



The Quarterly Review of Interest Rate Risk

Volume 4, Number 4

Fourth Quarter, 1999

Sensitivity Continues to Climb

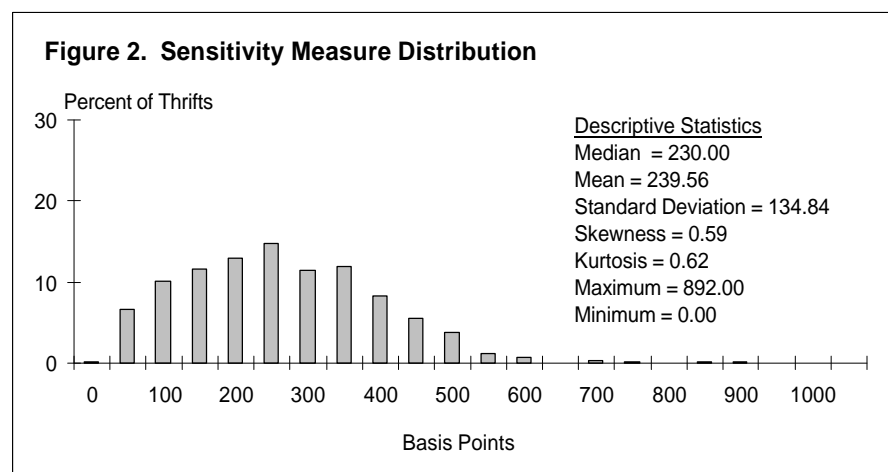
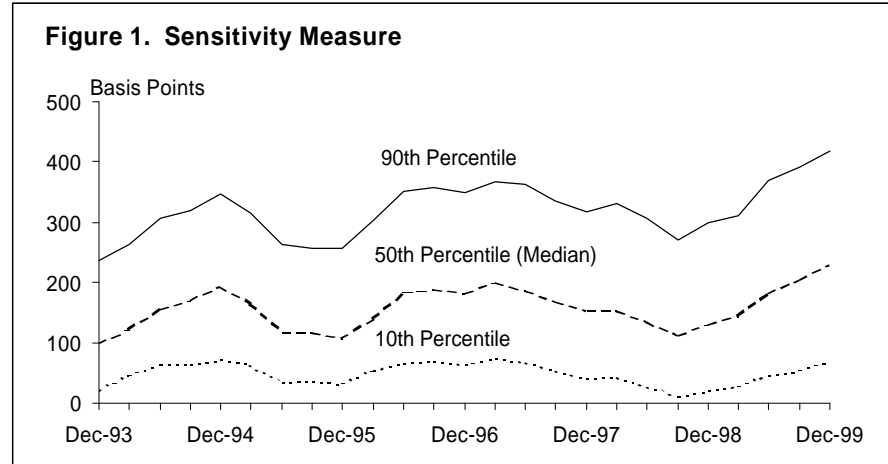
Rising interest rates continued to push thrift sensitivity higher. In the fourth quarter, median sensitivity for the thrift industry rose to 230 basis points. This represents the highest level of median sensitivity since OTS began monitoring sensitivity with the NPV Model in 1993.

OVERVIEW OF INDUSTRY TRENDS

Median sensitivity for the thrift industry rose sharply in the fourth quarter, continuing the upward trend for the fifth consecutive quarter. Median sensitivity increased to 230 basis points in the fourth quarter of this year (see Figure 1). This represents the highest level of median sensitivity for the thrift industry since OTS began monitoring sensitivity with the Net Portfolio Value Model in 1993.

The distribution of the sensitivity measure for the industry for the fourth quarter of 1999 is displayed in Figure 2. The percentage of thrifts with sensitivities over 400 basis points was 11.9 percent in the fourth quarter, up from 8.8 percent in the prior quarter.

Similar to the third quarter, an increase in interest rates led to the increase in median sensitivity.



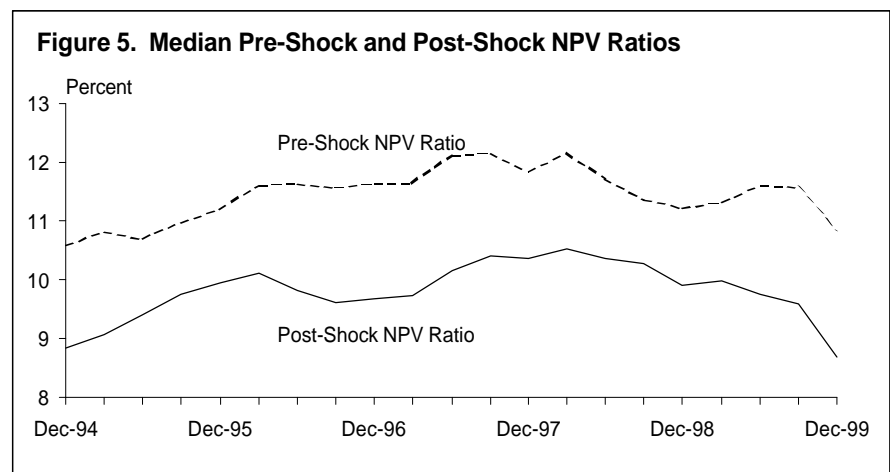
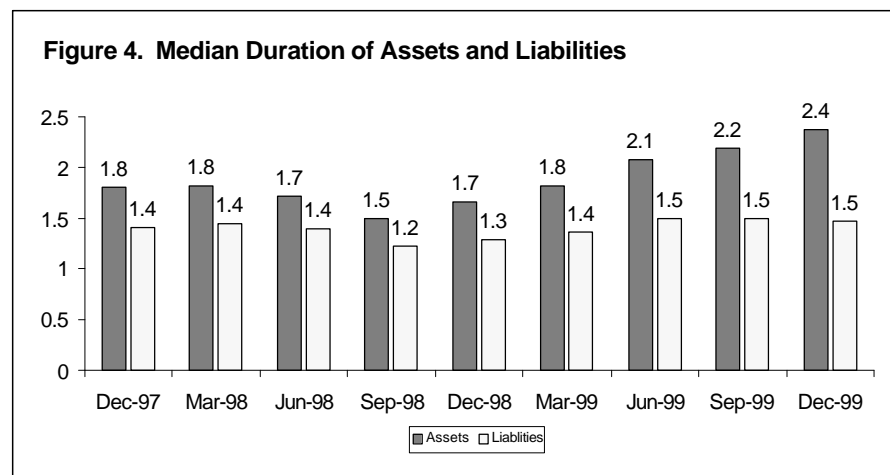
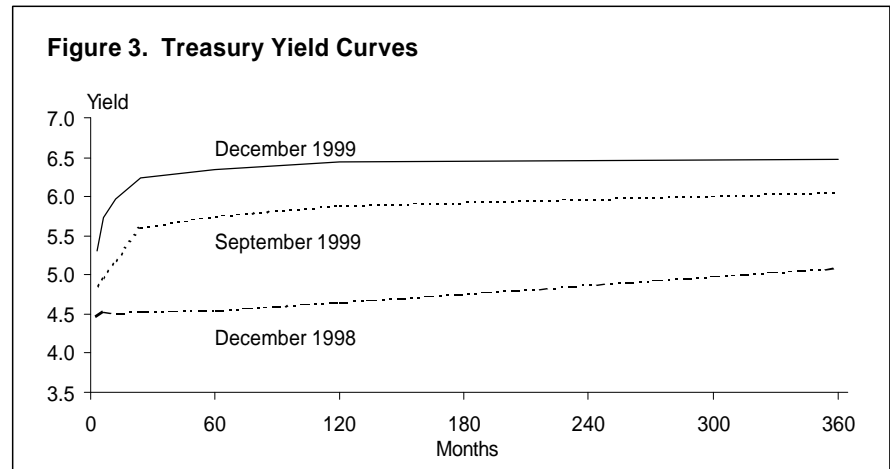
The Treasury yield curve shifted upward between the third and fourth quarters of 1999 (see Figure 3). Except for the range between three-month and one-year rates, where the yield curve actu-

ally steepened, the yield curve at the end of the fourth quarter was flatter than that at the end of the third quarter. Consistent with the lower short-term interest rates, thrift adjustable-rate mortgage originations rose during the fourth quarter.

The median effective assets duration for the industry increased, while the duration of liabilities remained the same between the third and fourth quarters (see Figure 4). The median effective duration for assets rose from 2.2 in the third quarter of 1999 to 2.4 in the fourth quarter of this year, while the median effective duration for liabilities remained unchanged at 1.5 over the same period. Since the fourth quarter of 1998, mortgage durations have continued to increase as a result of higher interest rates and slower prepayment speeds.

