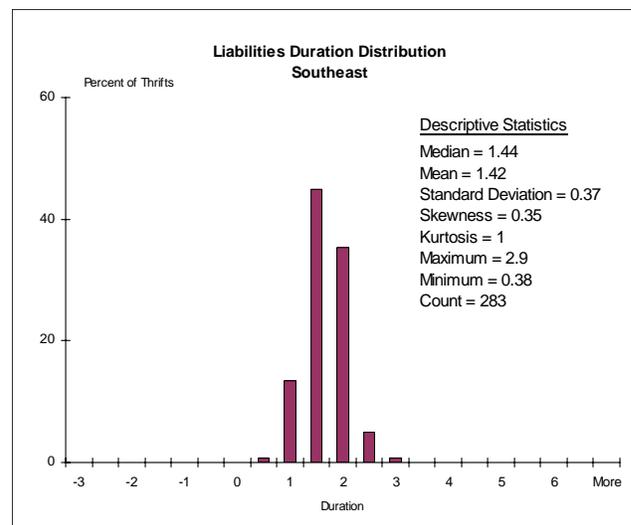
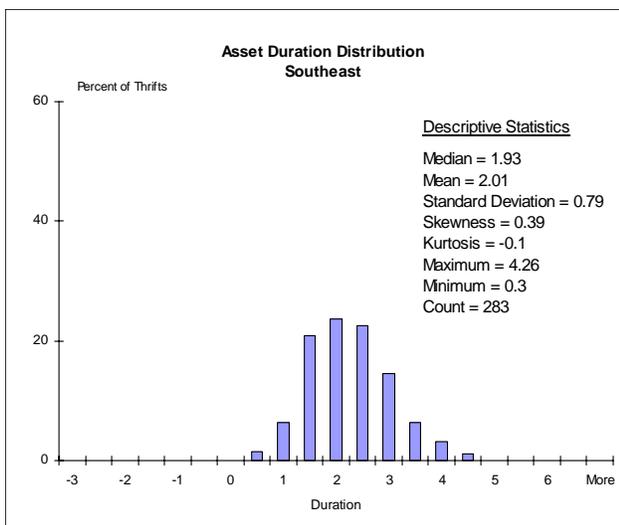
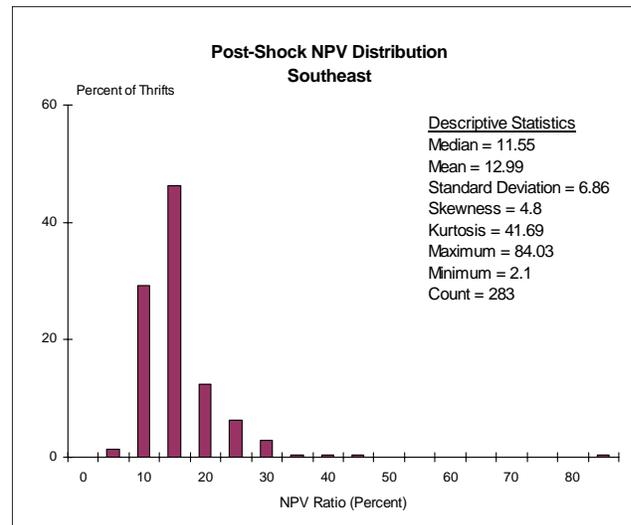
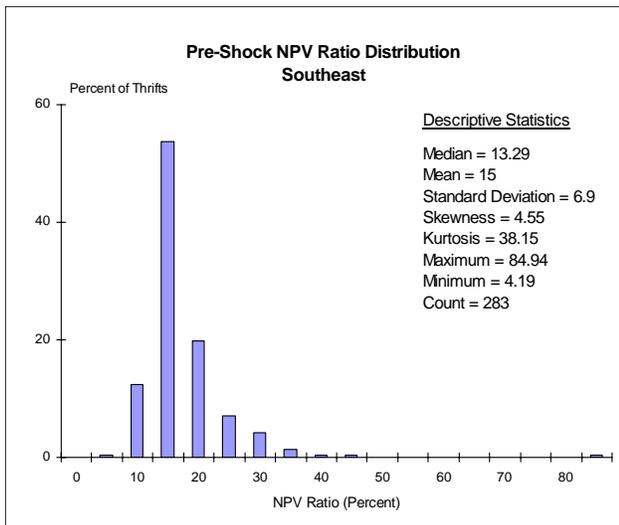
