

The Quarterly Review Of Interest Rate Risk



Risk Management Division,
Office of Thrift Supervision

Sensitivity Shows Modest Decrease

Thrift industry interest rate sensitivity fell modestly in the third quarter, as long-term interest rates declined and short-term interest rates rose.

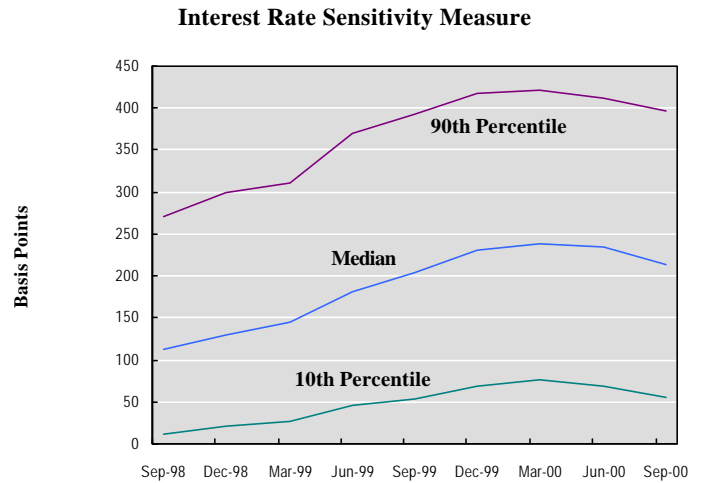
Median thrift sensitivity fell to 213 basis points, down from 234 basis points in June, the second straight quarterly decline.

The median pre-shock NPV ratio fell while the post-shock NPV ratio rose in the third quarter. Capital ratios remained strong.

The number of thrifts with "significant or high interest rate risk," as defined in TB 13a, declined

Special points of interest:

- Interest rate sensitivity decreases
- Yield curve inverts
- Discussion of non-maturity deposit valuation
- NPV increases
- 30-year mortgage rate falls
- NPV Model Changes for ARMs



for the third consecutive quarter.

Valuing Non-Maturity Deposits

One of the most contentious issues in measuring interest rate risk is the valuation of non-maturity deposits, such as passbook accounts, money market deposit accounts, NOW accounts, and non-interest bearing demand deposits, in a rising interest rate environment.

From an institution's point of view, non-maturity deposits typically appreciate in value when market interest rates rise, partially or even fully offsetting the depreciation in the value of its fixed-rate assets.

To understand how (and how much) non-maturity deposits can ap-

preciate in value in a rising interest rate environment, it is useful to examine more closely the factors that affect their behavior.

Non-maturity deposits have two interesting embedded options. The first is that an institution can change the interest rate it pays on such deposits whenever it wants. The second is that the depositors can withdraw their money whenever they want.

The institution's goal is simple - minimize its cost of funds. It can do so by paying a below-market rate of interest on its non-maturity deposits. How-

ever, the implementation of this objective is not so simple.

Different depositors react differently to a gap in interest rates between what the institution pays and what they might earn elsewhere.

For some of its accounts, an institution runs a risk that depositors will take their funds elsewhere if it doesn't raise the rate it pays to match (or nearly match) the rising interest rates on the alternatives available to the depositor.

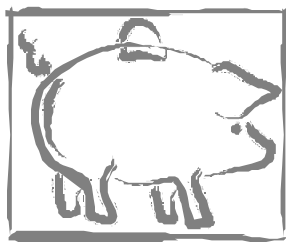
For other accounts, the institution runs little risk of runoff because the de-

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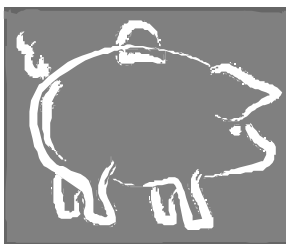
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Valuing Non-Maturity Deposits (continued)



“OTS expects institutions to consider both economic and demographic factors”



(Continued from page 1)

positor is more concerned with service and convenience than with the amount of interest lost by not going elsewhere.

The depositors' goal is also simple – maximize the benefits from their investment while minimizing their costs. Each depositor faces the decision to stay or move as interest rates on alternatives rise relative to the currently paid rate.

The costs they face include search costs (what are the alternatives available, and are they as convenient and as competitive), and transaction costs, including the time and expense of setting up a new account and closing an old one, changing direct deposit information, and establishing a new banking relationship.

These costs must be balanced against lost interest income, if the institution does not raise its rates. Moreover, the depositor must determine whether the gap in interest rates is likely to be permanent or just temporary.

The factors influencing the decisions of individual depositors are difficult to ascertain. However, they are often associated with observable factors, such as the extent of local competition, geographic location of the institution and its branches, and the demographic characteristics of the depositor base, among others.

It should be clear that the reaction of non-maturity depositors to gaps in interest rates varies not only from institution to institution at the same point in time, but also, within an

institution, at different points in time.

For example, technological improvements can make additional and more attractive alternatives available to the depositors at lower costs, increasing their sensitivity to gaps in interest rates. As a result, historical patterns of interest rate sensitivity may no longer accurately forecast future behavior.

Some institutions approach the valuation of non-maturity deposits by first separating interest rate-sensitive deposits from non-rate sensitive deposits. They attempt to observe the movement of funds in and out of different types of deposit accounts through different interest rate environments, taking into account the gap between what they pay in interest and services and what their competition is paying as the determining factor.

Approaching it this way, an institution might determine that most of its non-interest bearing accounts show little, if any, sensitivity to gaps in interest rates, while its money market funds are very sensitive to differences. But even here, the sensitivity may vary by the level of account balance and the level and direction of market rates.

Interest rate sensitive deposits have short durations. They reprice quickly in rising rate environments because the funds will flow out if the institution does not respond.

But even rate sensitive depositors wait for a while when market rates move, trying to ascertain whether the differences will last

long enough to make the change worthwhile.

Non-rate sensitive non-maturity depositors do not leave because of differences in interest rates. Nevertheless, they eventually will leave for some other reason, such as relocation, funding a college education, or death.

In the meantime, few new depositors will be attracted if the deposit accounts pay a below market rate.