The median pre-shock NPV ratio in the fourth quarter fell to 10.8 percent as a result of lower asset values caused by higher interest rates (see Figure 5). The industry's median post-shock NPV ratio fell to 8.7 percent in the fourth quarter, the seventh consecutive quarterly decline in this aggregate measure of the industry's ability to absorb additional interest rate shocks.

Lower levels of book capital in the fourth quarter contributed to the decline in post-shock net portfolio values. However, the increase in Treasury interest rates, coupled with a relatively



flat secondary market CD yield sheets to become more sensitive to changes in interest rates, as the increase in Treasury interest rates rise and prepayments fall. Flat secondary market CD yield

curves decrease the hedge value of deposits, resulting in higher interest rate sensitivity.

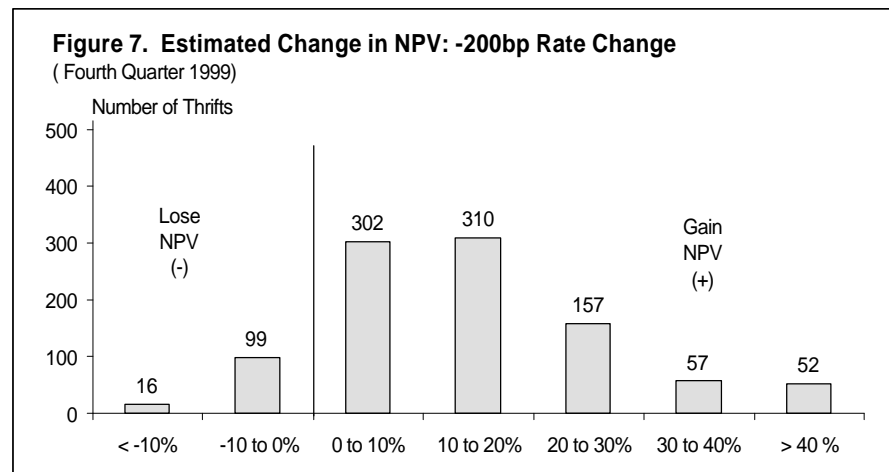
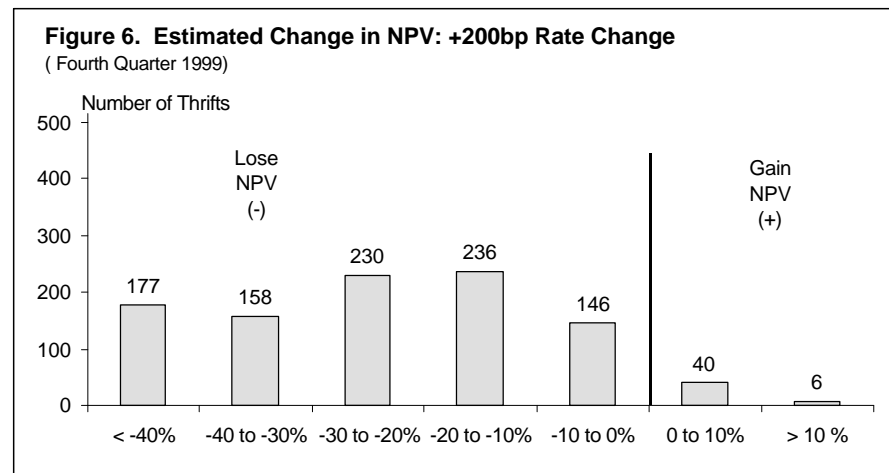
Gains and Losses

In the fourth quarter of 1999, the thrift industry would have lost 31.5 percent of its net portfolio value if rates rose by 200 basis points, up from 26.7 percent in the third quarter, and up from 16.7 percent in December 1998 (see Table 1). The industry would have gained 15.2 percent in value if rates fell by 200 basis points. These results demonstrate the higher sensitivity of savings associations to increases in interest rates, and are consistent with the substantially higher sensitivity displayed by the industry during the past year or so.

Of the 993 reporting savings associations, 95.4 percent would have experienced a loss of net portfolio value if interest rates increased by 200 basis points, up from 93.3 percent in the third quarter of this year (see Figure 6). About 57 percent of the industry would have lost more than 20 percent of their economic value, if interest rates rose by 200 basis points, up from 48.4 in the third quarter. This result is consistent with the increase in median interest rate sensitivity. If interest rates fell by 200 basis points, approximately 88 percent of reporting thrifts would have experienced increases in their net portfolio values (see Figure 7).

Table 1. Interest Rate Risk Measures
(Industry Aggregate Data)

Change in Interest Rates (Basis Points)	Percentage Change in NPV		Ratio of NPV to Assets	
	Sep-99	Dec-99	Sep-99	Dec-99
+300	-43.9	-50.4	5.3	4.4
+200	-26.7	-31.5	6.8	6.0
+100	-11.9	-14.3	8.0	7.3
Base Case	0.0	0.0	9.0	8.4
-100	7.5	9.7	9.5	9.1
-200	11.3	15.2	9.7	9.4
-300	15.7	18.7	10.0	9.6



Highly Exposed Thrifts

The number of thrifts with post-shock NPV ratios below 4 percent increased dramatically in the fourth quarter (see Figure 8).

This represents the third consecutive quarterly increase in the number of thrifts below this capital threshold. The number of thrifts highly exposed to interest rate risk more than doubled to 84,

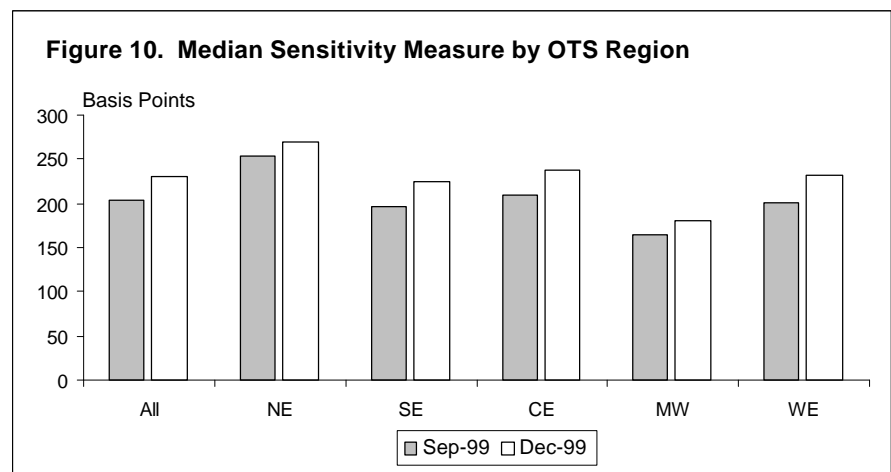
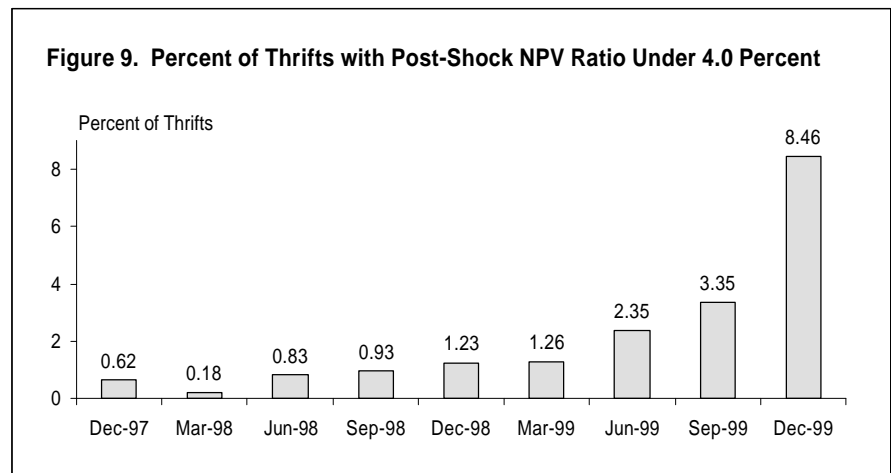
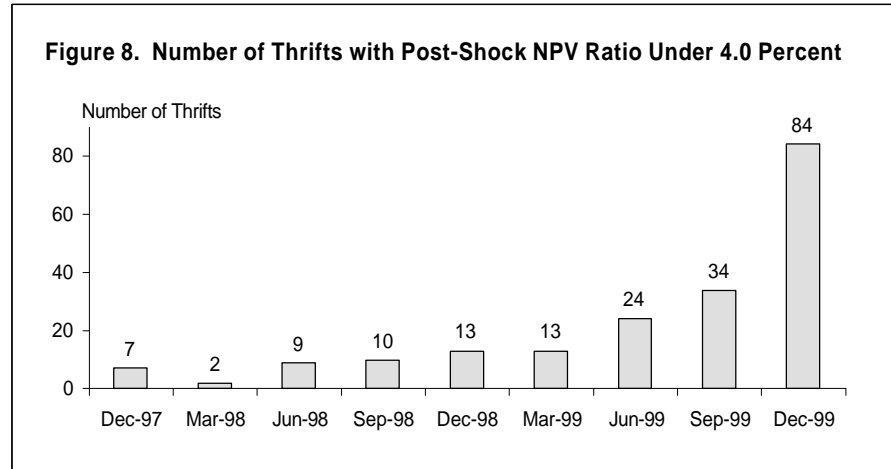
up from 34 in the previous quarter.

