



The Quarterly Review of Interest Rate Risk

Volume 5, Number 2

Second Quarter, 2000

Interest Rate Sensitivity Falls Modestly

Thrift industry interest rate sensitivity fell modestly, as interest rates generally declined in the second quarter. Median thrift sensitivity fell to 235 basis points, down from 238 basis points in March, the first decline in seven quarters. Although the median pre- and post-shock NPV ratios fell in the second quarter, capital ratios remained strong. The number of thrifts with “significant or high interest rate risk”, as defined in TB 13a, declined for the second consecutive quarter as well.

INDUSTRY TRENDS

OTS-regulated thrifts reported earnings of \$2 billion in the second quarter, down slightly from the first-quarter level. While profitability, as measured by return on assets and return on equity, also declined, asset quality and capital remained high during this period. As a result of a general decline

in interest rates in the second quarter, interest rate sensitivity fell for the first time in seven quarters. Median sensitivity fell to 235 basis points, down from 238 in March (see Figure 1). The percentage of thrifts with sensitivities over 400 basis points was 11.8 percent in the second quarter, down from 13.2 percent in March. The percentage of thrifts with sensitivities under 100 basis points increased

Figure 1. Sensitivity Measure and 1 year CMT

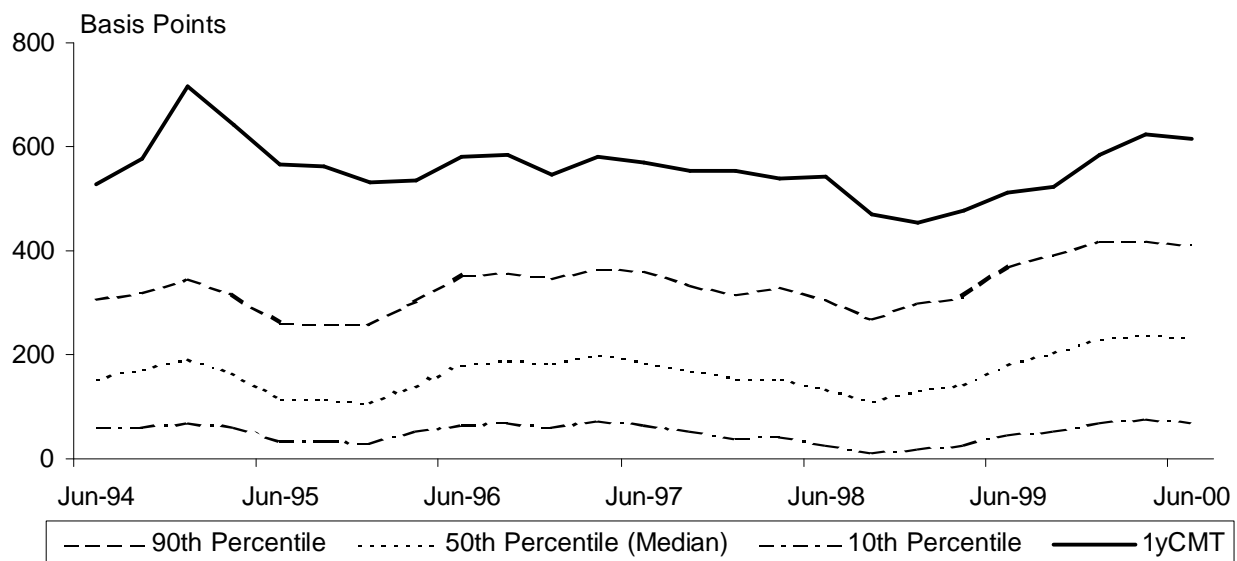
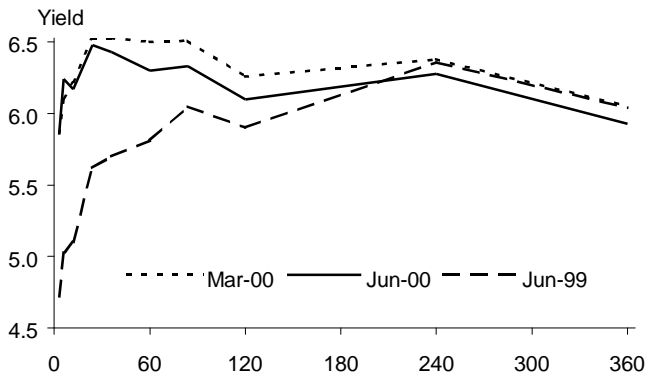


Figure 2. CMT Yield Curve

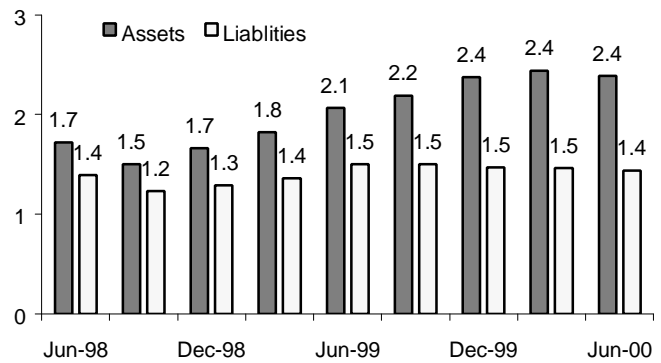


to 16.5 percent in the second quarter, up from 15.4 percent in March. These results are consistent with the decrease in industry sensitivity in the second quarter.

A decrease in interest rates was the primary cause of the fall in sensitivity. The Constant Maturity Treasury (CMT) yield curve shifted downward at all maturities greater than six months between the first and second quarters (see Figure 2). Despite the downward shift, the yield curve remained inverted, with the largest declines (roughly 15 to 20 basis points) occurring in the five- to ten-year range. While the Treasury continues with its plan to gradually retire longer-term debt, downward pressure on long-term rates should persist.

Although interest rates generally declined in the second quarter, the Federal Reserve raised rates by 50 basis points in May. The upward spike in rates in May, although lasting only briefly, may have heightened concerns that rates might rise

Figure 4. Median Duration of Assets and Liabilities



again in the future. Expectations of rising rates and inverted yield curves generally have negative effects on bank and thrift stock prices. And, as shown in Figure 3, bank and thrift stock prices fell in June.

Industry net interest margins fell in the second quarter. The average net interest margin for the industry was 265 basis points, down 5 basis points from the first quarter. The fall in margins was caused by the inverted yield curves that have prevailed during the past several quarters, and pressure resulting from lower yielding adjustable-rate mortgages that have not yet adjusted to current market rates. Net interest margins are still affected by the last 50 basis point hike in short-term rates by the Federal Reserve Board in May.

Margin compression is likely to continue in the third and fourth quarters of 2000, if the current market environment of high short-term funding costs and low mortgage rates continues. Thrifts

Figure 3. Bank and Thrift Stock Indexes and 1 year CMT

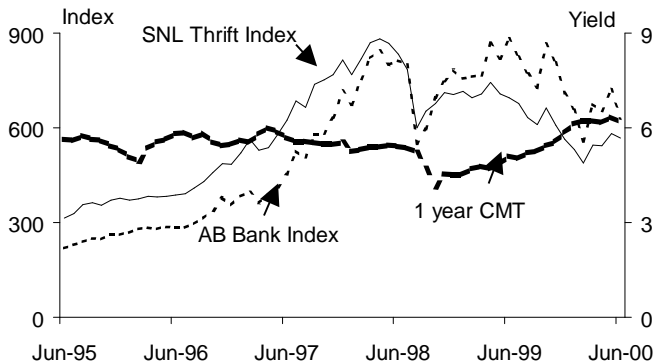


Figure 5. Cost of Funds - 11th. FHLB District

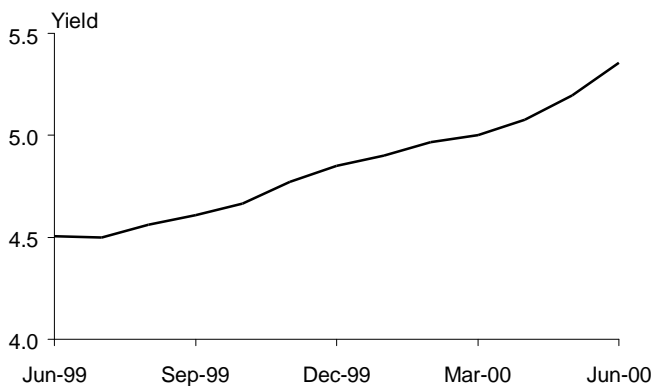
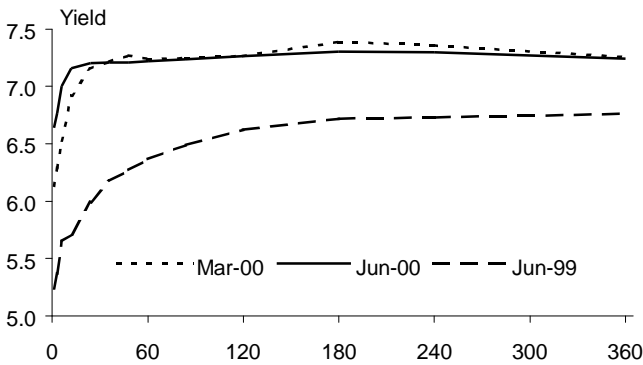