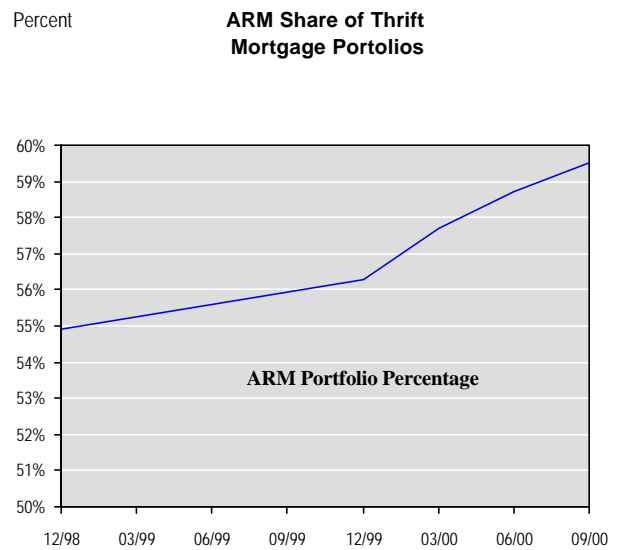
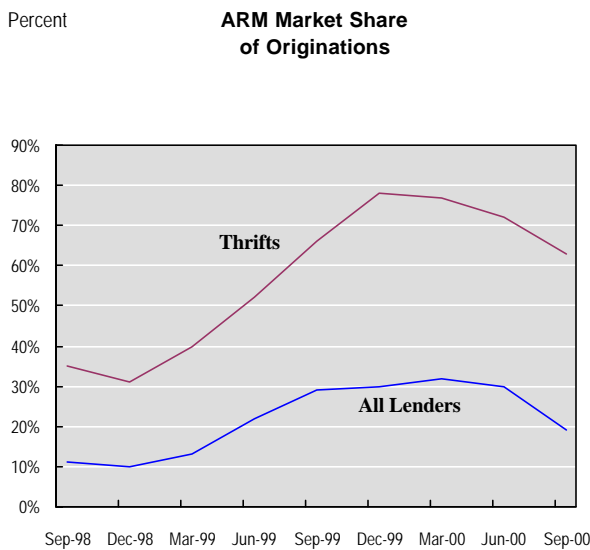
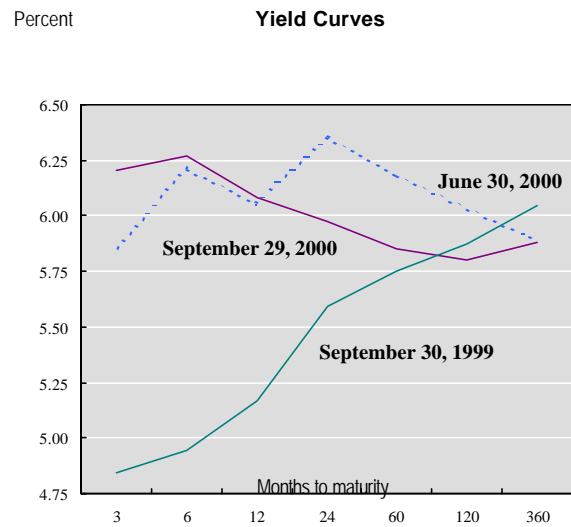
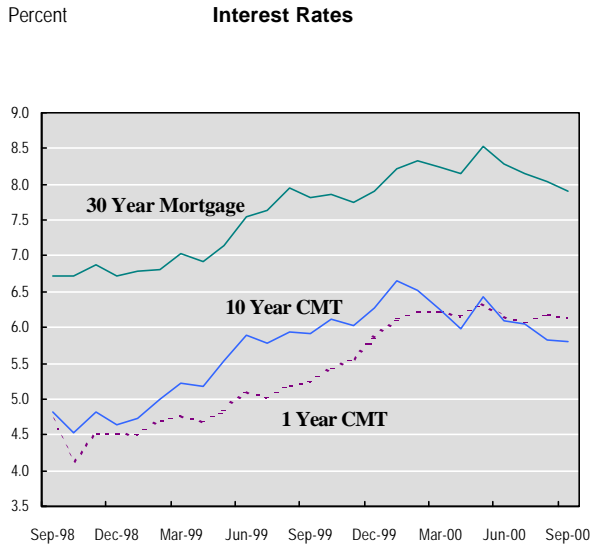
The speed at which these funds leave the institution can be estimated. The estimated decay rate (or its inverse, the retention rate) is commonly used by institutions to spread out current non-rate sensitive deposits over time. For example, 20 percent of the account balances might be estimated to leave each year, until the original balances are depleted.

In managing their interest rate risk, OTS expects institutions to consider both economic and demographic factors when assessing how much of a balance sheet hedge non-maturity deposits provide.

Management should consider not only the historical performance of these deposits, but also how increased competition, technological innovations, and changing demographics may affect their future performance.

Because of the dynamism of our financial markets, institutions should exercise caution in extrapolating the historical experience of their non-maturity accounts, as they grapple with this admittedly difficult valuation challenge.

Interest Rates and ARM Market Share



Long-term interest rates fell, while short-term rates rose in the third quarter. The 30-year mortgage rate fell to its lowest level since November 1999.

Consistent with a more inverted Treasury yield curve, the gap between the 1-year CMT and 10-year CMT increased in the third quarter.

With the increase in short-term rates relative to long-term rates, ARM originations by thrifts fell. Although thrifts' ARM originations fell, the portfolio share of ARM holdings in their mortgage

portfolios rose.

Third-quarter 1-4 family mortgage originations by thrifts were \$53.2 billion, up from \$52.9 billion in the second quarter.

Thrifts' share of all 1-4 family originations was 18.6 percent of total 1-4 family originations in the third quarter, down from 19.2 percent in the second quarter.

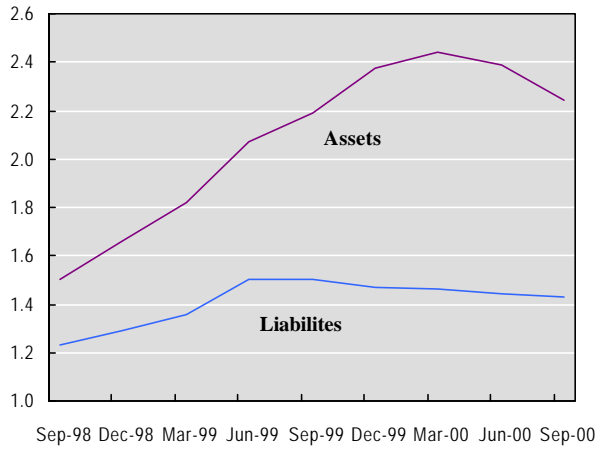
Refinancing activity of all mortgages accounted for 9 percent of thrift originations in the third quarter, up from 8.7 percent in the second quarter. Overall, the pace of refinancing activity has in-

creased recently as long-term interest rates declined.

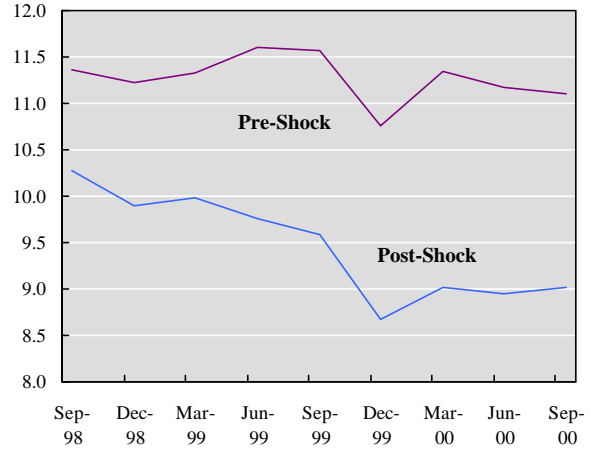
Greater inversion in the yield curve put more pressure on already tight net interest margins. Net interest margin for the thrift industry was 259 basis points in the third quarter, down from 265 basis points in the previous quarter. The third-quarter level represents the smallest net interest margin since December 1991, when it stood at 251 basis points. Margin compression is likely to persist as long as the yield curve remains inverted.