The percentage of thrifts with post-shock NPV ratios below 4 percent increased to 8.5 percent of the industry in the fourth quarter, from 3.4 percent in the third quarter (see Figure 9). A thrift with a post-shock NPV ratio below 4 percent either has a relatively low level of capital, a high degree of NPV sensitivity, or both. These highly exposed thrifts are subject to heightened OTS supervision.

Regional Trends

The Northeast Region thrifts had the largest median sensitivity measure of 269 in the fourth quarter of 1999, while the Midwest Region had the smallest measure of 180 in the fourth quarter. All OTS regions experienced an increase in sensitivity for the fourth quarter. The largest percentage increases in sensitivity occurred in the West and the Southeast Regions, where sensitivity rose 14.9 percent and 14.8 percent, respectively. In contrast, the Northeast Region saw sensitivity rise by only 6.3 percent (see Figure 10).

For the industry, the median pre-shock NPV ratio decreased 75 basis points between the third and fourth quarters of 1999 (see Figure 11). All regions saw their median pre-shock NPV ratios fall in the fourth quarter. The West Region had the largest decrease in the pre-shock NPV ratio, falling 11.8 percent or 109



basis points, between the third and fourth quarters of 1999 (see Figure 12). Similar to the median pre-shock NPV ratio, all OTS regions also experienced a decrease in their median post-shock NPV ratios. The West Region

For the industry, the median post-shock NPV ratio decreased 90 basis points between the third and fourth quarters of 1999 (see Figure 12). Similar to the median pre-shock NPV ratio, all OTS regions also experienced a decrease in their median post-shock NPV ratios. The West Region

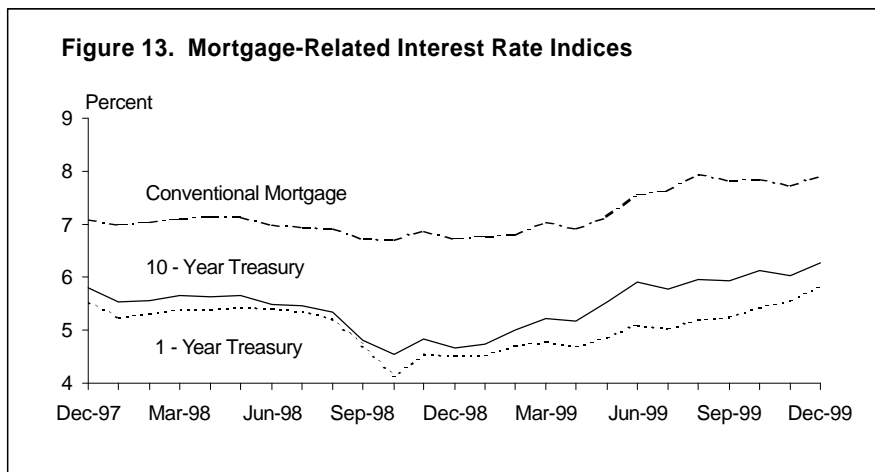
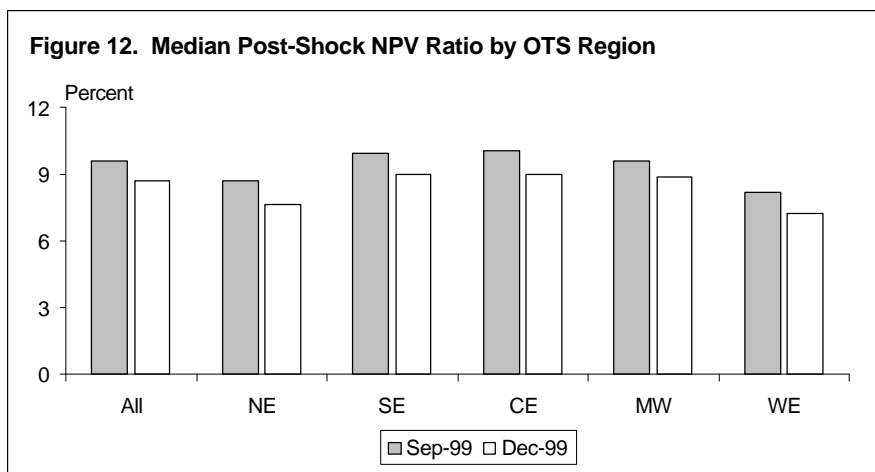
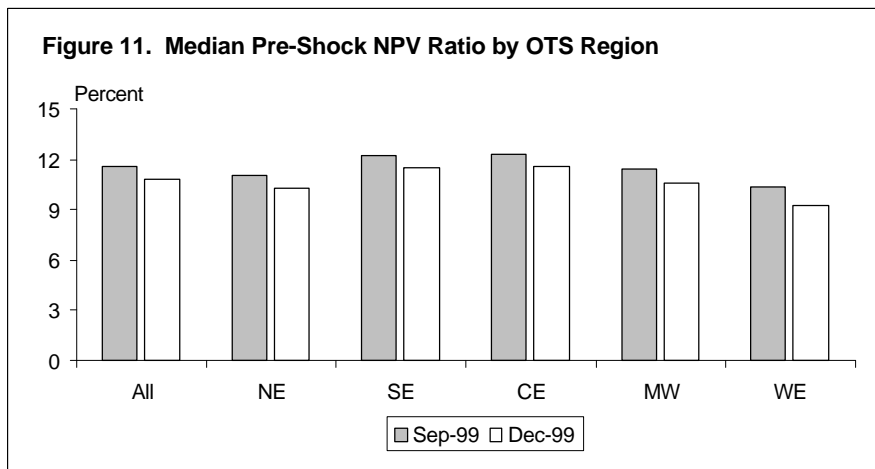
saw its post-shock NPV ratio fall 12 percent in the fourth quarter, the largest relative decline, as its median post-shock NPV ratio fell from 8.2 to 7.2 between the third and fourth quarters.

Appendices B1 to B5 present distributions for sensitivity, pre- and post-shock NPV ratios, and assets and liabilities durations for each OTS region.

THRIFT BULLETIN 13a AND THE “S” RATING

The Summary of Guidelines for the “Level of Interest Rate Risk” using post-shock NPV ratios and sensitivities produced by the NPV Model is shown in Table 2 for the fourth quarter of 1999. For comparison, Table 3 reports results using the NPV Model for the third quarter of 1999. Each cell of the tables shows both the number of thrifts and the corresponding percent of thrifts with the various combinations of post-shock NPV ratio and sensitivity specified in Thrift Bulletin 13a (TB 13a).

Of the 993 reporting thrifts in the fourth quarter of 1999, 37.7 percent had post-shock NPV ratios that exceeded 10 percent, down from 45.2 percent in the third quarter. With regard to interest rate sensitivity, 41.7 percent of thrifts had sensitivity measures of 200 basis points or less. Based on the “Level of Interest Rate Risk” guidance provided in TB 13a, 54.1 percent of thrifts might initially be assigned a “1” risk rating, 20.8 percent a



“2” rating, 14.4 percent a “3” rating, and 10.7 percent a “4” or a “5” rating. Differences between the third and fourth quarters. First, the number of thrifts with post-shock NPV ratios below 4 percent increased significantly in the fourth quarter. Second, the number of thrifts

A comparison of Tables 2 and 3 reveals several important dif-

ferences between the third and fourth quarters. First, the number of thrifts with post-shock NPV ratios below 4 percent increased significantly in the fourth quarter. Second, the number of thrifts

with sensitivity under 100 basis points decreased substantially in December 1999. In September, 21.4 percent of thrifts had sensitivity measures below 100 basis points, while in December, that percentage dropped to 17 percent.

Third, the portion of thrifts with sensitivity measures over 400 basis points increased from 8.8 percent of the industry in the third quarter to 11.9 percent in the fourth quarter.

