Volume 12, Issue 1

First Quarter, 2007

The Quarterly Review of Interest Rate Risk

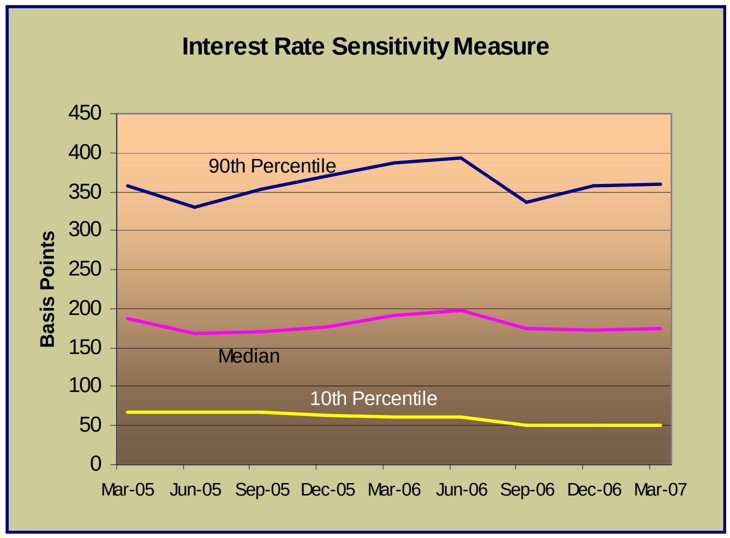
Office of Examinations, Supervision, and Consumer Protection
Risk Modeling and Analysis Division

Special points of interest:

- 30-yr mortgage commitment rate drops slightly
- Treasury yield curve falls in the first quarter
- First quarter median interest rate sensitivity rises slightly
- Asset duration falls
- Comparative Regional Analysis
- Q & A with Indymac Bank's Chris Pappalardo on ALM Models

Charts in this issue:

First Quarter Sees Little Change in Sensitivity



First-quarter median interest rate sensitivity rose to 175 basis points, up slightly from 172 basis points in the prior quarter. The median effective duration gap between assets and liabilities also experienced little change.

The median pre-shock NPV ratio rose slightly to 13.6 percent in the first quarter, up from 13.5 percent in the previous quarter. The median post-shock NPV ratio remained unchanged at 11.7 percent between the first quarter and the prior quarter.

At the end of the first quarter, the Treasury yield curve shifted downward, continuing to display a humped shape. Between quarter-end December 2006 and quarter-end March 2007, rates fell along the yield curve for all

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Q & A with Indymac Bank's Chris Pappalardo on ALM Models

IndyMac Bank, F.S.B., is a $29 billion thrift located in Pasadena, CA. According to the *American Banker* and *National Mortgage News*, Indymac consistently ranks among the ten largest savings and loans in the United States in terms of both total assets and mortgage originations.

Currently, Indymac is the seventh largest savings and loan and the second largest independent mortgage banker in the United States.

The bank originates and purchases a full array of mortgage products through its network of wholesale and correspondent channels and over its proprietary internet-based platform e-MITS.

IndyMac was originally established as a passive Real Estate Investment Trust (REIT) in 1985. In 2000, the organization terminated its status as a REIT and acquired First Federal Savings and Loan of San Gabriel Valley. Upon acquisition, it took the name IndyMac Bank.

Since joining Indymac in February 2004, Chris Pappalardo has served as the Director of Framework Management in Enterprise Risk Management (ERM) and as the head of the accounting policy group in Corporate Accounting. Currently, Chris is Indymac Bank's Chief Interest Rate Risk Officer and is a member of the ERM. He currently oversees a staff of 12. We recently asked Chris about his take on IndyMac's asset-liability management (ALM) process and the bank's use of ALM models.

OTS. Tell us a little about your educational and professional background.

CP. I have a B.S. in Accounting from Loyola Marymount University in Los Angeles and am a Certified Public Ac-

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Q & A with Indymac Bank's Chris Pappalardo on ALM Models (continued)

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Prior to my current role as Senior Vice President and Chief Interest Rate Risk Officer at Indymac Bank, I provided hedging, risk measurement, and accounting advisory services to Fortune 1000 companies as a Senior Manager in KPMG's Financial Risk Management Advisory Services practice.