Duration and NPV Sensitivity Measures

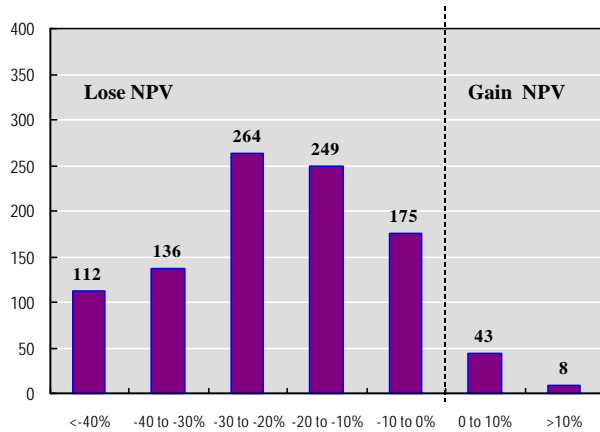
Duration **Median Duration of Assets & Liabilities**



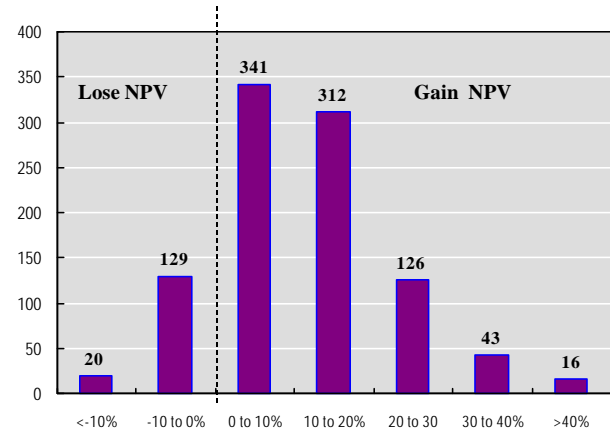
Percent **Median Pre- and Post-Shock NPV Ratios**



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



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



Median assets duration for the industry fell from 2.4 to 2.2 between the second and third quarters, as thrifts increased the proportion of ARMs held in their mortgage portfolios and the NPV model's valuation assumptions for them changed as well. (See story on page 6.) Median liabilities duration remain essentially unchanged.

The median pre-shock NPV ratio for the industry fell from 11.2 percent to 11.1 percent between the second and third quarters.

However, the median post-

shock NPV ratio rose to just over 9 percent in the third quarter, consistent with the decrease in median sensitivity for the industry.

The post-shock NPV ratio rose as a result of lower long-term interest rates and shorter asset durations in the third quarter.

In the third quarter, a 200 basis point increase in rates would result in a loss in net portfolio value for 936 thrifts, while 51 thrifts would see their net portfolio value rise.

If rates fell by 200 basis

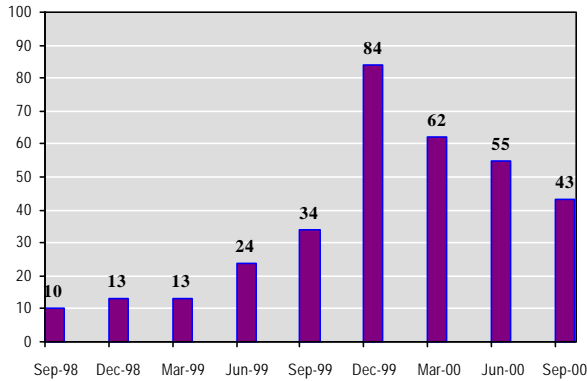
points, 838 thrifts would see their net portfolio values rise, while 149 thrifts would see a decrease in their portfolio value.

Third-quarter earnings stood at \$1.9 billion, down slightly from \$2.0 billion in the second quarter.

The new SFAS 133 accounting rule for derivatives had a modest negative effect on thrifts' earnings in the third quarter, although the accounting rule change will affect more thrifts in the next several quarters.

Interest Rate Risk Measures

Number Thrifts with Post-Shock NPV Ratios Under 4 Percent



Interest Rate Risk Measures Industry Aggregates Last Two Quarters

	Ratio of NPV to Assets		% Change	
	Jun-00	Sep-00	Jun-00	Sep-00
+300	4.7	5.3	-48%	-43%
+200	6.2	6.7	-30%	-27%
+100	7.4	7.8	-14%	-12%
Base	8.5	8.7	0	0
-100	9.2	9.3	10%	+8%
-200	9.4	9.5	13%	+10%
-300	9.5	9.7	16%	+14%

Post-Shock NPV Ratio and Sensitivity Measure Matrix June 2000

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
Over 10%	106	105	167	32	410
6% to 10%	56	113	189	29	387
4% to 6%	3	14	101	27	145
Below 4%	0	1	24	30	55
Total	165	233	481	118	997

Minimal Moderate Significant High

Post-Shock NPV Ratio and Sensitivity Measure Matrix September 2000

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
Over 10%	118	108	168	28	422
6% to 10%	87	130	162	25	404
4% to 6%	2	28	73	18	121
Below 4%	0	1	23	19	43
Total	207	267	426	90	990

Minimal Moderate Significant High

The number of thrifts with a post-shock NPV ratio below 4 percent fell to 43. This represents the third consecutive quarterly fall in the number of thrifts that are highly exposed to fluctuations in interest rates.

With a 200 basis point increase in interest rates, the thrift industry would lose 27 percent of its net portfolio value. This net portfolio loss is down from 30 percent in the previous quarter.

The number of thrifts with a

post-shock NPV ratio over 6 percent increased between the second and third quarters. In the third quarter, the number of such thrifts was 826 compared to 797 in the second quarter.

The number of thrifts with a post-shock NPV ratio below 6 percent fell to 164 in the third quarter, down from 200 in the previous quarter. Besides better capital ratios, thrifts also displayed improvements in interest rate sensitivity.

The number of thrifts with a

sensitivity of 200 basis points or less increased to 474 in the third quarter, up sharply from 398 in the second quarter. Also, the number of thrifts with a sensitivity over 400 basis points fell to 90 in the third quarter, down from 118 in the previous quarter.

As a result of better capital ratios and lower sensitivity, the number of thrifts with high interest rate risk exposure fell from 81 to 60 between the second and third quarters.

Model Changes to Reflect Popularity of Hybrid ARMs

Effective with the September 2000 results, OTS has changed the way the Net Portfolio Value model treats balances reported on Schedule CMR in lines CMR143 and CMR158.