Finally, the number of thrifts that initially might be considered to bear "significant" or "high" interest rate risk increased from 165 thrifts (16.3 percent) in the third quarter to 249 thrifts (25.1 percent) by the end of the fourth quarter. As noted in previous issues of the *Quarterly Review*, these results indicate the need for careful management and monitoring.

MORTGAGE-RELATED INTEREST INDICES

This section examines time-series plots of two mortgage-related interest indices and the Freddie Mac Commitment rate for 30-year fixed-rate mortgages, as reported by the Federal Reserve Board. The two interest indices are the one-year constant maturity Treasury (one-year CMT), which is representative of the various indices used to set one-year adjustable-rate mortgages (ARMs), and the ten-year (ten-year CMT). The ten-year

Table 2. Post-Shock NPV Ratio and Sensitivity Measure Matrix, December 1999

	Sensitivity Measure				Total
	Under 100bp	101-200bp	201-400bp	Above 400bp	
Post-Shock NPV	# of Thrifts (% of Total)	# of Thrifts (% of Total)	# of Thrifts (% of Total)	# of Thrifts (% of Total)	
Over 10%	104 10.5% Minimal Risk (1)	98 9.9% Minimal Risk (1)	147 14.8% Minimal Risk (1)	25 2.5% Moderate Risk (2)	374 37.7%
6% to 10%	60 6.0% Minimal Risk (1)	124 12.5% Minimal Risk (1)	162 16.3% Moderate Risk (2)	34 3.4% Significant Risk (3)	380 38.3%
4% to 6%	5 0.5% Minimal Risk (1)	19 1.9% Moderate Risk (2)	105 10.6% Significant Risk (3)	26 2.6% High Risk (4 or 5)	155 15.6%
Below 4%	0 0.0% Moderate Risk (2)	4 0.4% Significant Risk (3)	47 4.7% High Risk (4 or 5)	33 3.3% High Risk (4 or 5)	84 8.5%
Total	169 17.0%	245 24.7%	461 46.4%	118 11.9%	993 100%

Table 3. Post-Shock NPV Ratio and Sensitivity Measure Matrix, September 1999

	Sensitivity Measure				Total
	Under 100bp	101-200bp	201-400bp	Above 400bp	
Post-Shock NPV	# of Thrifts (% of Total)	# of Thrifts (% of Total)	# of Thrifts (% of Total)	# of Thrifts (% of Total)	
Over 10%	142 14.0% Minimal Risk (1)	130 12.8% Minimal Risk (1)	164 16.2% Minimal Risk (1)	22 2.2% Moderate Risk (2)	458 45.2%
6% to 10%	70 6.9% Minimal Risk (1)	136 13.4% Minimal Risk (1)	169 16.7% Moderate Risk (2)	31 3.1% Significant Risk (3)	406 40.0%
4% to 6%	5 0.5% Minimal Risk (1)	11 1.1% Moderate Risk (2)	79 7.8% Significant Risk (3)	21 2.1% High Risk (4 or 5)	116 11.4%
Below 4%	0 0.0% Moderate Risk (2)	1 0.1% Significant Risk (3)	18 1.8% High Risk (4 or 5)	15 1.5% High Risk (4 or 5)	34 3.4%
Total	217 21.4%	278 27.4%	430 42.4%	89 8.8%	1014 100%

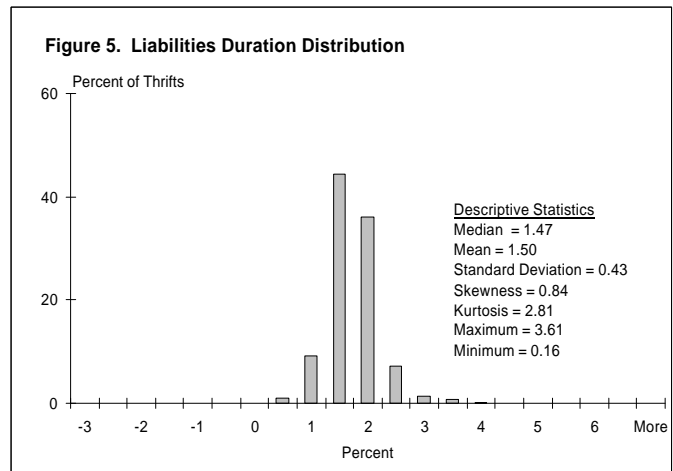
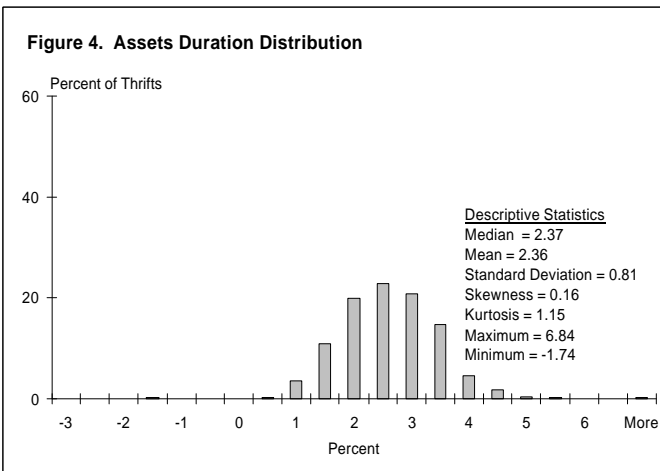
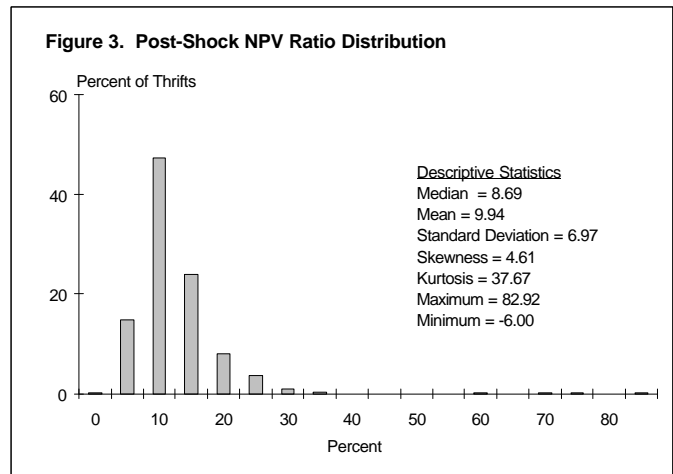
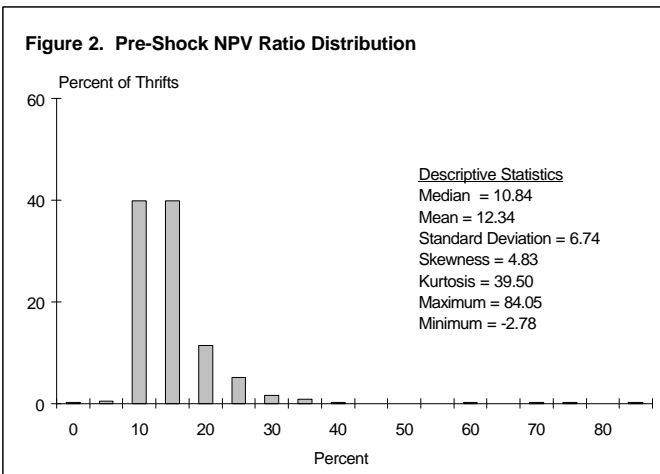
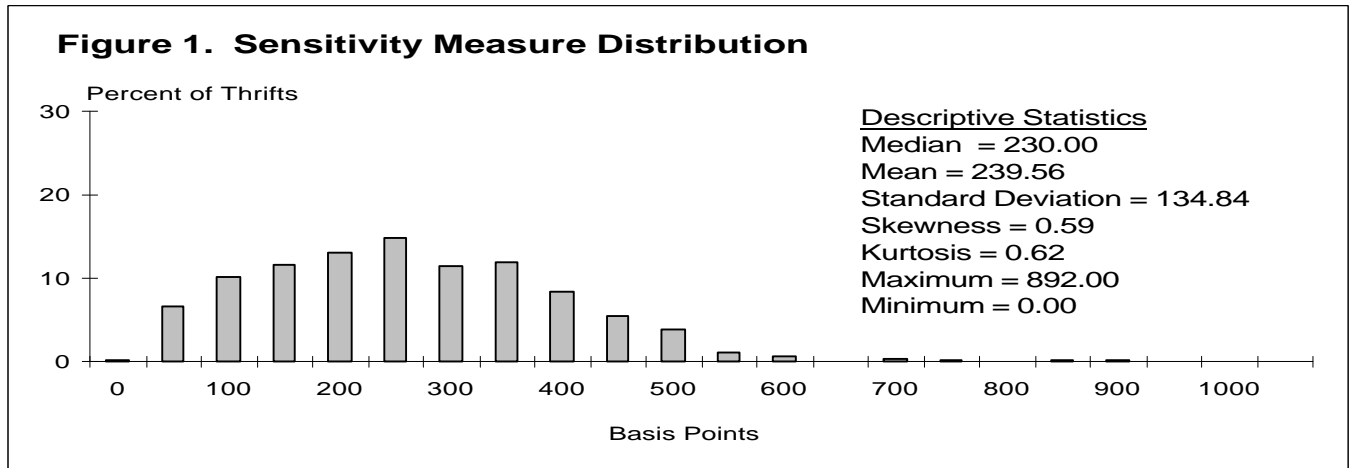
CMT index tracks the commitment rate for 30-year fixed-rate mortgages well (see Figure 13).