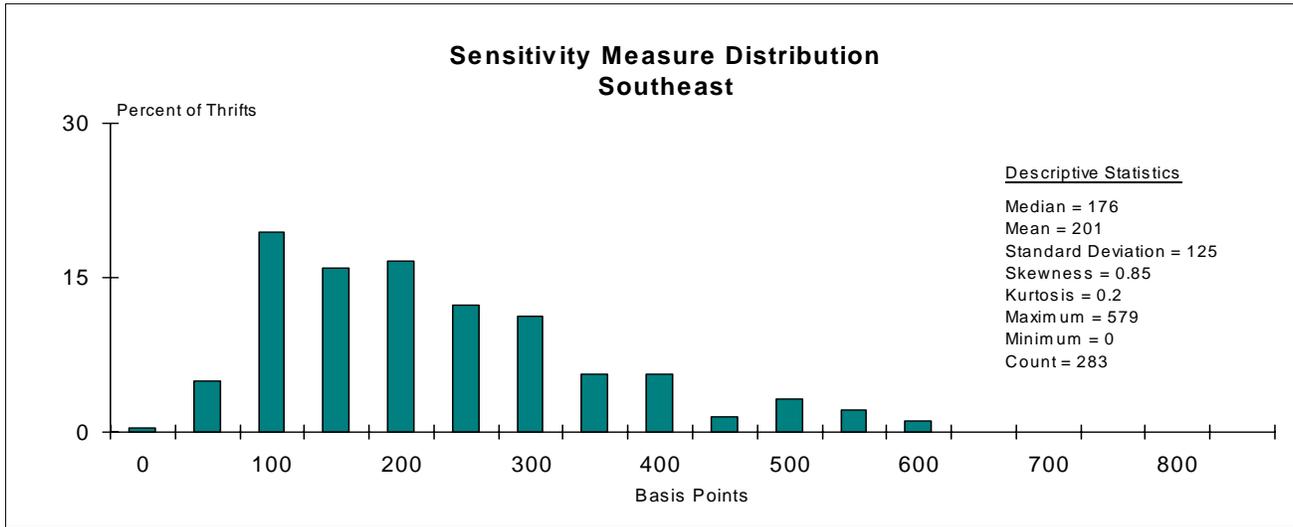
Appendix A – All Thrifts



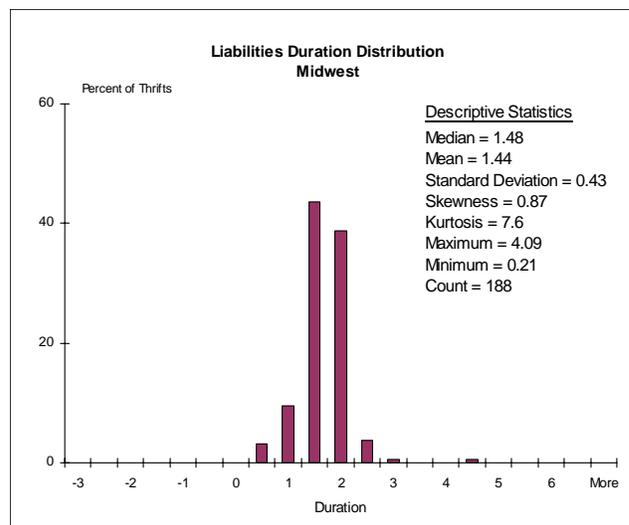
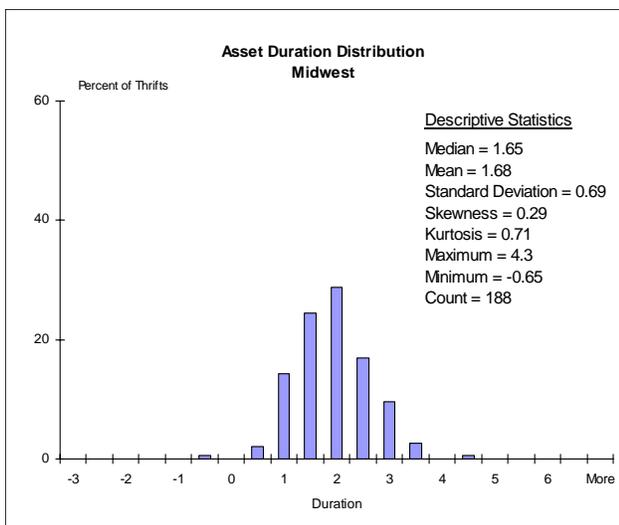
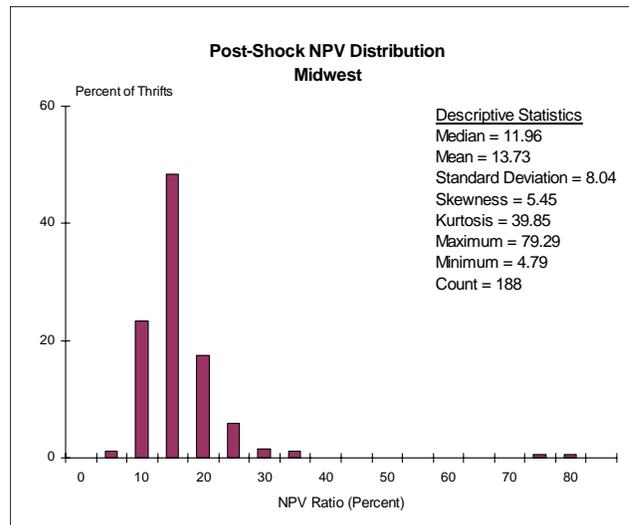