These lines are used to report adjustable rate, single family, first mortgages tied to a current market index and having a coupon reset frequency of "2 Years to 5 Years".

In the past, the model has assumed that those balances were best represented by ARMs tied to the 3-year Treasury yield and having an interest rate that reset every 3 years.

Because of market changes, as of the September 2000 quarter, the model will assume that those balances are best represented by ARMs tied to the 3-year Treasury yield and having an interest rate that resets annually based on the 1-year Treasury yield.

Such hybrid ARMs appear to be the predominant type of mortgage

product being reported on those lines of Schedule CMR, so OTS believes this assumption will produce valuations and measures of price sensitivity that are more representative of the true characteristics of the mortgages being reported.

Generally, this treatment will result in somewhat lower price sensitivity for such mortgages and a slightly lower base case value, though the extent of such changes will depend on the specific characteristics (i.e., coupons, margins, and rate caps) reported by the institution.

The impact of this modification on an institution's overall measured level of interest rate risk is generally quite small, but favorable. The actual impact will depend on the magnitude of an institution's holdings of such ARMs and their specific characteristics. The tables presented here summarize the range of results that may be expected.

Price Sensitivity		
If Reported Balances are Treated as:		
	Hybrid ARMs	3/3 ARMs
95 th Percentile	2.99	3.28
75 th Percentile	2.50	2.78
Median	2.11	2.33
25 th Percentile	1.68	1.83
5 th Percentile	0.91	1.16

Valuation		
If Reported Balances are Treated as:		
	Hybrid ARMs	3/3 ARMs
95 th Percentile	101.54	101.65
75 th Percentile	99.50	99.57
Median	98.30	98.39
25 th Percentile	97.35	97.39
5 th Percentile	95.80	95.76



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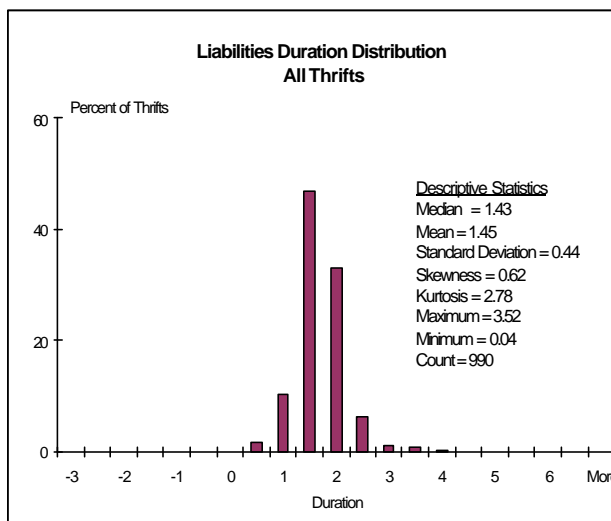
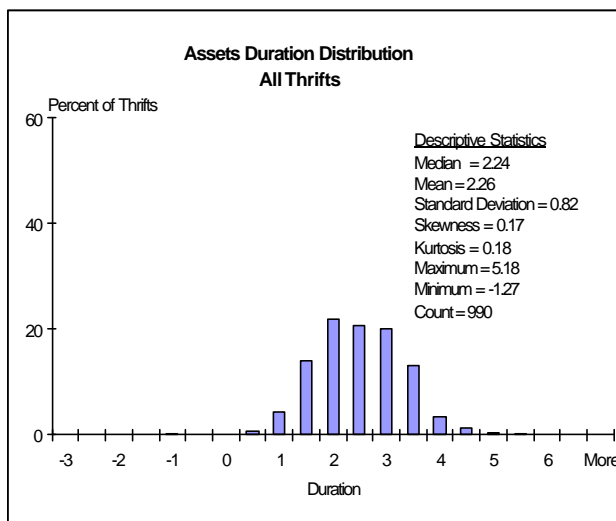
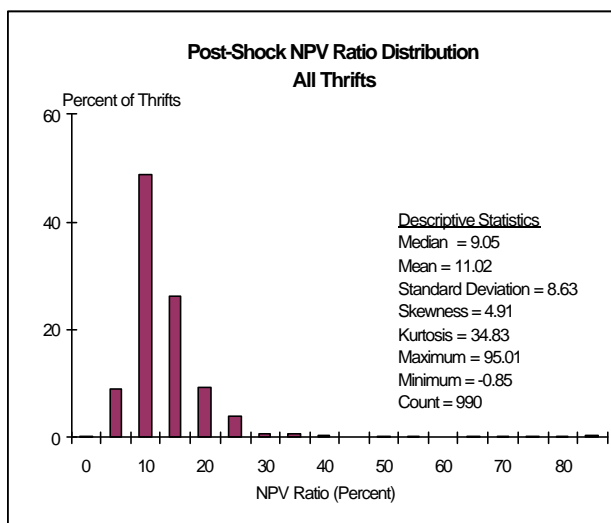
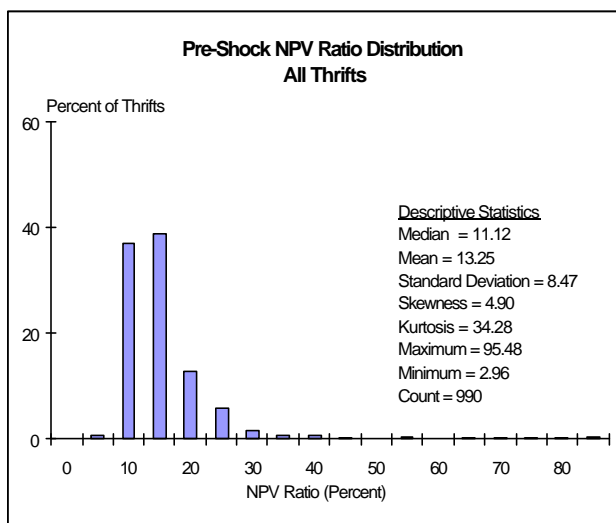
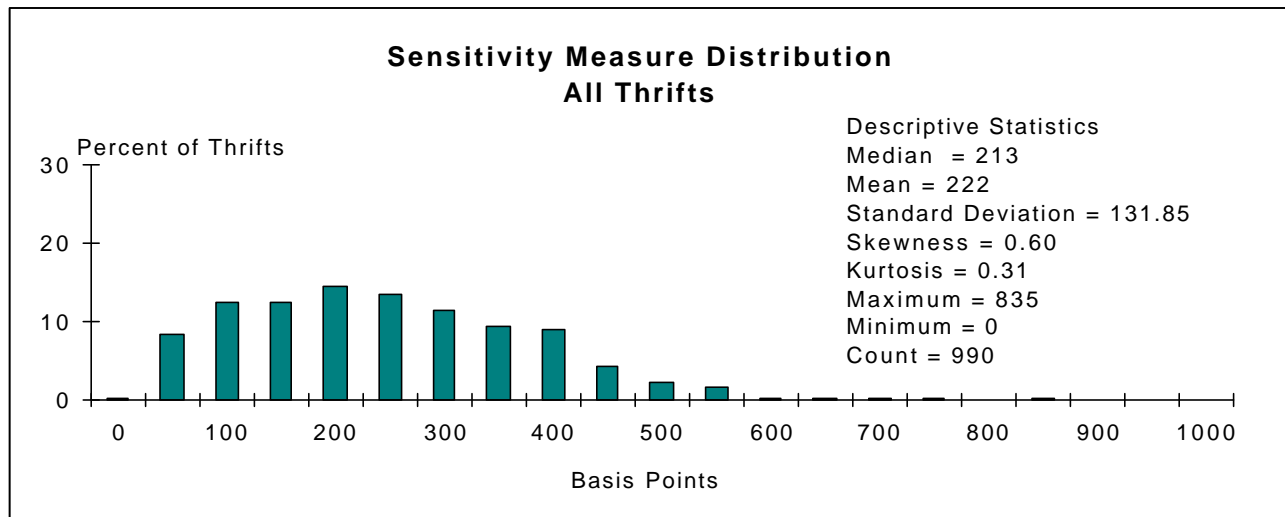
Net Portfolio Value Model