Persistent concerns about inflationary pressure associated with the ongoing economic expansion and the Federal Reserve's decision to raise the fed-

eral funds rate have put upward pressure on interest rates. Concerns over tightness of labor markets and high levels of consumption have fueled speculation of rate increases in the months ahead.

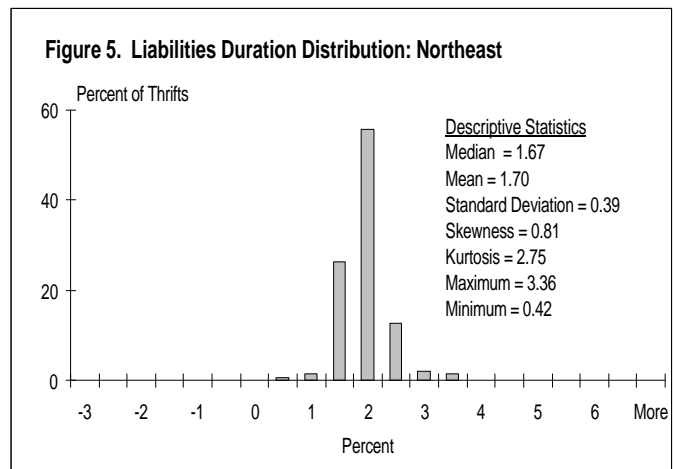
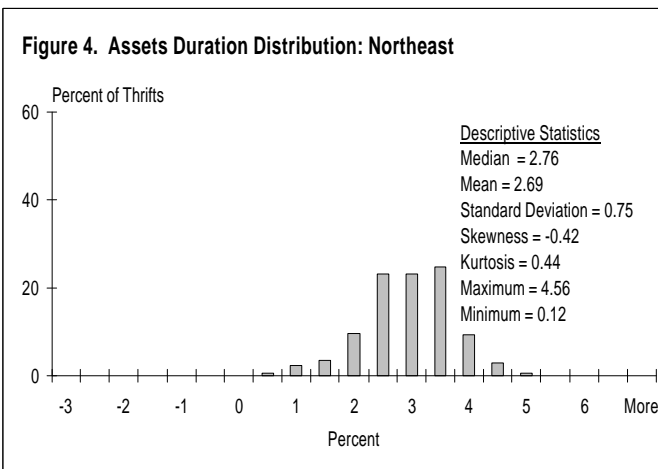
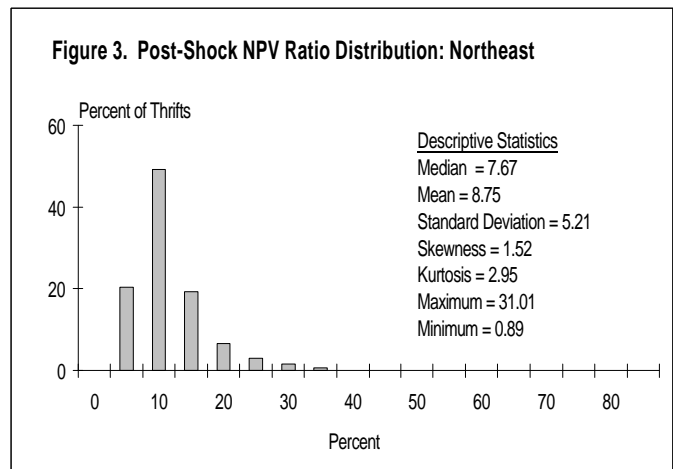
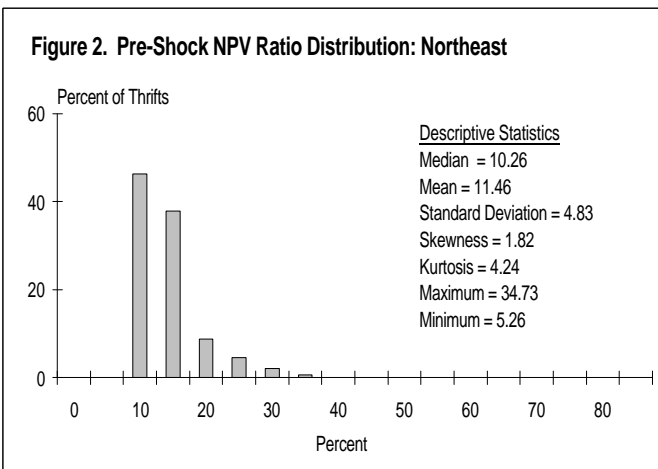
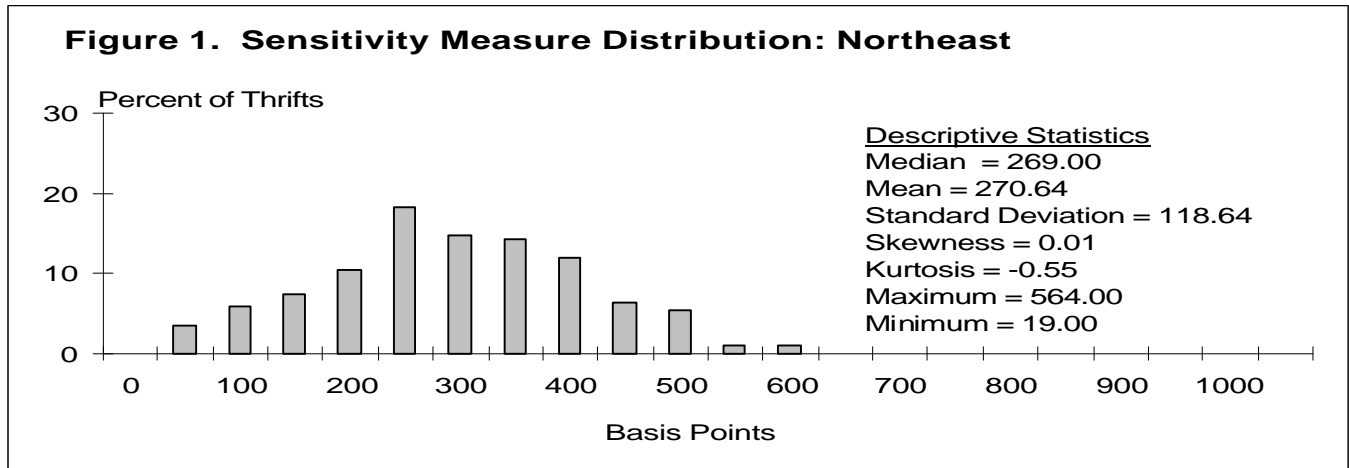
Appendix A (All Thrifts)

This appendix presents distributions for sensitivity, pre-shock and post-shock NPV ratios, and assets and liabilities duration for all reporting thrifts at fourth quarter end 1999. Also included in each figure are descriptive statistics.