Figure 6. LIBOR Yield Curve

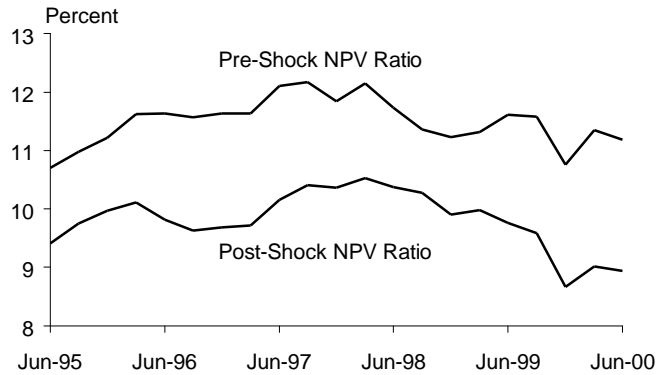


have increased their use of short-term non-deposit borrowings, such as FHLB advances, recently to fund asset growth. As shown in Figure 5, the cost of funds continued to rise in the second quarter. In addition, both LIBOR rates and rates on FHLB advances rose on short-term maturities in the second quarter, while longer-term maturities enjoyed a fall in rates (see Figures 6 and 7).

The thrift industry's median effective duration for assets remained at 2.4 in the second quarter, while the median effective duration for liabilities fell slightly to 1.4 (see Figure 4). The decrease in liabilities duration was due to thrifts shifting to shorter-term non-deposit funding sources, such as FHLB advances.

The thrift industry's median pre-shock NPV ratio fell slightly to 11.2 percent in the second quarter, down from 11.4 percent in March (see Figure 8). The pre-shock NPV ratio is the difference between the estimated market values of assets and

Figure 8. Median Pre- and Post-Shock NPV Ratios



liabilities (net of the market value of off-balance sheet positions) divided by the market value of assets. Declining interest rates in the second quarter caused the market value of both assets and liabilities to increase, with the market value of assets increasing by more than the market value of liabilities. As a result, the industry's net portfolio value rose. However, the pre-shock NPV ratio fell due to an increase in the market value of assets that exceeded the rise in industry net portfolio value in the second quarter. On the asset side, the estimated market value of mortgage loans and mortgage-backed securities increased the most. The increase in value was due to the general fall in Treasury rates. On the liabilities side of the balance sheet, the biggest increase in market value occurred in borrowings, as a result of a general decline in LIBOR and rates on FHLB advances (see Figures 6 and 7).

The post-shock NPV ratio provides an estimate

Figure 7. FHLB Advances Yield Curve

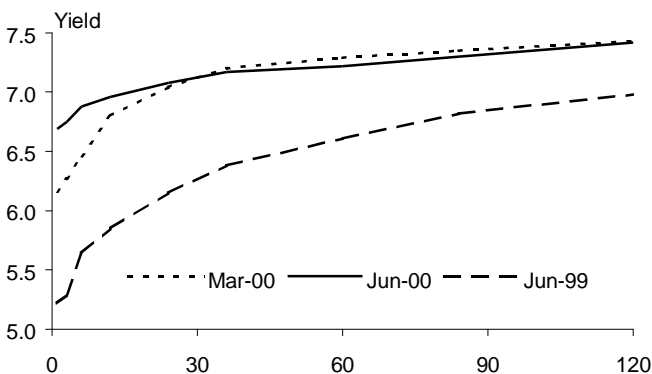
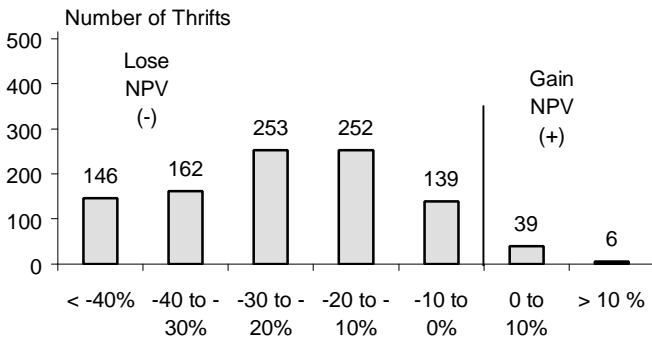


Table 1. Interest Rate Risk Measures
(Industry Aggregate Data)

Change in Interest Rates (Basis Points)	Percentage Change in NPV			Ratio of NPV to Assets		
	Jun-99	Mar-00	Jun-00	Jun-99	Mar-00	Jun-00
+300	-41.0	-49.1	-48.1	5.8	4.7	4.7
+200	-25.0	-31.2	-30.4	7.2	6.2	6.2
+100	-11.1	-14.7	-14.2	8.4	7.5	7.4
Base Case	0.0	0.0	0.0	9.3	8.6	8.5
-100	6.2	10.2	9.6	9.7	9.4	9.2
-200	9.7	14.2	12.8	9.9	9.6	9.4
-300	14.1	16.5	15.7	10.2	9.8	9.5

Figure 9. Estimated Change in NPV: +200bp Rate Change (Second Quarter 2000)



of what would happen to industry capital ratios under a hypothetical adverse movement of 200 basis points in interest rates. The industry’s median post-shock NPV ratio fell to 8.94 percent in tandem with the fall in the median pre-shock NPV ratio (see Figure 8). Although the post-shock NPV ratio fell, post-shock capital ratios remain strong.

Gains and Losses

In the second quarter, the thrift industry would have lost 30.4 percent of its net portfolio value if rates rose by 200 basis points. This percentage was down from 31.2 percent in the previous quarter. The industry would have gained 12.8 percent in value if rates fell by 200 basis points (see Table 1).

Of the 997 thrifts reporting in the second quarter, about 95 percent would have experienced a loss of net portfolio value if rates rose by 200 ba-

Figure 10. Estimated Change in NPV: -200bp Rate Change (Second Quarter 2000)

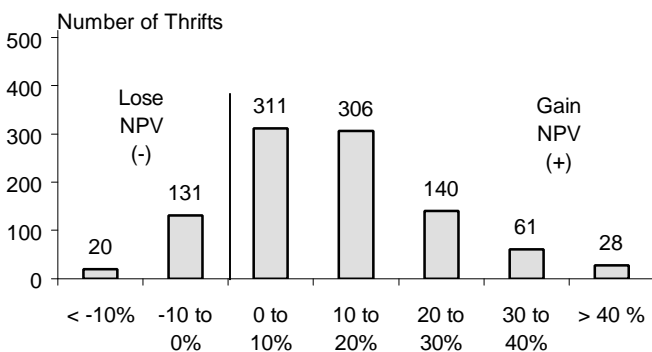
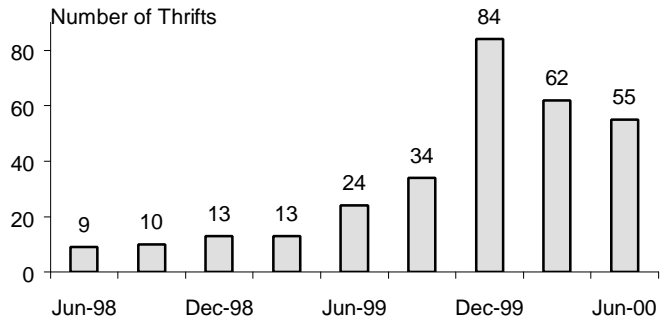


Figure 11. Number of Thrifts with Post-Shock NPV Ratio Under 4.0 Percent



sis points. About 56 percent of thrifts would have lost more than 20 percent of their value if rates rose by 200 basis points. If rates fell by 200 basis points, about 85 percent of reporting thrifts would have experienced increases in their net portfolio values (see Figures 9 and 10).