OTS developed the NPV Model to monitor the interest rate risk exposure of savings associations. The model measures risk exposure by estimating how hypothetical changes in market interest rates will affect the estimated market value of an institution's assets, liabilities, and off-balance sheet contracts. On a quarterly basis, OTS measures each institution's exposure under seven different interest rate scenarios. The results of the model are used to produce institution-specific *Exposure Reports*, which are provided to thrift institutions to use as a management tool.

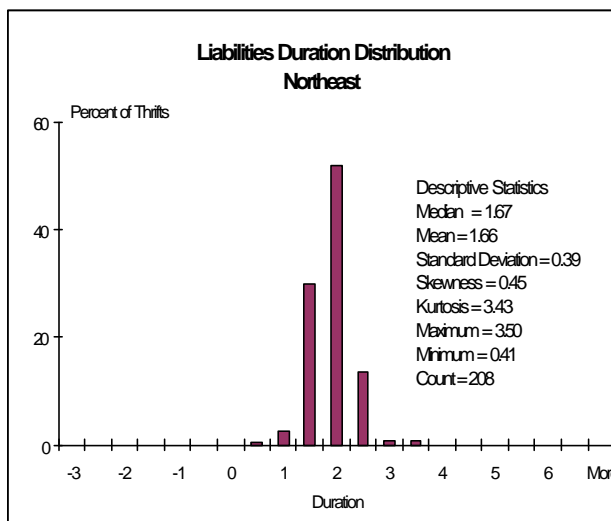
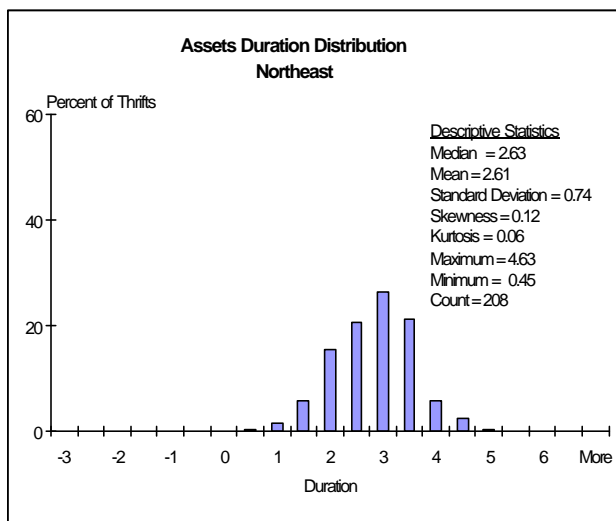
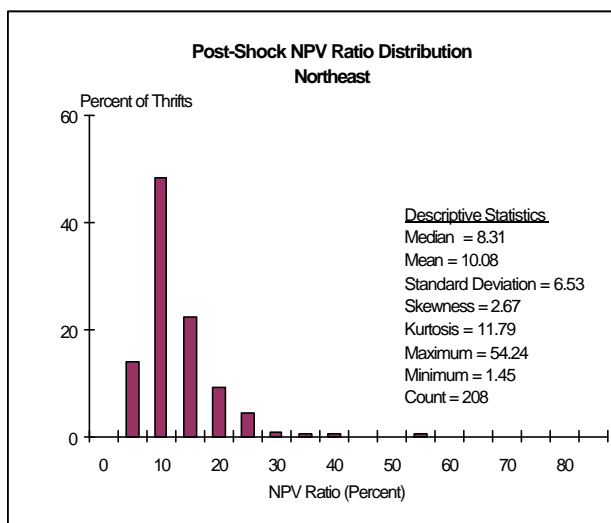
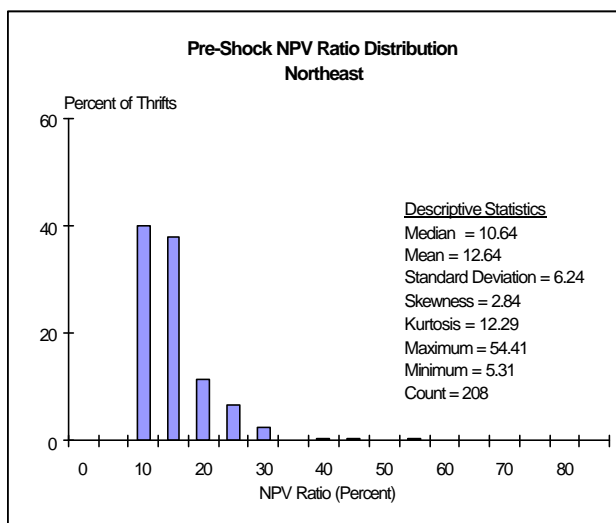
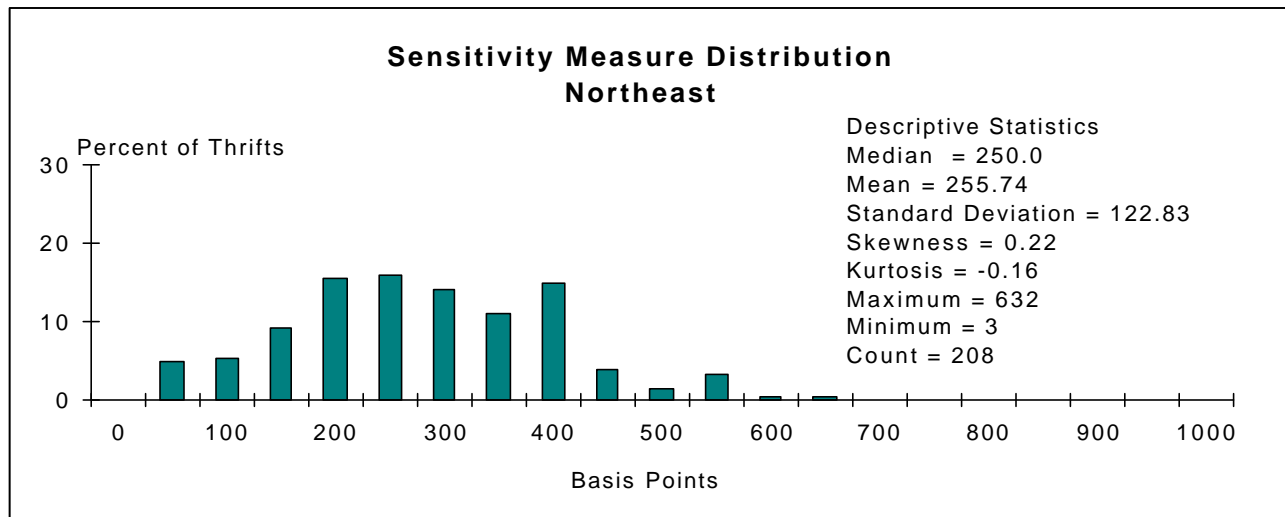
The NPV Model was developed in 1991, and then upgraded in 1994. The NPV model has been well received by the academic community and was recognized by the Innovations in Government Award, sponsored by Harvard University and the Ford Foundation. The staff is currently working on significant improvements to the model and overhauling the software system, both of which should be completed in late 2001.