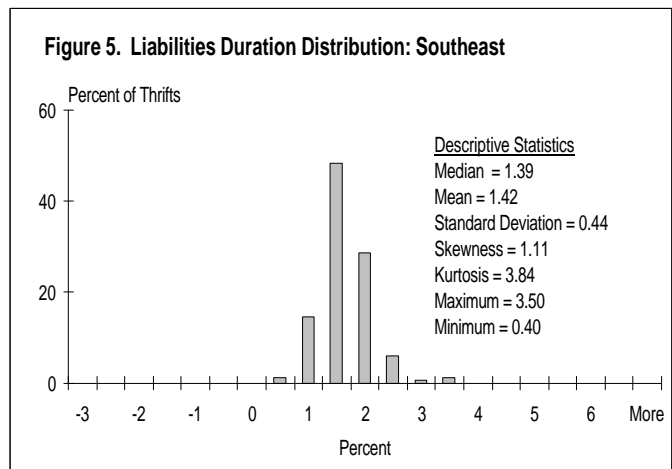
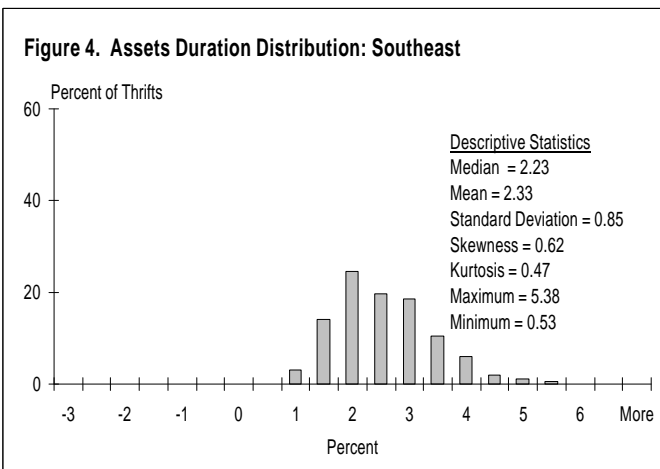
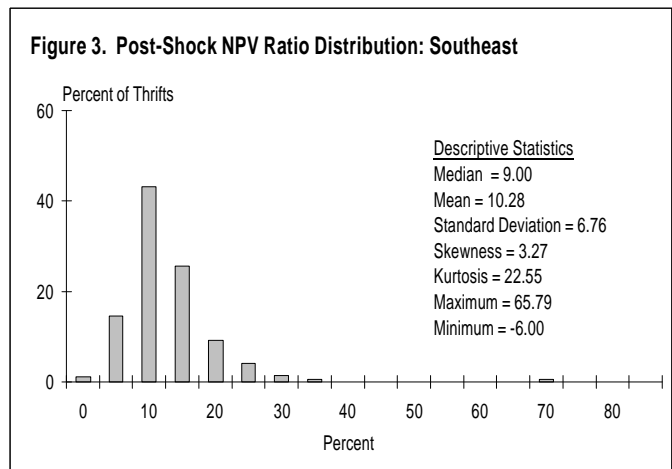
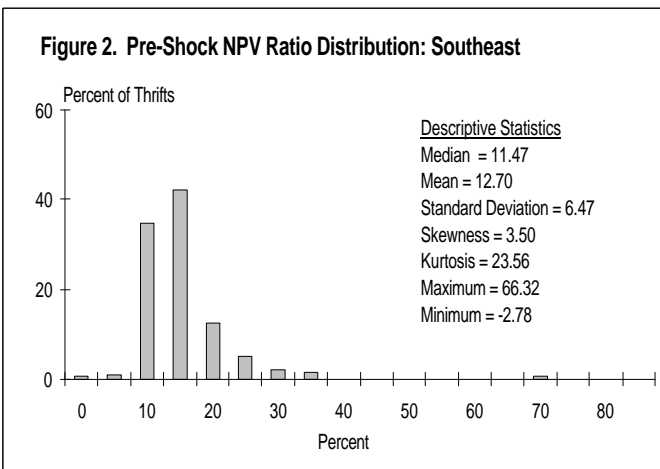
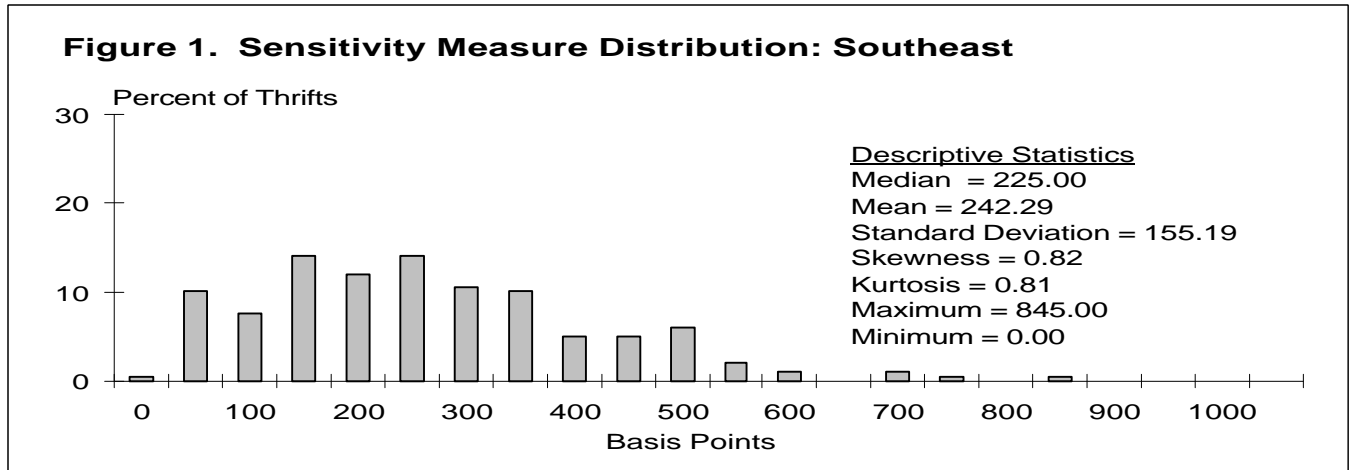
Appendix B 1 (Northeast Region)

This appendix presents distributions for sensitivity, pre-shock and post-shock NPV ratios, and assets and liabilities duration for reporting thrifts in the Northeast Region at fourth quarter end 1999. Also included in each figure are descriptive statistics.



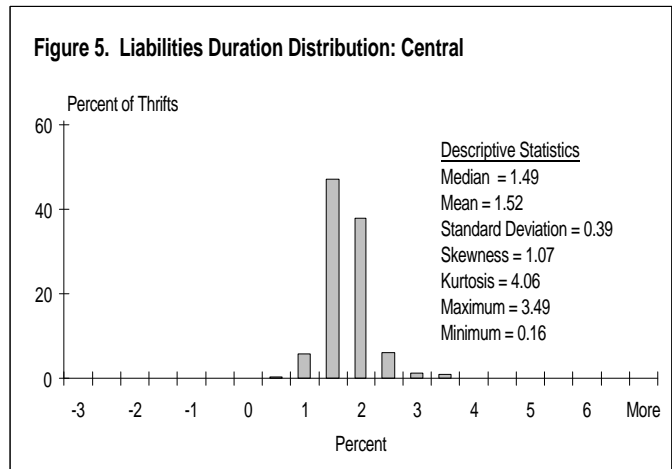
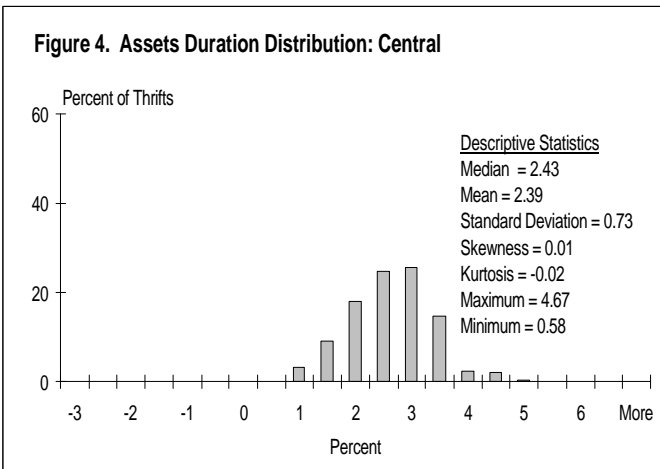
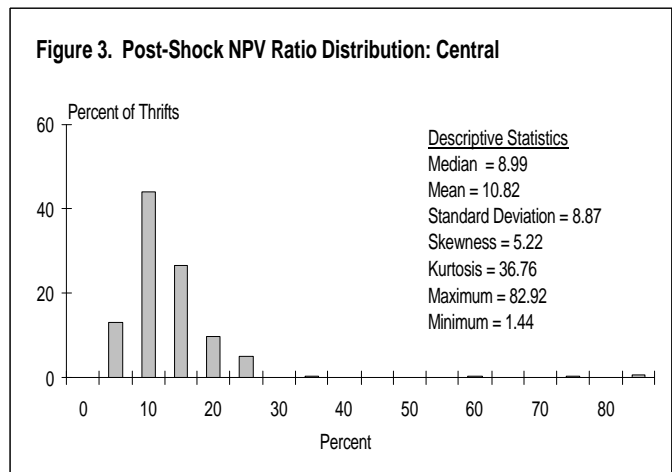
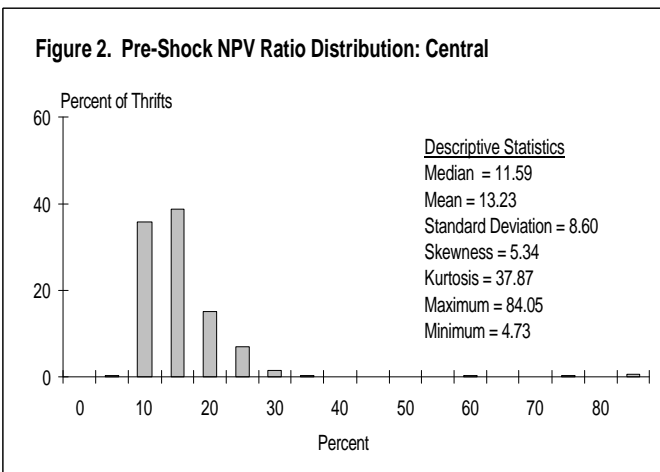
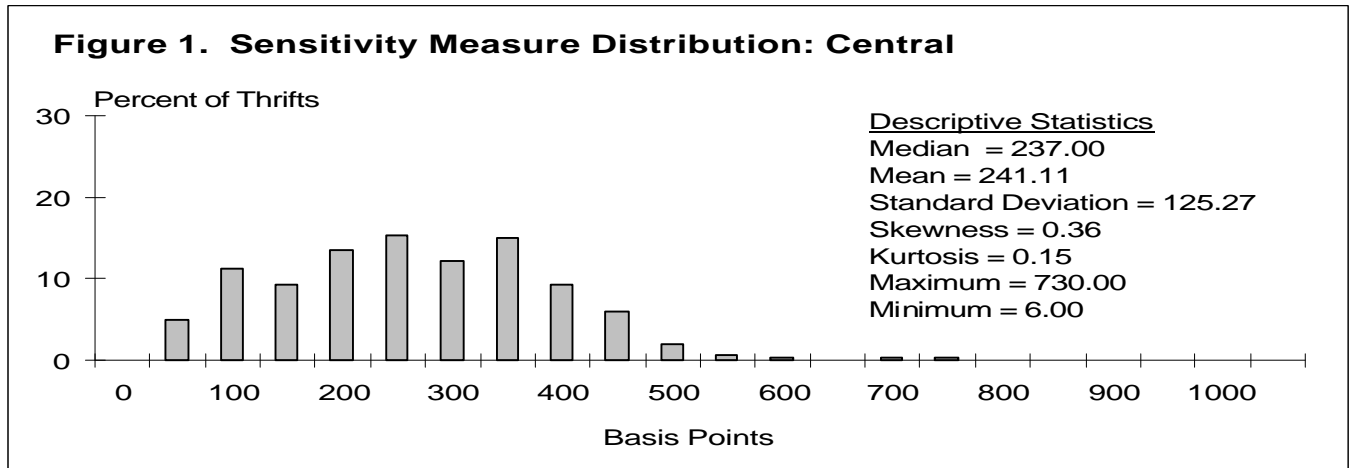
Appendix B 2 (Southeast Region)