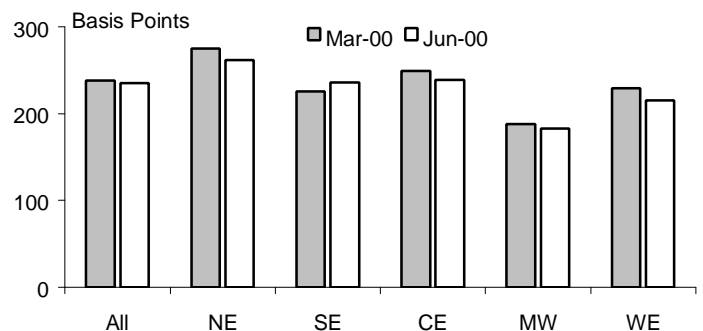
Highly Exposed Thrifts

The number of thrifts with post-shock NPV ratios below 4 percent fell to 55 thrifts in the second quarter (see Figure 11). This represents the second consecutive quarterly decline in the number of highly exposed thrifts. Despite the improvement, the number of thrifts highly exposed to interest rate risk was well above levels that existed in 1998 and early 1999.

Regional Trends

With the exception of the Southeast Region, all

Figure 12. Median Sensitivity Measure by OTS Region



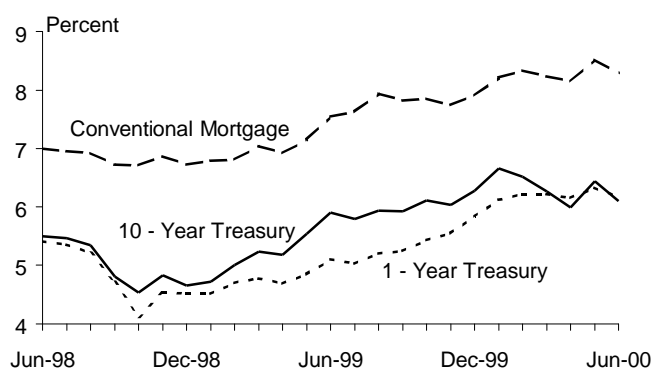
OTS regions saw their median sensitivities fall in the second quarter (see Figure 12). The Southeast Region saw its median sensitivity rise to 236 basis points, up from 226 in March. In the other regions, the West Region experienced the largest percentage decrease in median sensitivity, falling 6.1 percent in June, to a level of 215. The Northeast, Central, and Midwest Regions saw their median sensitivities fall 4.9 percent, 4.7 percent, and 2.7 percent, respectively, in the second quarter.

MORTGAGE-RELATED INTEREST INDICES

Originations of 1-4 family mortgages by thrifts rose substantially in the second quarter. Despite an upward spike in the 30-year fixed-rate mortgage rate in May, single-family originations were \$52.9 billion, up 33.1 percent from the previous quarter. An estimated 72 percent of thrift mortgage originations were adjustable-rate mortgages, down slightly from 75 percent in the first quarter. The fall in the percentage of ARM originations was caused by the relative decline in rates on fixed-rate mortgages, which increased demand for fixed-rate mortgages.

The rate on 30-year fixed-rate mortgages reached a five-year high in May at 8.52 percent, and then fell to 8.29 percent at the end of June. The sharp rise in May was associated with the 50 basis point hike in short-term rates by the Federal Reserve. As Figure 13 shows, both the 1-year and 10-year CMT interest rates, as well as the Freddie

Figure 13. Mortgage - Related Interest Rate Indices



Mac 30-year fixed-rate commitment rate for conventional mortgage loans, fell by the end of the second quarter.

While the Treasury yield curve remained inverted in June, it was less inverted than in March. In the second quarter, the spread between the 10-year CMT and the 1-year CMT was -7 basis points. In March, the spread stood at -22.7 basis points. These negative spreads indicate an inverted yield curve.

THRIFT BULLETIN 13a AND THE "S" RATING

The industry's interest rate exposure and sensitivity matrix for the second quarter is shown in Table 2. Table 3 reports results for the first quarter. Of the 997 reporting thrifts, 11.8 percent had sensitivity measures that exceeded 400, down from 13.2 percent in the previous quarter. Only 5.5 percent of thrifts had post-shock NPV ratios below 4 percent, down from 6.1 percent in March. These results show improvement in sensitivity and capital levels in the second quarter.

Based on TB 13a guidance, 55 percent of thrifts might initially be assigned a "1" rating, 23.6 percent a "2" rating, 13.1 percent a "3" rating, and 8.1 percent a "4" or a "5" rating. The percentage of thrifts with significant or high interest rate risk exposure was 21.2 percent in the second quarter, down from 22.6 percent in March.

Table 2. Post-Shock NPV Ratio and Sensitivity Measure Matrix, June 2000

	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%	106 10.6% Minimal Risk (1)	105 10.5% Minimal Risk (1)	167 16.8% Minimal Risk (1)	32 3.2% Moderate Risk (2)	410 41.1%
6% to 10%	56 5.6% Minimal Risk (1)	113 11.3% Minimal Risk (1)	189 19.0% Moderate Risk (2)	29 2.9% Significant Risk (3)	387 38.8%
4% to 6%	3 0.3% Minimal Risk (1)	14 1.4% Moderate Risk (2)	101 10.1% Significant Risk (3)	27 2.7% High Risk (4 or 5)	145 14.5%
Below 4%	0 0.0% Moderate Risk (2)	1 0.1% Significant Risk (3)	24 2.4% High Risk (4 or 5)	30 3.0% High Risk (4 or 5)	55 5.5%
Total	165 16.5%	233 23.4%	481 48.2%	118 11.8%	997 100%

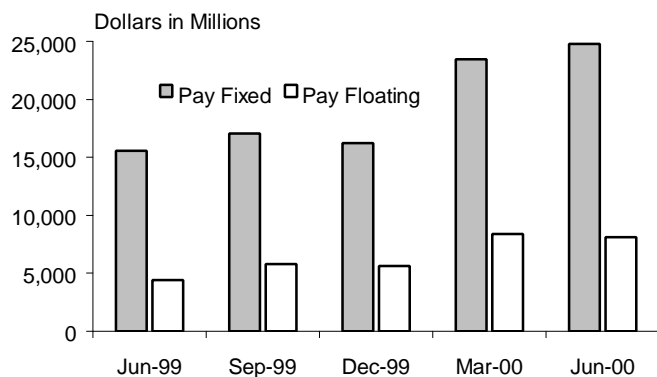
Table 3. Post-Shock NPV Ratio and Sensitivity Measure Matrix, March 2000

Post-Shock NPV	Sensitivity Measure				Total
	Under 100bp # of Thrifts (% of Total)	101-200bp # of Thrifts (% of Total)	201-400bp # of Thrifts (% of Total)	Above 400bp # of Thrifts (% of Total)	
Over 10%	106 10.5% Minimal Risk (1)	117 11.6% Minimal Risk (1)	169 16.7% Minimal Risk (1)	31 3.1% Moderate Risk (2)	423 41.8%
6% to 10%	49 4.8% Minimal Risk (1)	113 11.2% Minimal Risk (1)	183 18.1% Moderate Risk (2)	42 4.2% Significant Risk (3)	387 38.3%
4% to 6%	1 0.1% Minimal Risk (1)	15 1.5% Moderate Risk (2)	96 9.5% Significant Risk (3)	27 2.7% High Risk (4 or 5)	139 13.7%
Below 4%	0 0.0% Moderate Risk (2)	2 0.2% Significant Risk (3)	27 2.7% High Risk (4 or 5)	33 3.3% High Risk (4 or 5)	62 6.1%
Total	156 15.4%	247 24.4%	475 47.0%	133 13.2%	1011 100%

INTEREST RATE SWAPS

The special topic of this issue of the *Review* is interest rate swaps, a popular over-the-counter financial derivative. When measured by notional amount, the estimated global market size of interest rate swaps currently exceeds \$52 trillion. Given such a liquid market, it is not surprising that financial institutions use these instruments to hedge their interest rate risk. It is also not surprising that the use of swaps has increased, given the existing interest rate environment. However, the cost of hedging with swaps has increased as well, as swap spreads have responded to recent changes in both the yield curve and risk perceptions.