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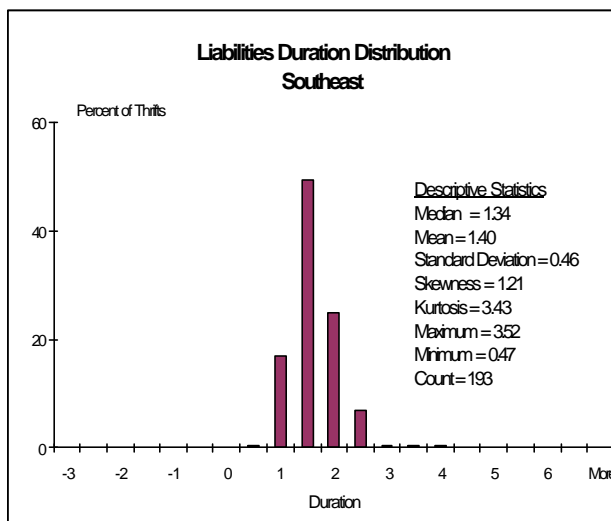
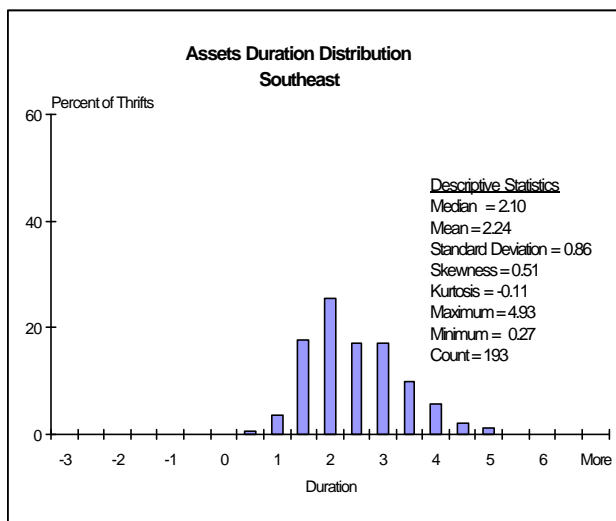
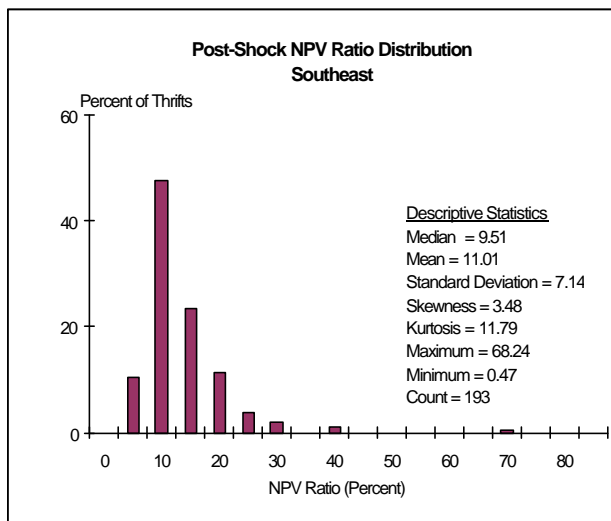
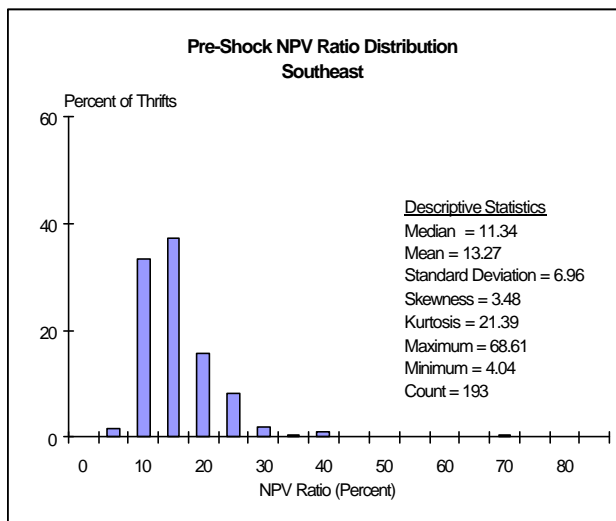
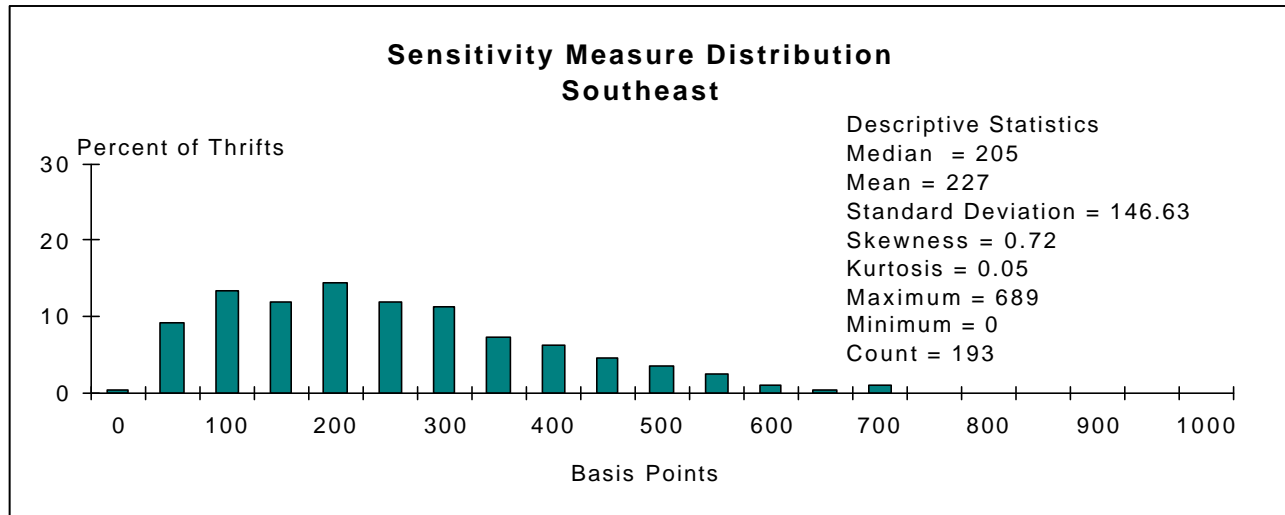
Appendix A – All Thrifts