This appendix presents distributions for sensitivity, pre-shock and post-shock NPV ratios, and assets and liabilities duration for reporting thrifts in the Southeast Region at fourth quarter end 1999. Also included in each figure are descriptive statistics.



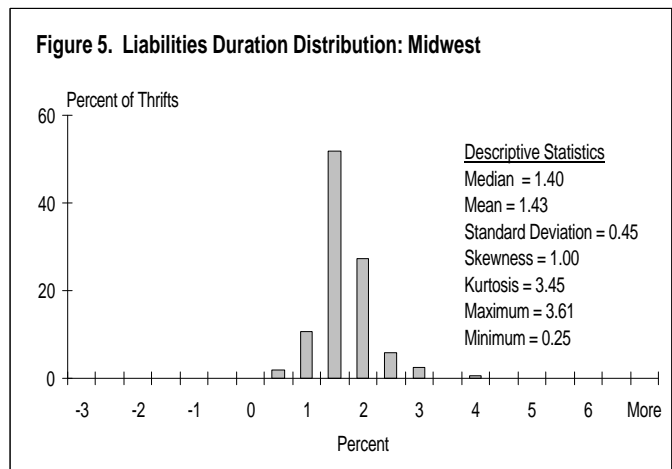
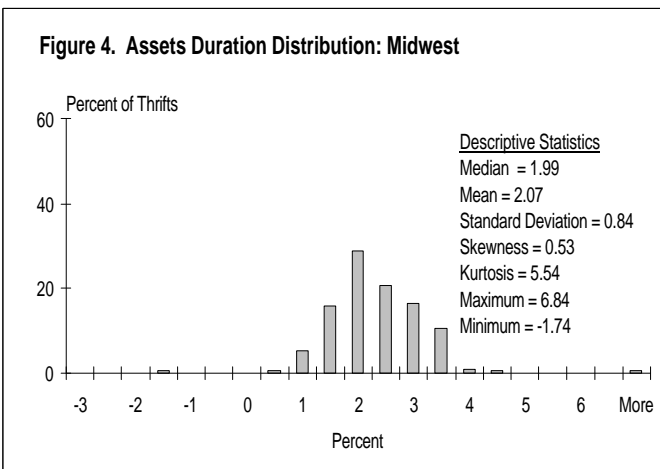
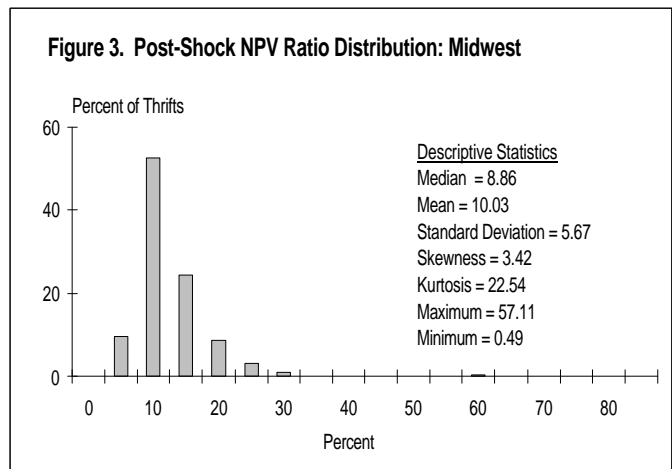
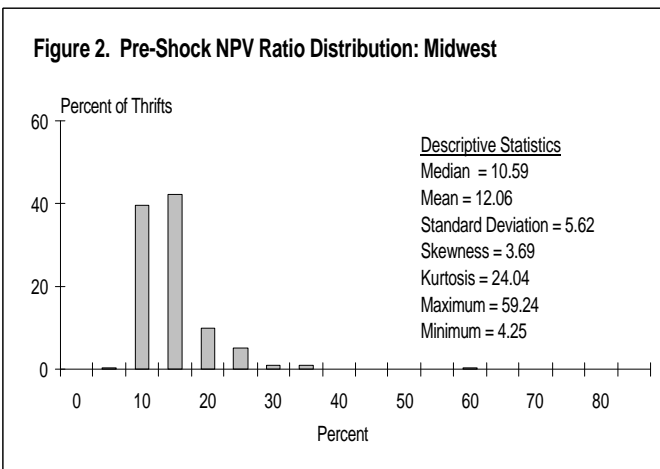
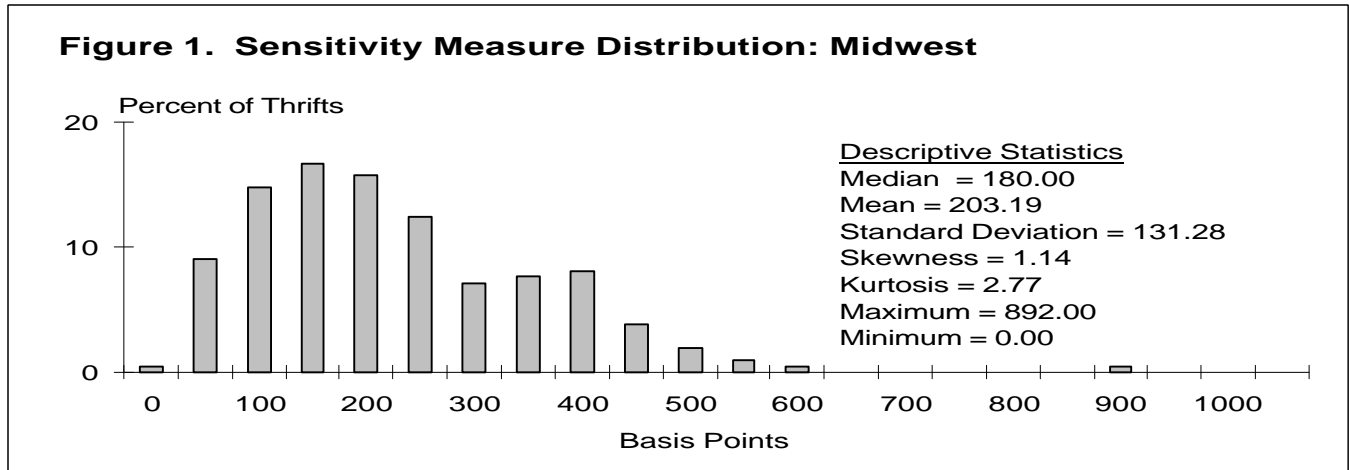
Appendix B 3 (Central Region)

This appendix presents distributions for sensitivity, pre-shock and post-shock NPV ratios, and assets and liabilities duration for reporting thrifts in the Central Region at fourth quarter end 1999. Also included in each figure are descriptive statistics.