We examine the use of interest rate swaps with a constant sample of 950 thrifts from June 1999 to June 2000. Several stylized facts emerge from the

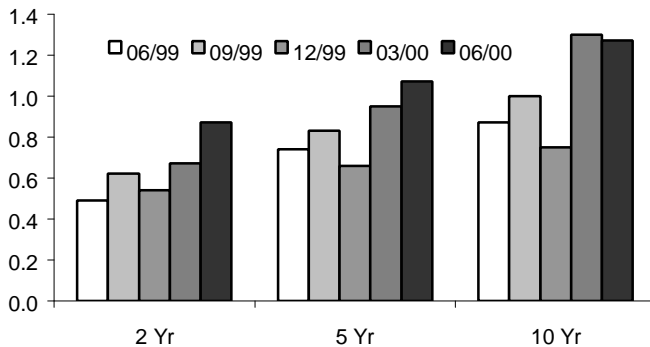
Figure 14. Notional Amount of Swaps

analysis. First, large thrifts were the primary owners of swaps. While fixed-rate payers were only about 3 percent of the total number of thrifts during the sample period, these institutions accounted for approximately 36 percent of industry assets. Floating-rate payers were approximately 1 percent of the total number of thrifts, and accounted for 23 percent to 33 percent of industry assets. Second, savings institutions were largely fixed-rate payers, consistent with the hedging objectives of thrifts. As they tend to have a positive duration gap, the typical thrift will benefit from the reduction in risk to rising rates afforded to the fixed payer. As a result, aggregate fixed-rate positions represented approximately three times the floating-pay positions when measured by outstanding notional value. Thus, hedging with interest rate swaps was typically executed by large thrifts using fixed-pay contracts.

The use of interest rate swaps increased dramatically during the March 2000 quarter, and moderately during the June 2000 quarter. The uncertain interest rate environment likely led some institutions to increase their hedge against rising rates, while other floating-rate payers offset existing contracts. In March 2000, the notional amount of fixed-rate payer and floating-rate payer swaps increased by \$7.2 and \$2.8 billion, respectively. This represented a quarterly growth of 44 percent in fixed payer positions and 49 percent in floating-payer positions. In June 2000, only fixed-rate payer usage increased, whereas floating-rate payer usage declined slightly. In general, the overall increase reflects the increased demand for swaps by thrifts already using these derivatives rather than new institutions entering the swaps market.

The increased use of swaps during the first quarter of 2000 occurred during a period when interest rate swaps were becoming more expensive. Fixed-rate positions are quoted at a spread to Treasuries. As with any financial instrument, swap spreads are determined by supply and demand. These spreads widened substantially over the past year. The quarter-end spreads from June 1999 to June 2000 are shown in Figure 15. Swap

**Figure 15. Quarter End Swap Spreads
(Swap vs. Active Treasury)**



spreads peaked in May of this year, with five-year and ten-year spreads exceeding 110 basis points and 140 basis points, respectively.

Although spreads have narrowed as upward pressure on interest rates has eased somewhat, there are other market pressures that will likely prevent spreads from returning to the lower levels of 1999. Due to an overall increase in the level of Treasury rates over the past year, the demand for fixed-rate payer versus floating-rate payer increased. Additional pressure on spreads was exerted by the inverted Treasury yield curve that has also prevailed for much of 2000. An inverted yield curve increased the risk of paying a floating rate and contributed significantly to increased spreads.

Other market events that affected corporate and agency bond spreads also affected swap pricing. In particular, media attention during the first half of 2000 on government-sponsored entities (GSEs) increased the market's perception of risk, resulting in sharply increased yields on GSE bonds. As a result, swap spreads widened for the quarters ending March and June 2000, as compared with the prior year. Thus, factors that affected bond markets also significantly influenced the swap markets and put pressure on swap spreads.

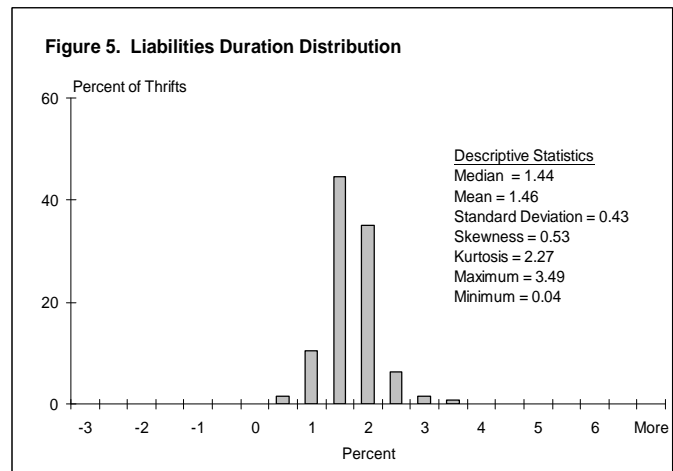
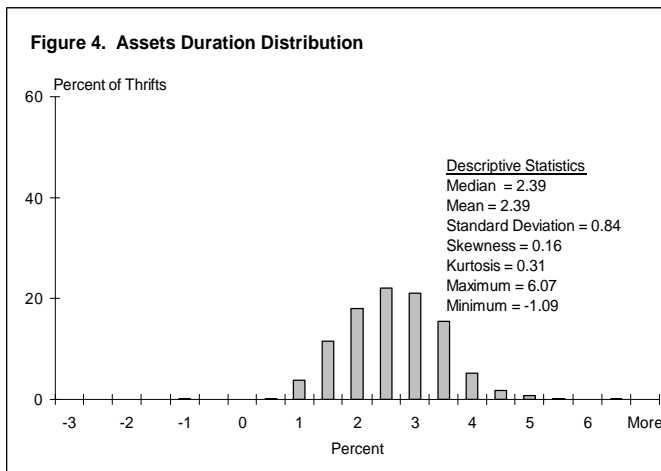
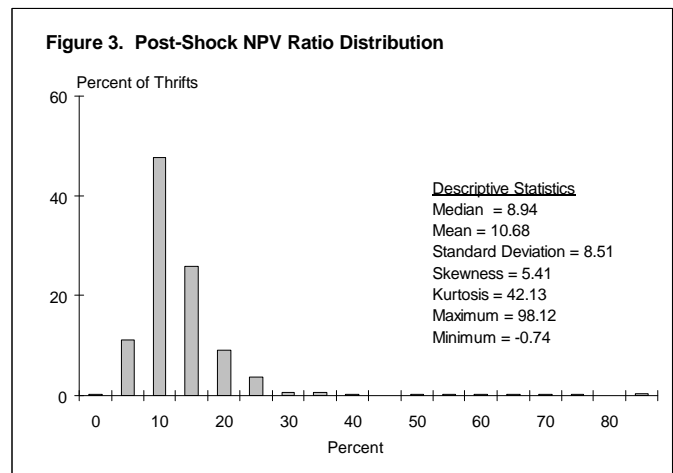
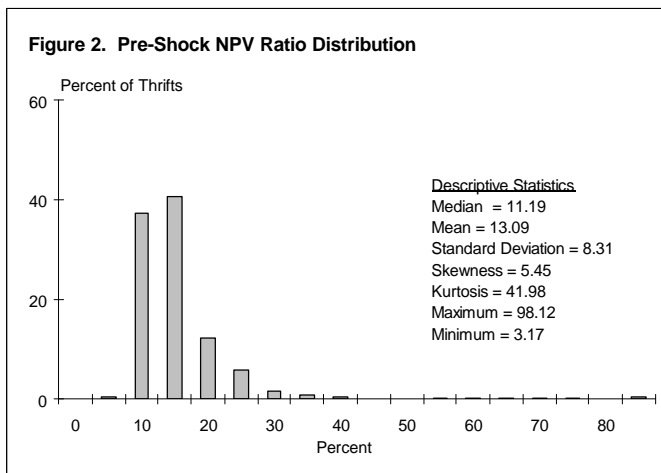
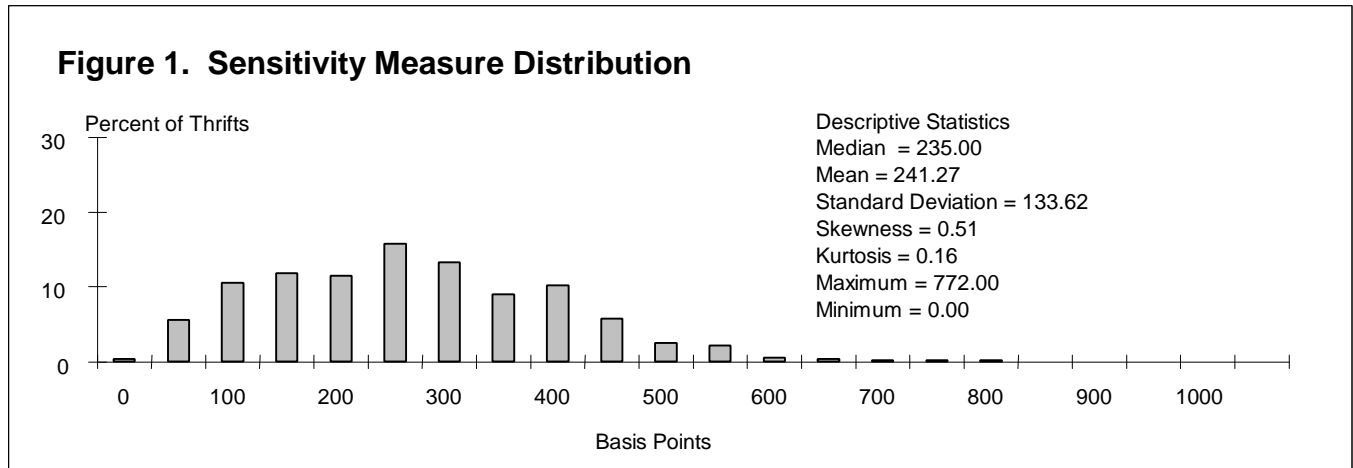
In sum, interest rate swaps provided an important vehicle for managing interest rate risk on the part of thrifts. However, the use of swaps will probably not extend to smaller thrifts in the near