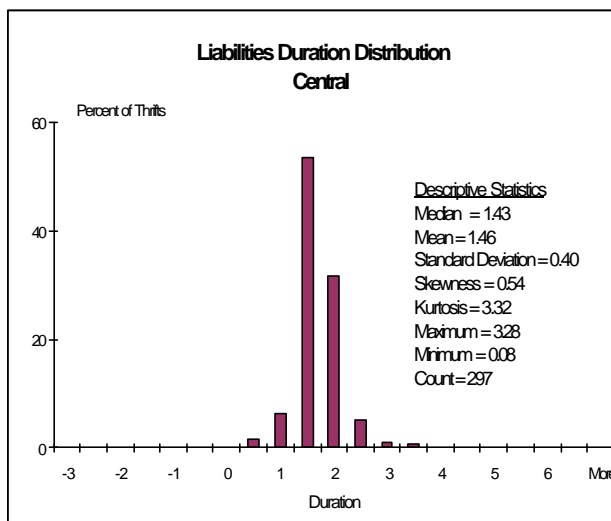
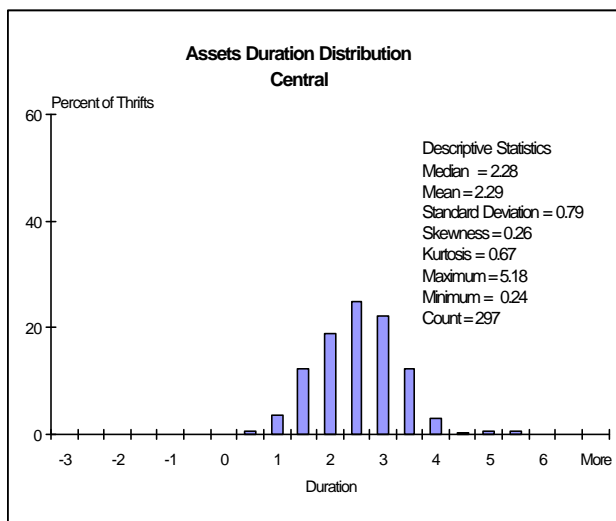
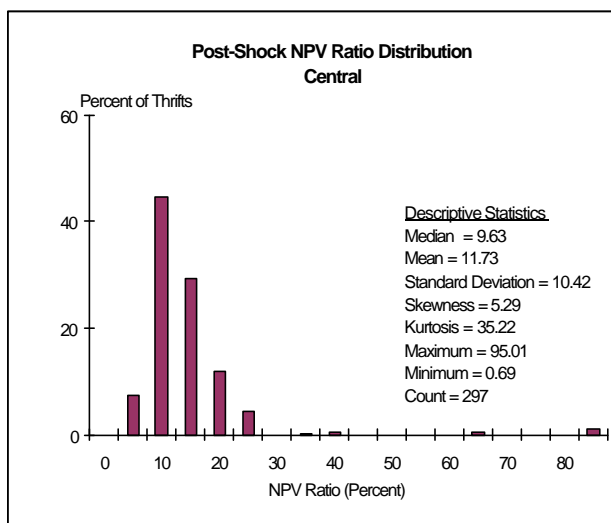
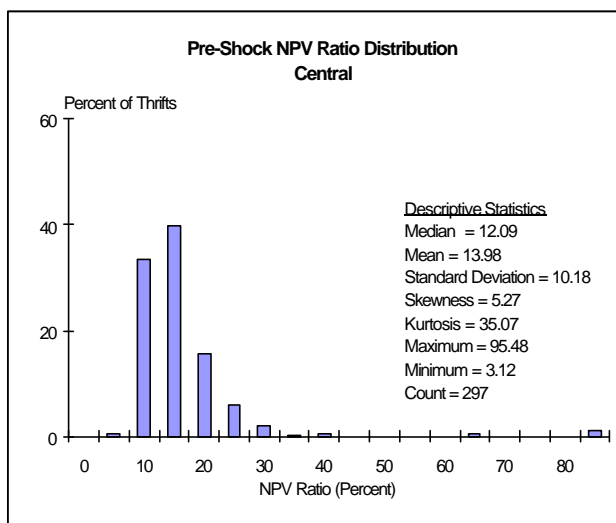
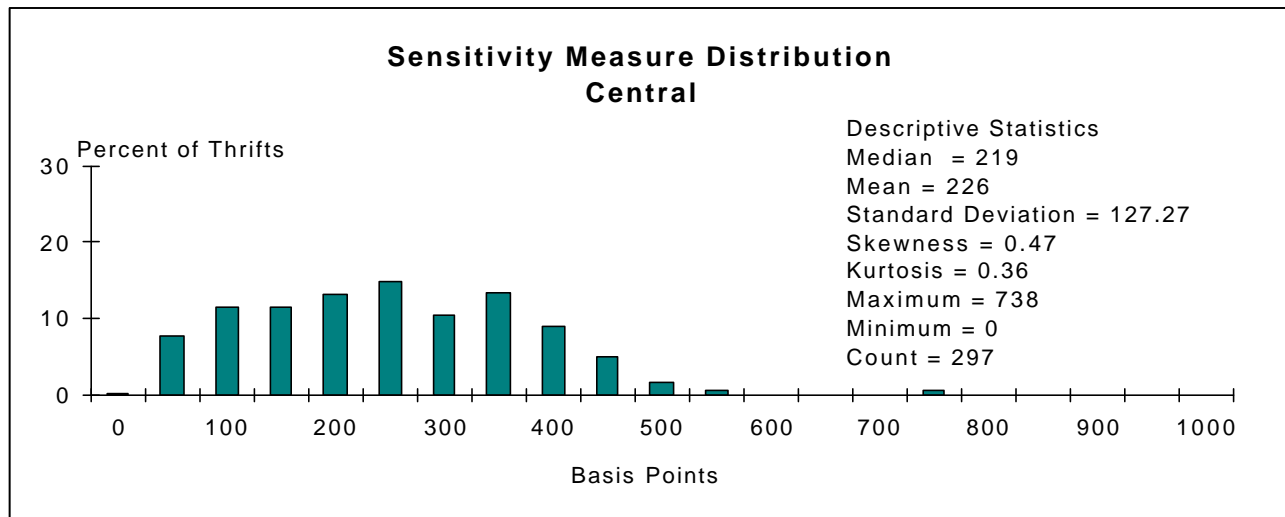
Appendix B – Northeast Region