OTS. Discuss your current position and responsibilities.

CP. As Indymac's Chief Interest Rate Risk Officer, I am responsible for overseeing interest rate risk management activities conducted by the Company's portfolio and business unit managers and ensuring that risks are managed to a level that is appropriate for the organization's risk appetite and return on equity.

OTS. What does ALM mean to your organization?

CP. Indymac's philosophy is to manage for an appropriate balance of risk and return at an individual portfolio level. Accordingly, our concept of ALM focuses on oversight, reporting, and effective communication between portfolios, upper management, and the Board of Directors.

This ultimately feeds back into individual portfolio investment and hedging decisions, aligning them with Company-wide investment strategy and tolerance for risk.

ALM at Indymac is part of the Corporate Enterprise Risk Management ("ERM") function, so it fits into a broader corporate group with a mandate that extends beyond just traditional ALM oversight. ERM is also charged with ensuring that the bank-wide interest rate and valuation risk framework is appropriately designed, operating effectively, and supported by adequate resources, systems, and processes.

OTS. Describe the key components of an ALM model and how management at your institution uses ALM model results.

CP. Indymac's ALM risk aggregation and reporting process is fundamentally based on the models and risk metrics produced for each portfolio. These metrics are combined to produce bank-wide risk measures – including bank-wide Value-at-Risk ("VaR"), duration gap, Net Portfolio Value sensitivity, Net Interest Income sensitivity, and scenario analysis – which give Indymac's managers, executives, and directors a tool to gauge how individual risk profiles are affecting the overall risk of the bank.

This information is then used to evaluate historical performance and forecasted returns and is also used when setting or revising interest rate risk limits.

OTS. Are some components of an ALM model more important than others and can you identify any key trends in ALM modeling today? For example, do you foresee a convergence between interest rate risk models and credit risk models?

CP. To really be useful, ALM reporting must do more than just combine stand-alone portfolio risk metrics. Useful ALM reports must: (1) provide additional risk analytics that are not available on a stand-alone basis (in our case, NPV and NII sensitivity, which is only reported at the aggregate level) and (2) reveal the interaction of risk between the aggregated portfolios and sources of risk (in the case of bank-wide VaR, the "diversification effect").

As Indymac's ALM reporting continues to develop, it is our objective to leverage these capabilities into more sophisticated applications.

In particular, we are leveraging NPV and NII sensitivities into more sophisticated periodic earnings and performance risk measurements – sometimes referred to as "Earnings-at-Risk" – and using the diversification benefit we see in the bank-wide VaR to identify lower cost and higher performance inter-company hedging alternatives to interest rate risk management.

ALM reporting provides a foundation for these first steps, which we expect will ultimately unify the various sources of risk – including interest rate risk, credit risk, and operating risk – into a single "enterprise-wide" diversified measure of risk.

OTS. Do you use Net Portfolio Value (NPV), Net Interest Income (NII), or both in the ALM model used at your institution? What types of metrics do you focus on in evaluating interest rate risk? (e.g., key rate durations, convexity, OAS's, etc.)

CP. Indymac's standard ALM reports include both Net Portfolio Value and Net Interest Income sensitivity to instantaneous changes in interest rates. Since instantaneous rate changes greater than 10-15 basis points are uncommon, we also focus on portfolio Value-at-Risk, and beginning this quarter, bank-wide Value-at-Risk.

These "VaR" models are based on all available risk metrics, which include the "greeks" (duration, convexity, and volatility) for every portfolio, and additional risk metrics for the higher risk portfiolios, including mortgage spread duration, OAS duration, treasury-swap spread duration, and partial durations.

We try to focus on the risk metrics with the highest potential for impact in the highest risk portfolios first – which tends to be mortgage spread durations and partial durations in the servicing portfolio due to the sensitivity of that portfolio and the difficultly in hedging those elements.

OTS. What factors do you feel are most important when selecting an ALM model?