future. High transaction costs for smaller institutions serve as barriers to entry for such institutions.[♦] Thrifts will likely continue to have a strong demand for these over-the-counter derivatives, given an interest rate environment that is generally unfavorable. And, market forces will likely continue to keep swap spreads high in the foreseeable future.

[♦] Hogan and Malmquist argue in *"The Barriers to Depository Uses of Derivatives: An Empirical Analysis"* that swap transaction costs are prohibitive for smaller institutions as only large institutions have access to dealers offering low transaction costs. (Journal of Multinational Financial Management, 1999, Volume 9)

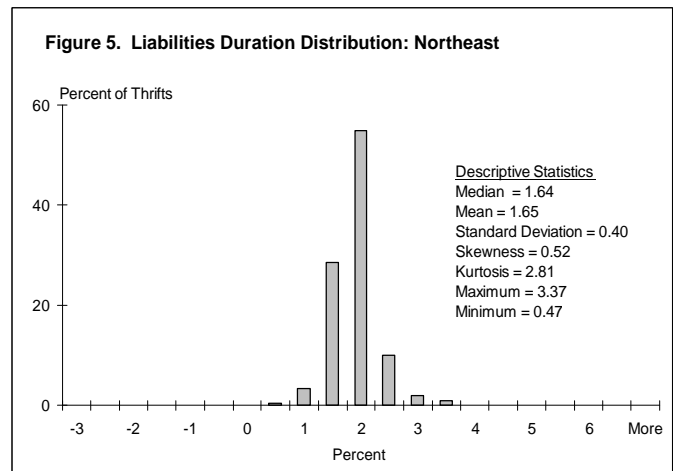
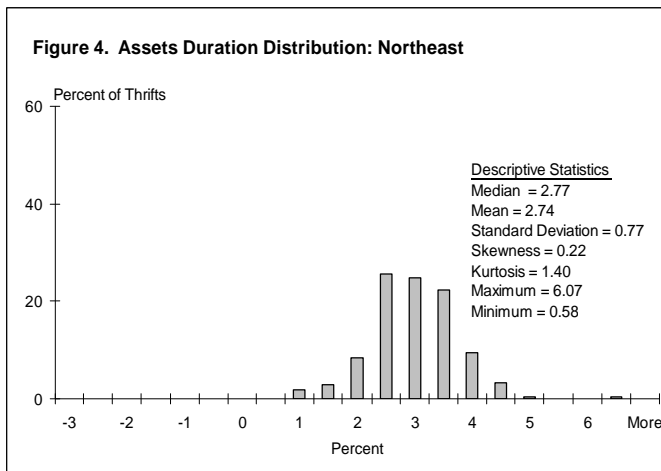
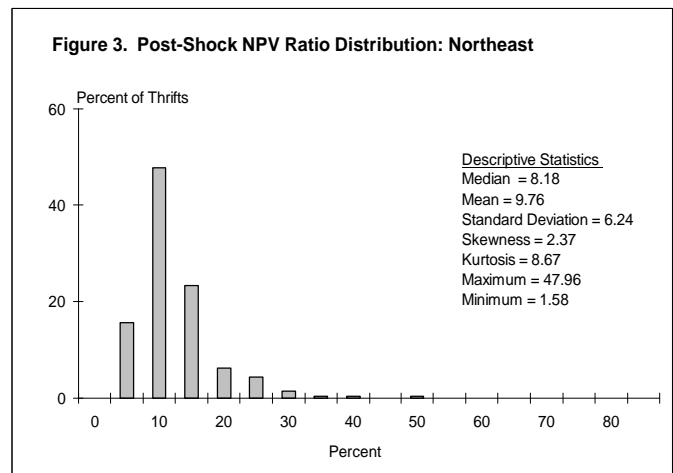
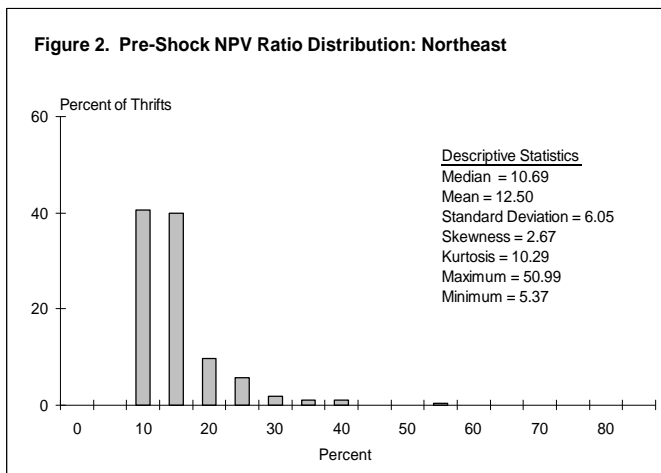
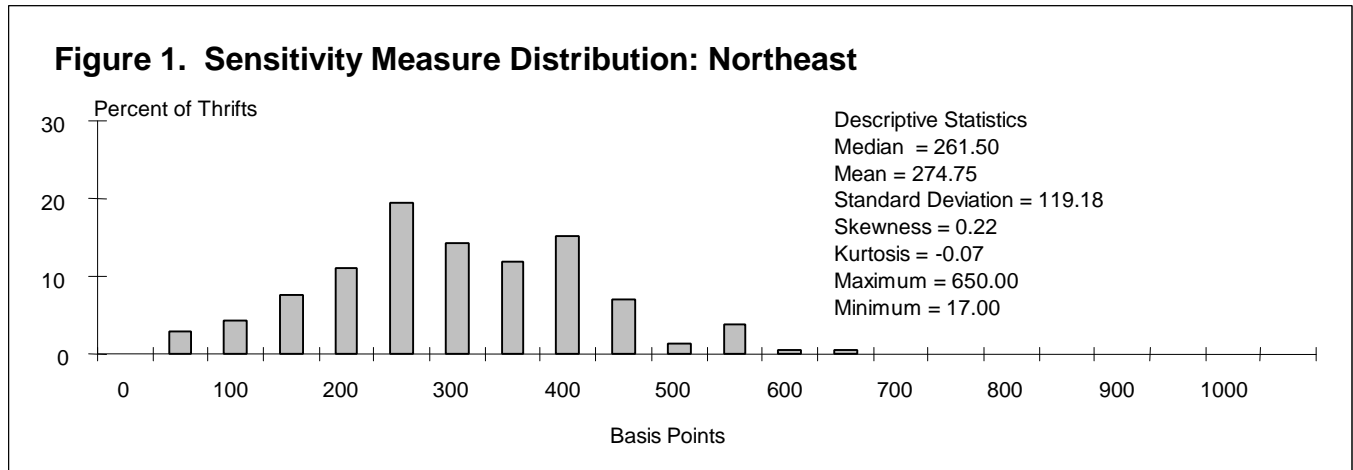
Appendix A (All Thrifts)

This appendix presents distributions for sensitivity, pre-shock and post-shock NPV ratios, and assets and liabilities duration for all reporting thrifts at second quarter end 2000. Also included in each figure are descriptive statistics.