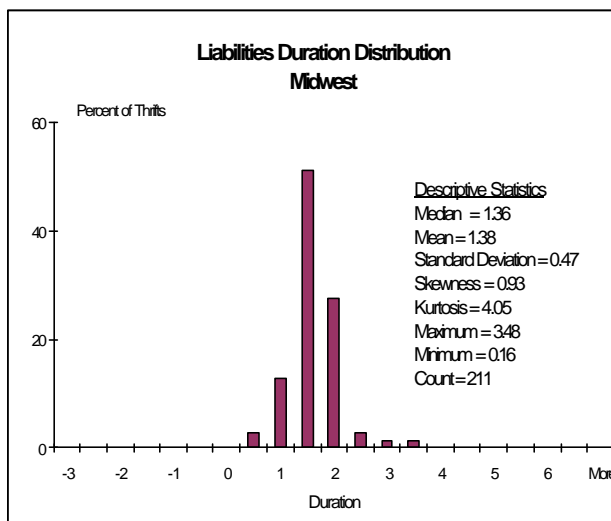
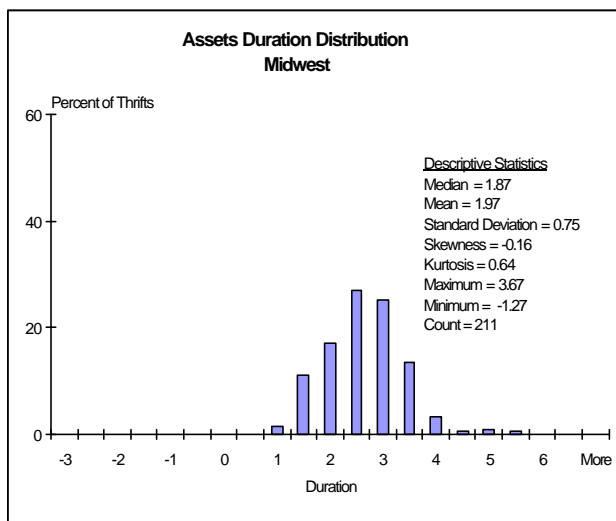
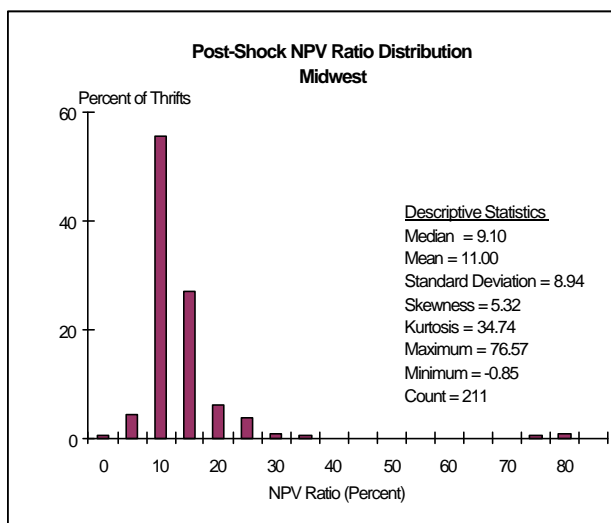
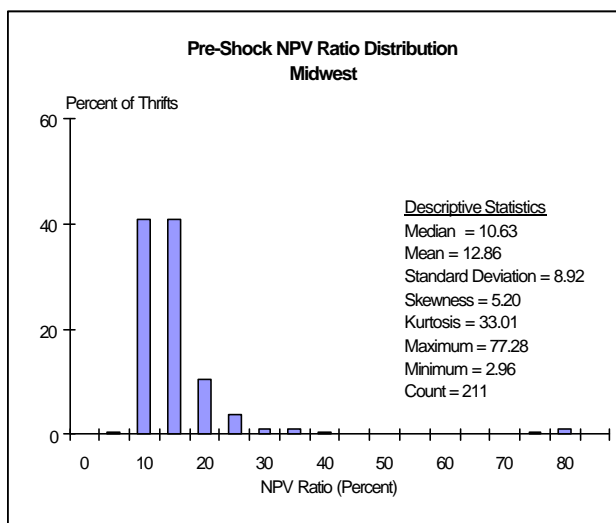
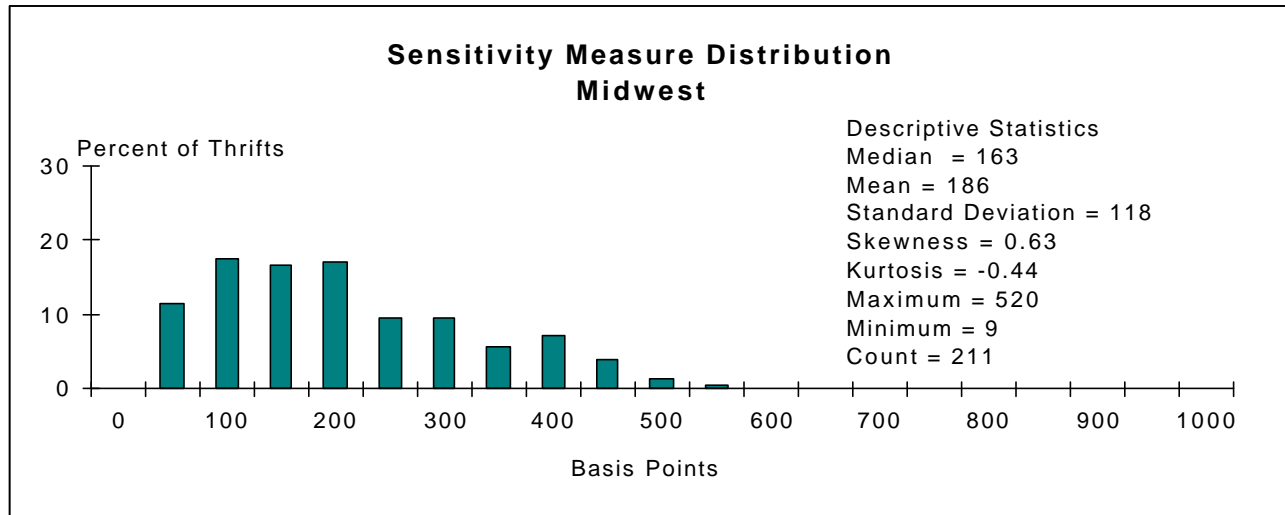
Appendix C – Southeast Region



Appendix D – Central Region



Appendix E – Midwest Region



Appendix F – West Region