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Q & A with Indymac Bank's Chris Pappalardo on ALM Models (continued)

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CP. Our biggest challenge with selecting the appropriate ALM functionality at Indymac has been in cost-effectively balancing the need for automation, speed, and internal control with accuracy, flexibility, and robustness.

The loans and investments produced by our hybrid thrift/mortgage banking business model are diverse, and we strive to constantly improve our valuation and risk measurement processes – which creates a very dynamic and challenging environment for ALM modeling and systems.

The perfect solution would be a unified system that does both valuation/risk sensitivity and aggregate risk reporting and simulation, but similar to other thrifts and financial institutions, our experience has been that a single system is either unavailable or cost-prohibitive.

OTS. Describe the validation process for your ALM model. What aspects of model validation are particularly challenging?

CP. Validation is an important ongoing process for any well-maintained model. At Indymac, we validate our ALM modeling and reporting from both a "bottom-up" and a "top-down" approach.

From the "bottom-up", we ensure that individual portfolio valuation and risk reporting models underlying ALM reporting are appropriately designed and functioning as intended by comparing how well those models predict actual changes over time.

We also segregate model custody from the users of those models and follow a strict model change control process. From the "top-down", we perform a similar comparison of projected changes to actual changes using the sensitivities produced in our ALM reporting, including bank-wide NPV, NII, and Value-at-Risk. In both cases, to determine actual value, we utilize market transactions, broker/dealer quotes, and appraisals.

The challenge with model validation on aggregate-level risk metrics is that any imprecision in the underlying individual portfolio models is compounded when combined with other portfolios – particularly when portfolios are correlated to one-another.

Accordingly, more advanced ALM reporting is often delayed while trying to improve the underlying models. The challenge is improving individual models quickly to enable aggregate, bank-wide risk analytics but not holding those aggregate analytics up for too long making the underlying models "perfect".

The other key aspect to model validation is knowing the limitations of each model and risk measurement and, instead of relying too much on any single risk metric, using the information in combination to make the best possible decisions.■

Update on the Enhanced NPV Model

Starting with the June 2007 reporting cycle, the Interest Rate Risk Exposure Reports will be expanded to include NPV Model results for parallel upward and downward rate shocks of 50 basis points. The change to the report is in response to requests made by thrift executives who wanted to see the potential impact of more realistic interest rate scenarios. The report will continue to display the +/- 100 and 200 basis point scenarios, as well as the +300 basis point scenario.

Historically, the self-valued items on Schedule CMR have prevented OTS from providing more comprehensive scenario analysis because institutions are only required to provide instrument valuations for the +/- 100, 200, and 300 basis point rate shocks. Using the Enhanced NPV Model, however, OTS now can estimate the degree to which the value of self-valued instruments will change under alternative rate scenarios, including non-parallel shifts of the yield curve.

In addition, Capital Market Specialists will be given the "What-If" capability of obtaining NPV Model results for customized parallel interest rate shocks of any requested size. For example, requests could be made for an upward shift in the yield curve of 10 basis points and a downward shift of 50 basis points.

This customized scenario analysis is just one example of the Enhanced NPV Model's expanded "What-If" capabilities. In coming quarters, we will be making available balance sheet restructuring analysis and limited types of pre-purchase analysis.

OTS is also testing a series of new IRR-related reports, including a behavioral liquidity gap report, a net interest income report, and a risk decomposition report, which explains the quarter-to-quarter changes in an institution's interest rate risk results.

For more information on these NPV Model enhancements, contact your Regional Capital Markets Specialist or Scott Ciardi, Director, Risk Modeling and Analysis Division, in Washington, D.C.■

First Quarter Sees Little Change in Sensitivity (continued)

(Continued from page 1)
maturities, except the three-month and 30-year maturities. The three-month and 30-year yields rose by two and three basis points, while both the six-month and ten-year yields fell by three basis points. During the same period, the two-year yield fell by 23 basis points.

The target rate for federal funds remained unchanged at 5.25 percent at the January 2007 and March 2007 meetings of the Federal Open Market Committee.

Thrift earnings were strong despite continued weakness in housing markets and an unfavorable yield curve environment Average net interest margin rose to 281 basis points in the first quarter, up ten basis points from the previous quarter. Net interest income rose for the industry because liability costs rose slower than asset yields.