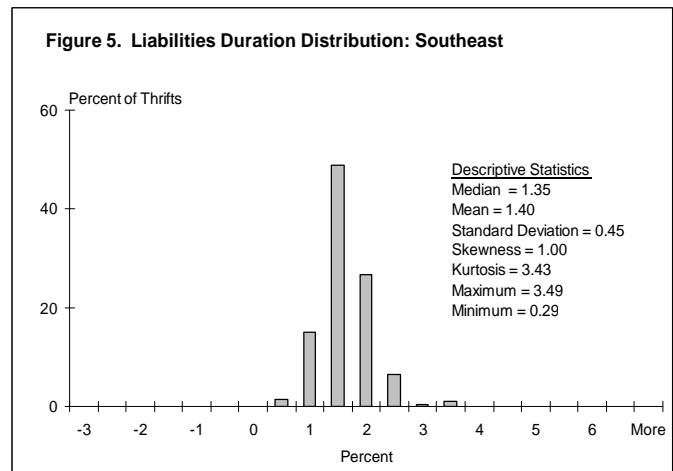
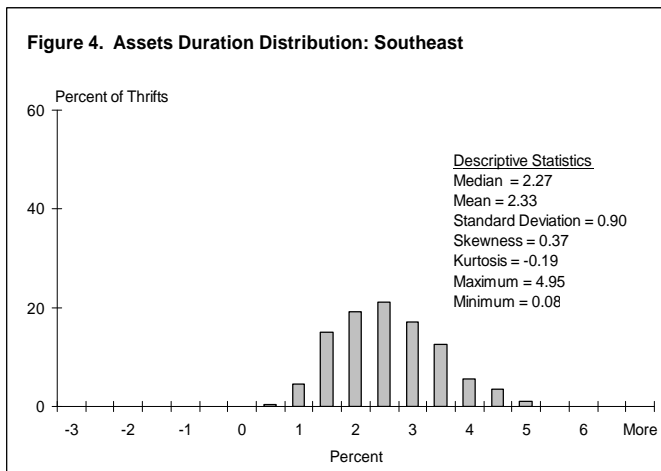
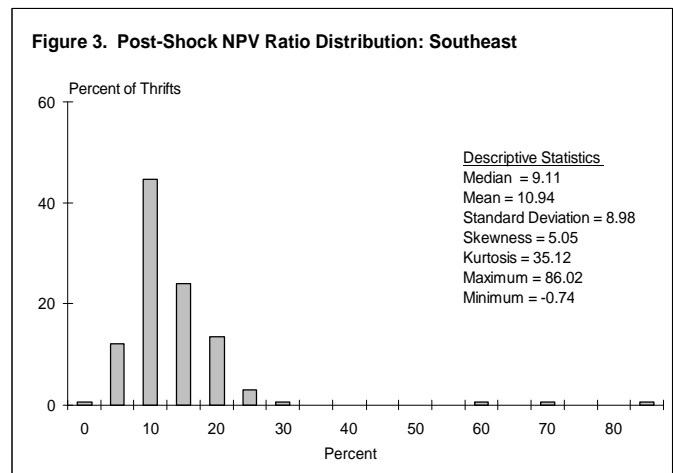
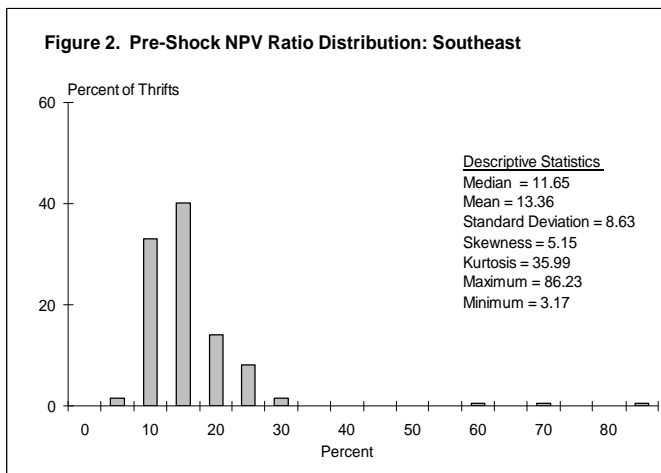
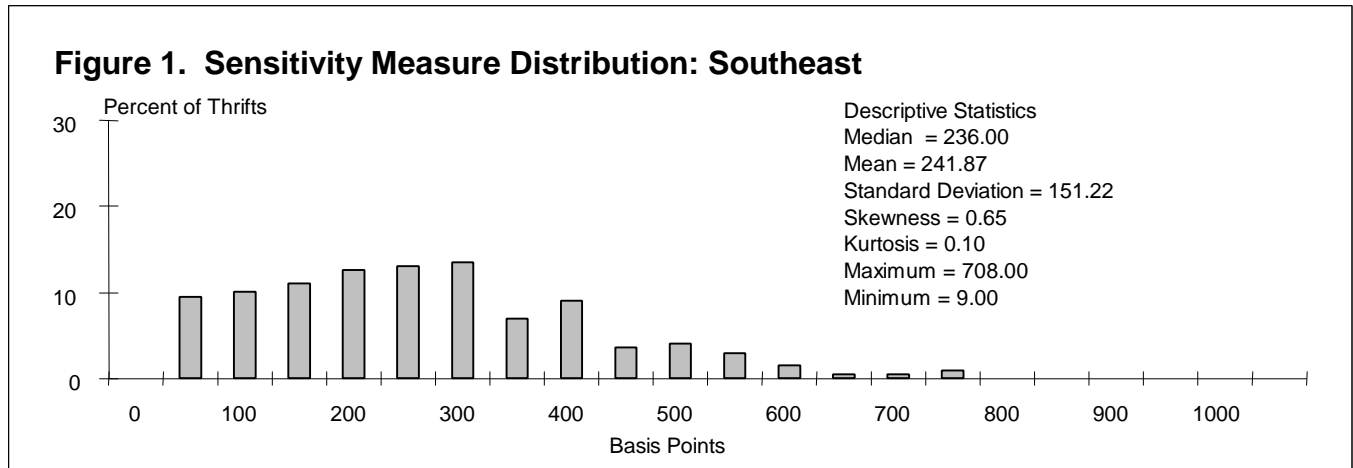
Appendix B 1 (Northeast Region)

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 second quarter end 2000. Also included in each figure are descriptive statistics.