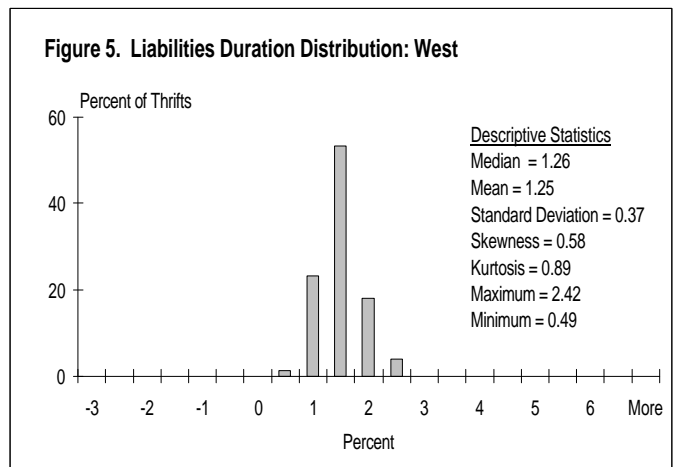
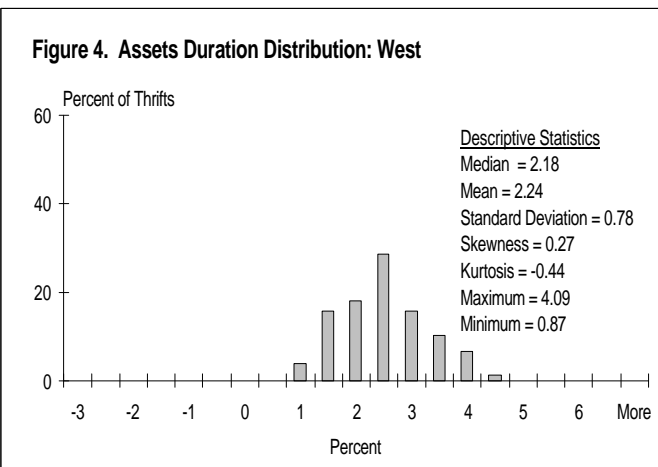
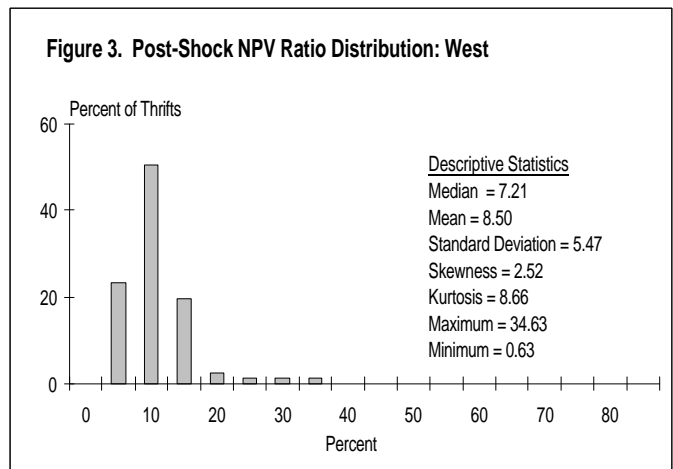
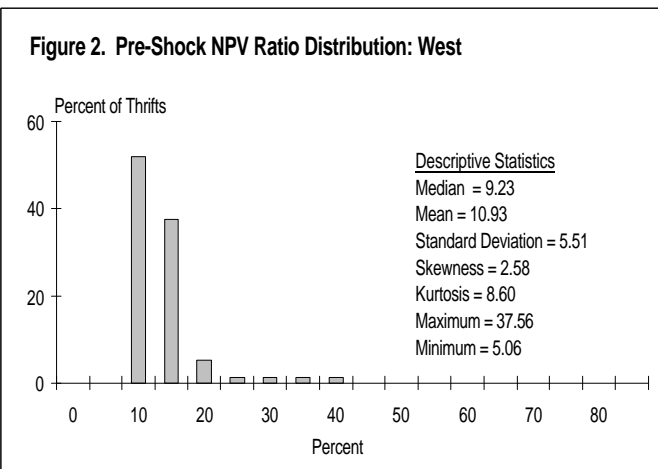
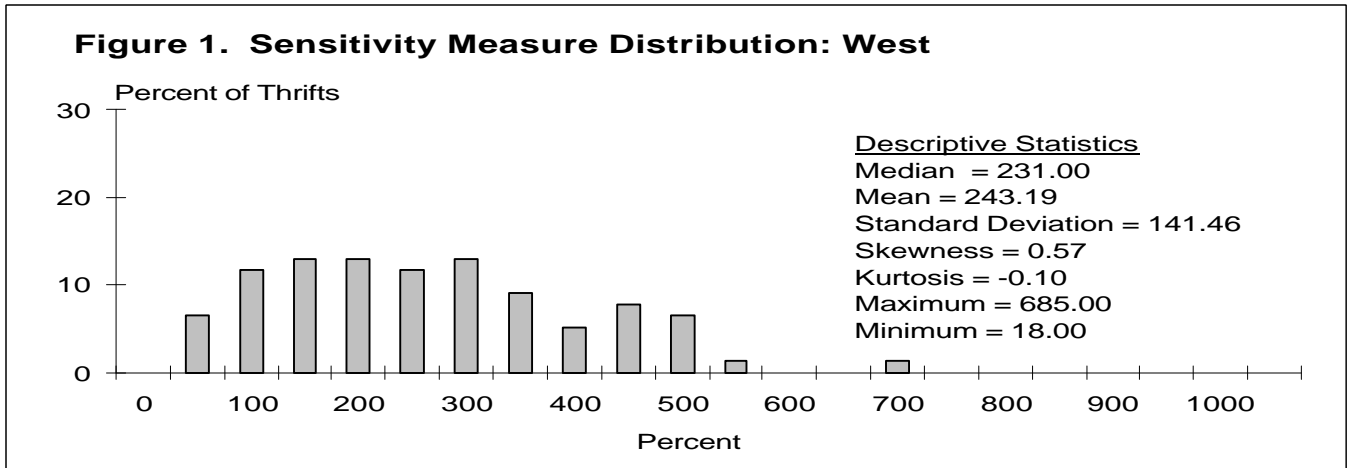
Appendix B 4 (Midwest Region)

This appendix presents distributions for sensitivity, pre-shock and post-shock NPV ratios, and assets and liabilities duration for reporting thrifts in the Midwest Region at fourth quarter end 1999. Also included in each figure are descriptive statistics.



Appendix B 5 (West Region)

This appendix presents distributions for sensitivity, pre-shock and post-shock NPV ratios, and assets and liabilities duration for reporting thrifts in the West Region at fourth quarter end 1999. Also included in each figure are descriptive statistics.



GLOSSARY

Pre-Shock NPV Ratio	Equity-to-assets expressed in present value terms (i.e., base case NPV divided by present value of assets).
Post-Shock NPV Ratio	Equity-to-assets ratio expressed in present value terms following an adverse 200 basis point interest rate shock. Also referred to as the exposure ratio.
Sensitivity Measure	Difference between Pre-shock and Post-shock NPV Ratios (expressed in basis points).
Estimated Change in NPV	The percentage change in base case NPV caused by an interest rate shock.
Duration	Duration is a measure of the price sensitivity of a financial instrument for small changes in yield. The higher the duration of an instrument, the greater is its price sensitivity. For example, an asset with duration of 1.6 will appreciate in value by about 1.6 percent for a one percentage point (100 basis points) decline in yield. The reverse would hold if yields rose by one percent.
Kurtosis	The kurtosis statistic measures the tendency of data to be distributed toward the tails, or ends, of the distribution. A distribution that is approximately normal has a kurtosis statistic close to 0.
Skewness	The skewness statistic measures the degree to which the data of a distribution are more spread out on one side than the other. A distribution that is approximately symmetric has a skewness statistic close to 0.

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