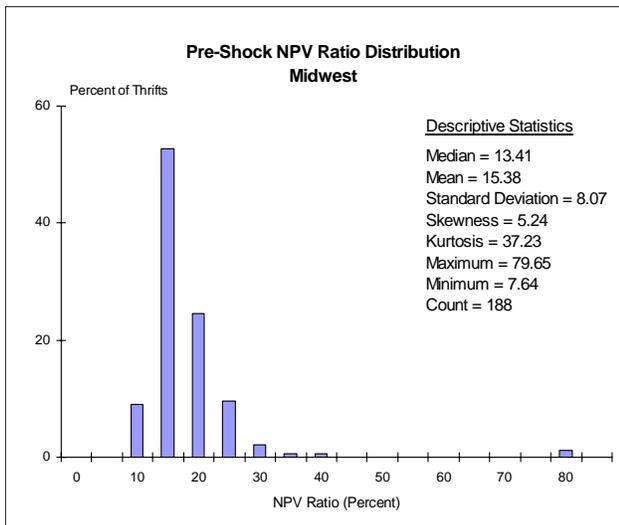
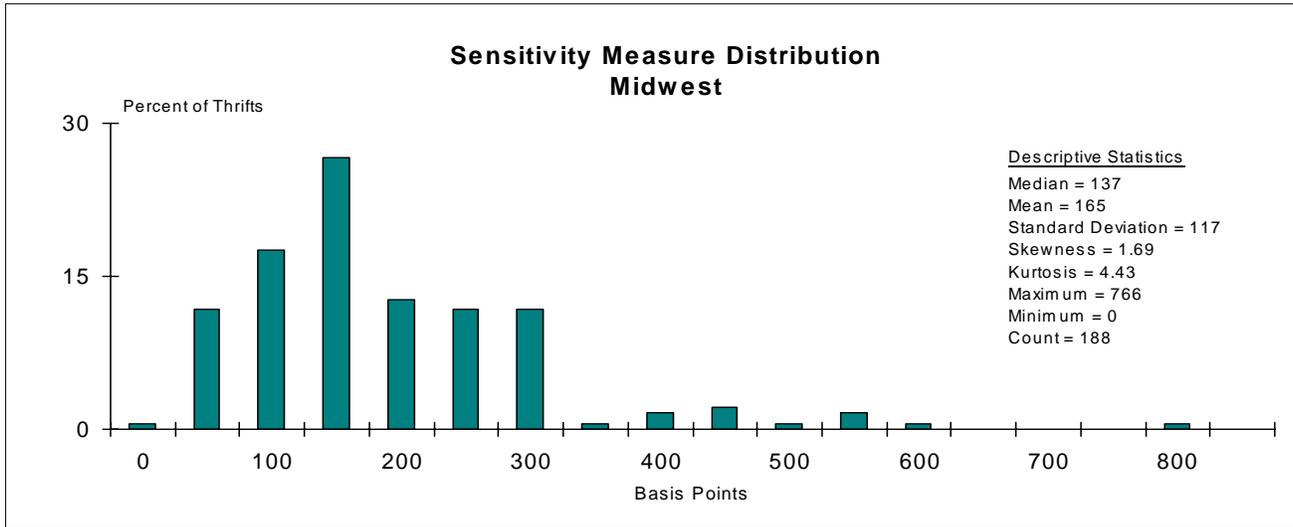
Appendix B – Northeast Region



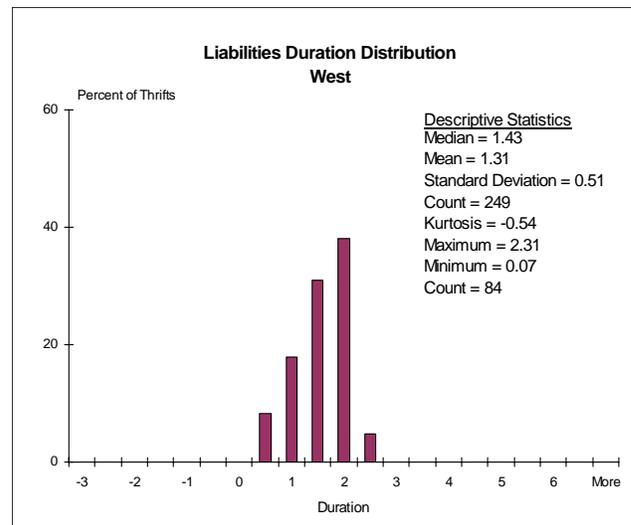