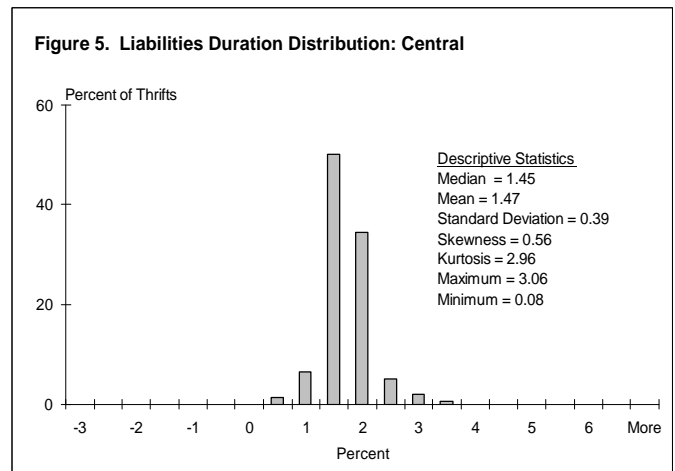
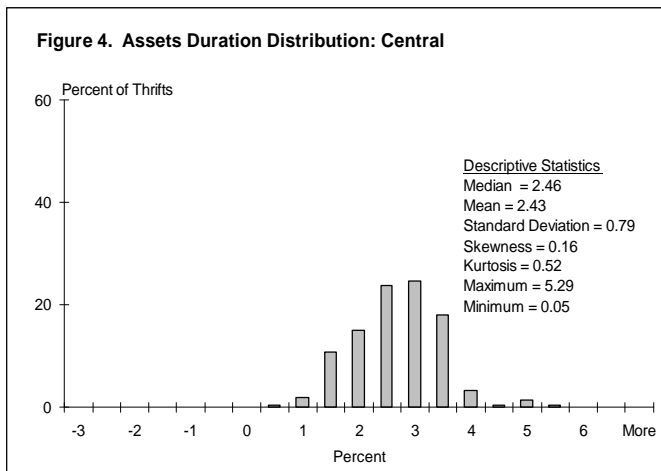
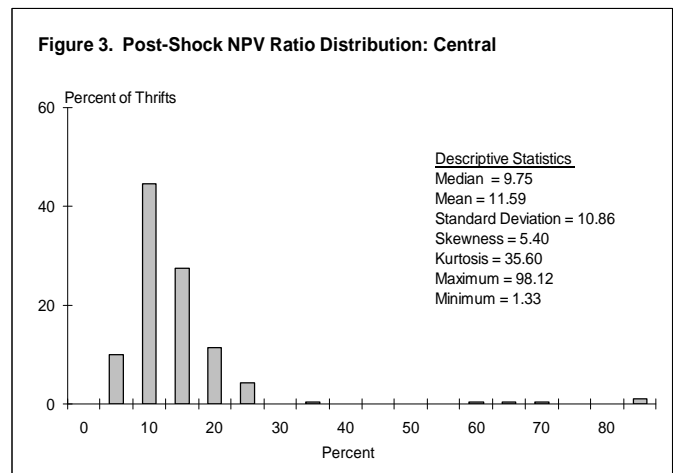
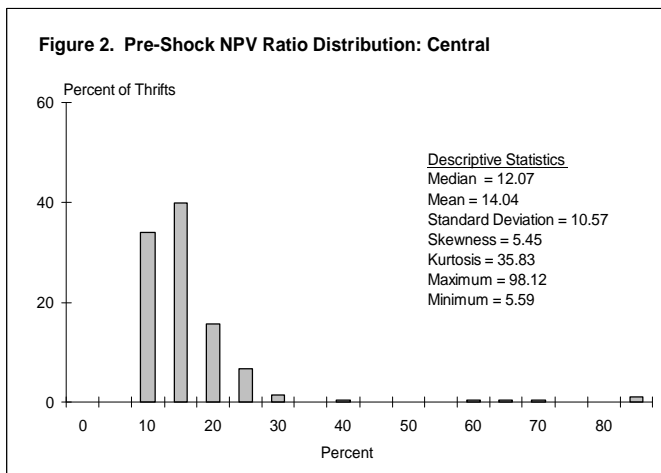
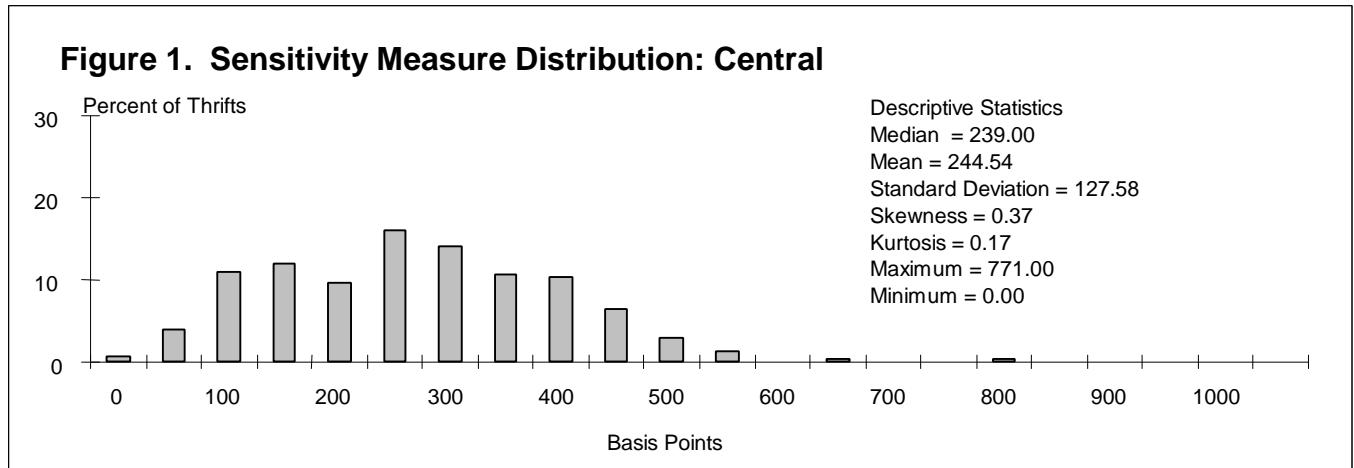
Appendix B 2 (Southeast Region)

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 second quarter end 2000. Also included in each figure are descriptive statistics.



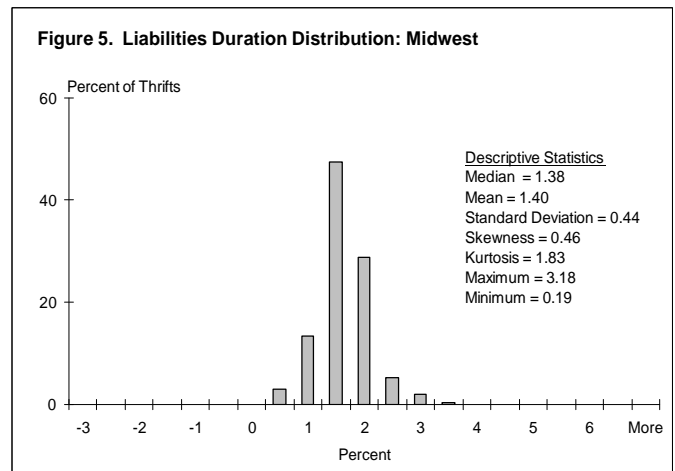
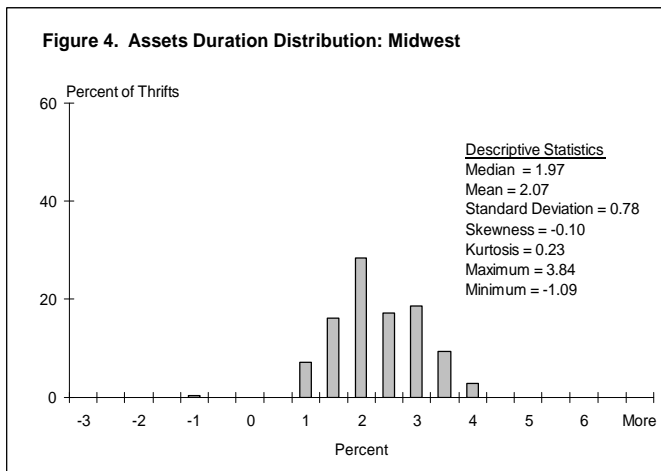
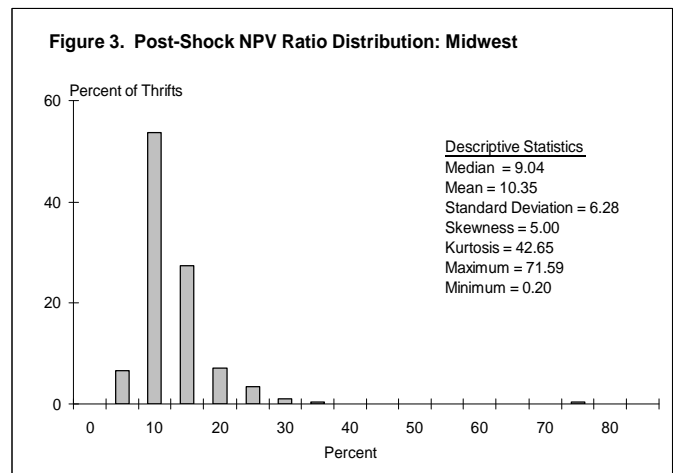
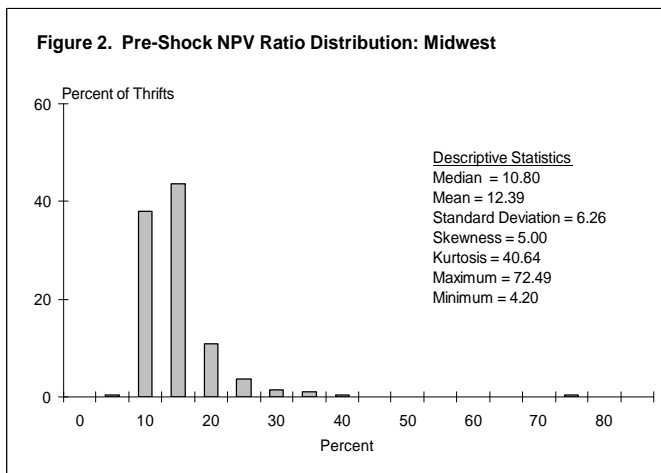
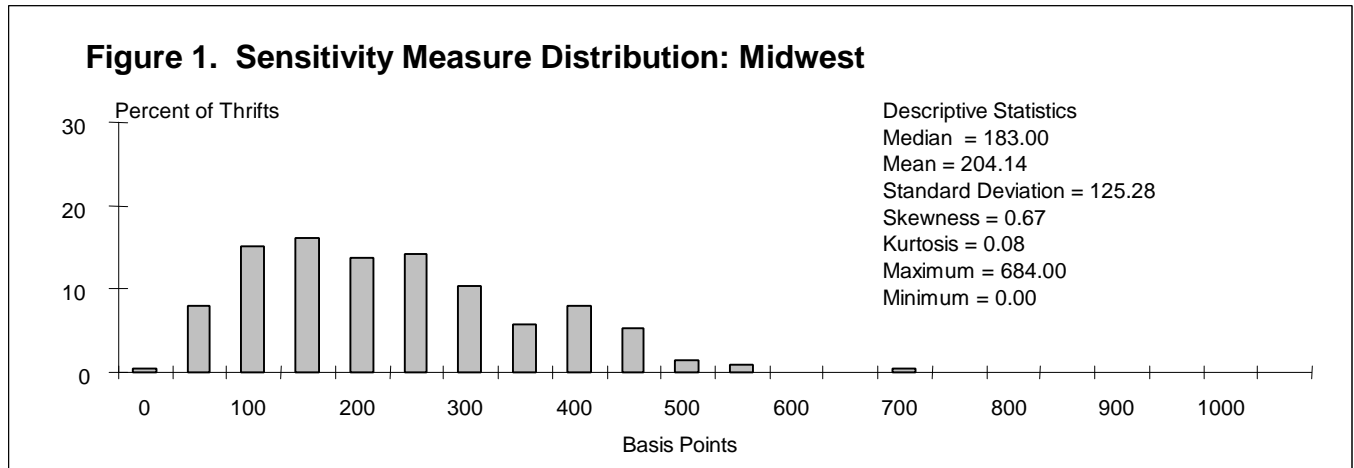
Appendix B 3 (Central Region)

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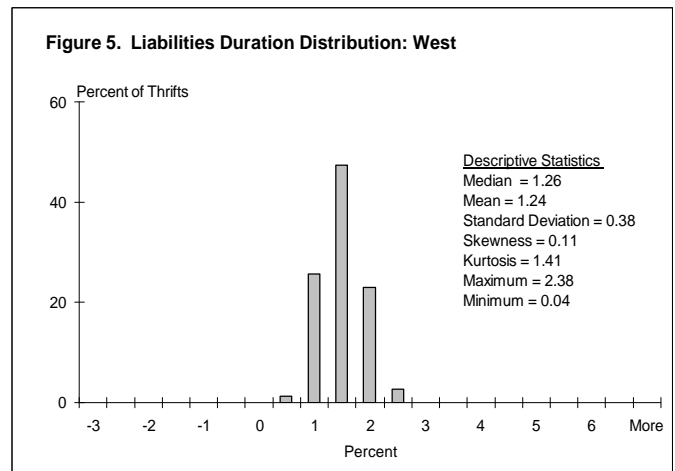
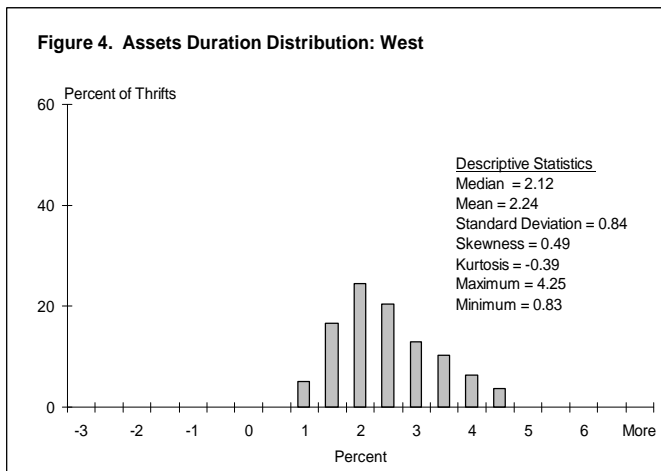
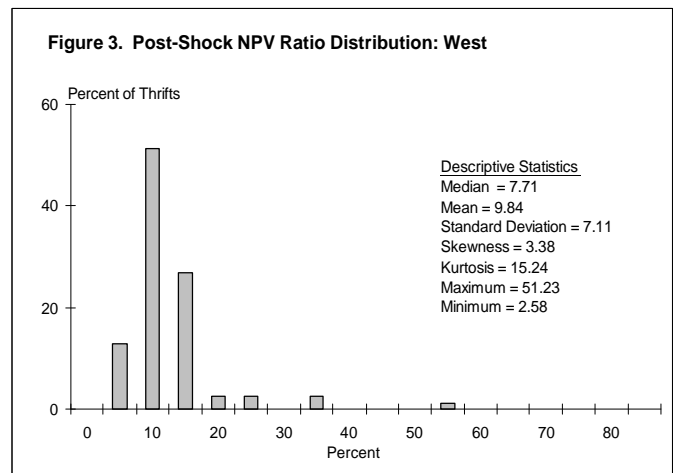
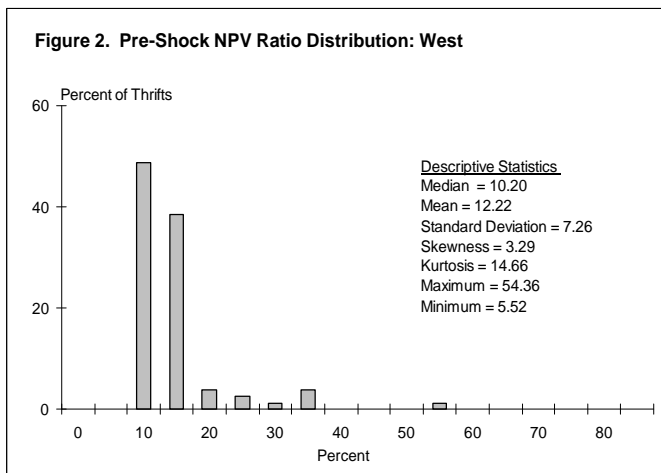
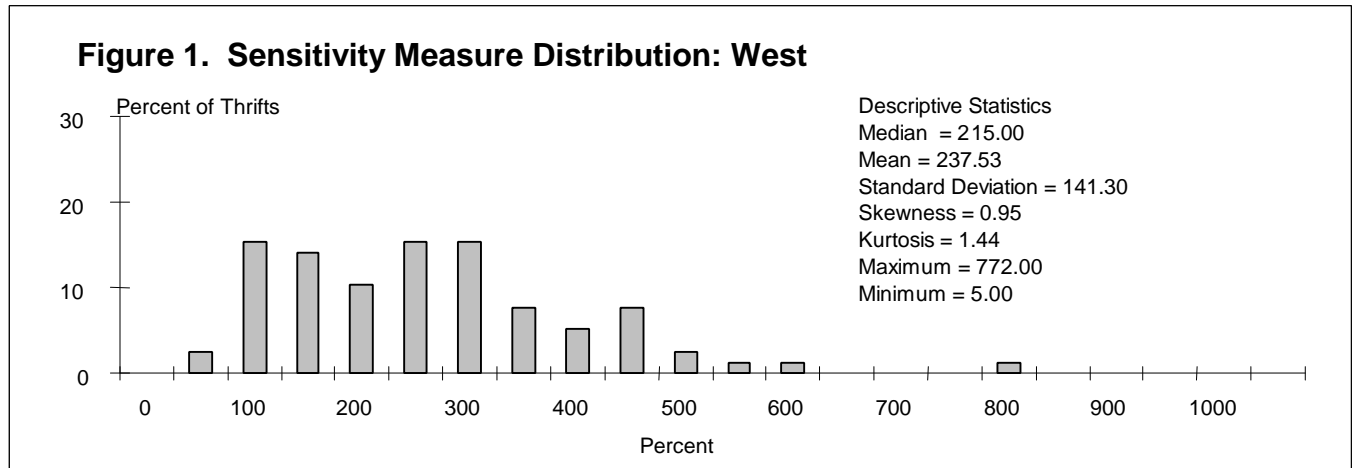
Appendix B 4 (Midwest Region)

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 second quarter end 2000. 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 second quarter end 2000. 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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