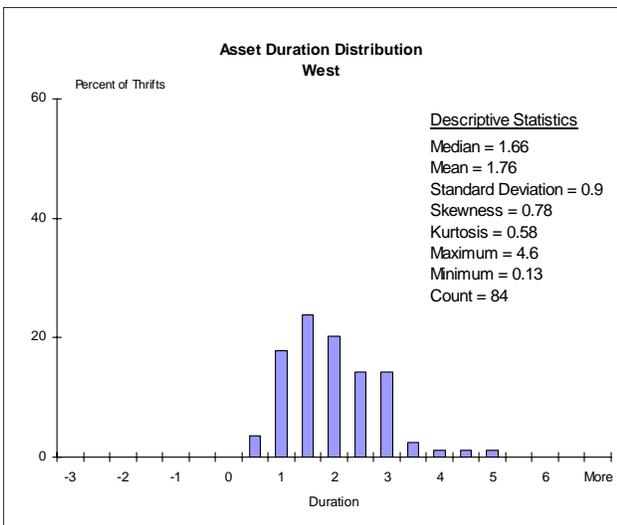
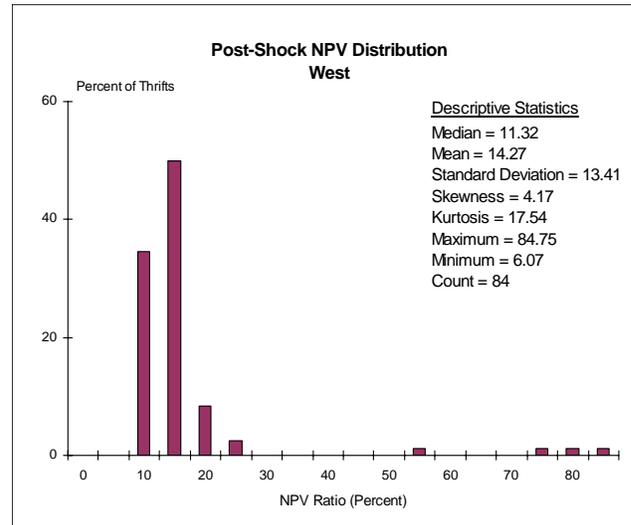
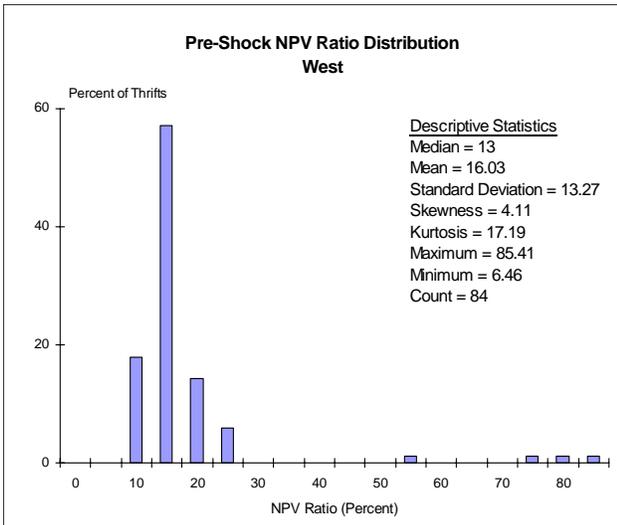
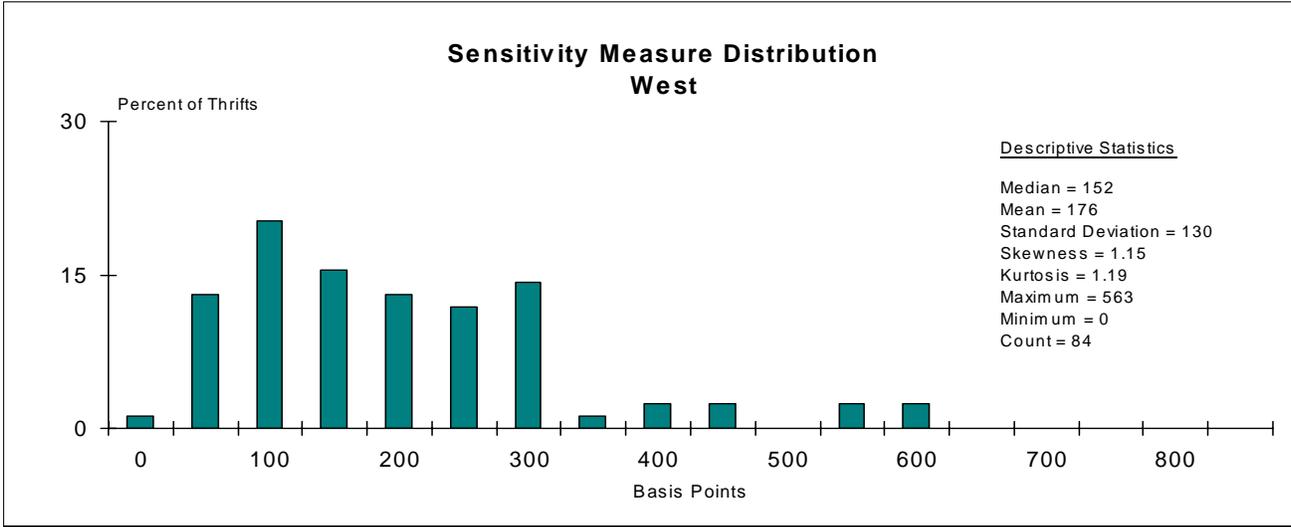
Appendix C – Southeast Region



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 nor-

mal 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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