Consistent with the increase in net income in the first quarter, thrift profitability rose from the previous quarter. Return on average equity was 9.36 percent in the first quarter, up from 8.89 percent in the prior quarter. In addition, the average return on assets (ROA) for the industry rose to 0.97 percent in the first quarter, up from 0.89 percent in the previous quarter.

The rise in ROA in the first quarter was driven by higher net interest margin and lower loan loss provisions and non-interest expense. Partially offsetting these positive impacts on first-quarter profitability were lower fee income and other non-interest income and higher taxes.

The fall in first-quarter fee income was due to a surge in refinancing activity, which caused downward revaluations of servicing portfolio assets, and declines in fee income from credit card operations.

Total thrift earnings for the first quarter were $3.62 billion, up 15 percent from $3.14 billion in the previous quarter. Thrift industry equity capital (i.e., GAAP capital) remained strong at 10.7 percent, despite weakness in the housing sector during the first quarter.

The 30-year mortgage rate, as measured by the contract interest rate on Freddie Mac commitments for fixed-rate, 30-year mortgages, fell to 6.16 percent at the end of the first quarter, down from 6.18 percent from the prior quarter.

Total thrift mortgage originations (which include multi-family and non-residential mortgages) were $168.8 billion, up 26 percent from $134.3 billion in the previous quarter. The conversion of Countrywide Bank from a commercial bank to a thrift accounted for the increase in originations.

First-quarter 1-4 family mortgage originations rose to $149.6 billion, up 33 percent from $112.1 billion in the previous quarter.

Mortgage refinancing activity accounted for 47 percent of total mortgage originations in the first quarter, up from 39 percent in the previous quarter.

The notional amounts of optional and firm commitments to originate both fixed- and adjustable-rate mortgages in the first quarter were $93.3 billion and $3.8 billion, respectively. Optional commitments to originate mortgages rose $17.2 billion, and firm commitments rose $400 million from the previous quarter's levels.

The ARM share of total thrift mortgage originations rose to 13 percent in the first quarter, up from 12 percent in the prior quarter. In contrast, the ARM share of total 1-4 family mortgages held by thrifts in their portfolios fell to 62.8 percent in the first quarter, down from 63.8 percent in the prior quarter.

Between December 2006 and March 2007, thrift portfolio holdings of single-family mortgages relative to total assets were up slightly over the quarter to 51.8 percent of assets. Mortgage-backed securities (MBS) rose to 12.3 percent of assets in the first quarter, up from 11.8 percent at the end of the previous quarter.

Besides adding liquidity to the balance sheet, MBS allow thrifts to add geographic diversification to their portfolios, which is important to community thrifts located in areas adversely affected by the recent housing downturn.

Over the past several quarters, thrifts have generally attempted to increase levels of deposits and decrease borrowings as a funding source on the liabilities side of the balance sheet. Consistent with this funding strategy, deposits and escrows as a percentage of total assets were 64 percent at the end of the first quarter, up from 62.1 percent in the previous quarter. Total variable-rate borrowings and structured advances dropped from $185.9 billion to $175.7 billion.

Over the same period, total fixed-rate, fixed-maturity deposits fell from $411.2 billion to $410.6 billion. Also, brokered deposits fell from $74.1 billion to 64.1 billion . In contrast, balances in MMDA accounts rose to $207.6 billion in the first quarter, up substantially from $184.3 billion in the prior quarter.

The industry's median effective duration of assets fell from 1.84 to 1.82 between December 2006 and March 2007. This represents the third quarterly decrease in the effective duration of assets.

In its June 2007 *Short-Term Prepayment Estimates*, Bear, Stearns & Co. observes that the interest-only (IO) mortgage option has been one of the most popular affordability features in the non-agency mortgage sector during the last five years.

Until 2005, the interest-only feature was associated primarily with adjustable rate mortgages. However, as the yield curve flattened, the interest-only option has become increasingly important in fixed-rate non-agency originations, accounting for 30 percent to 40 percent of origination volumes.

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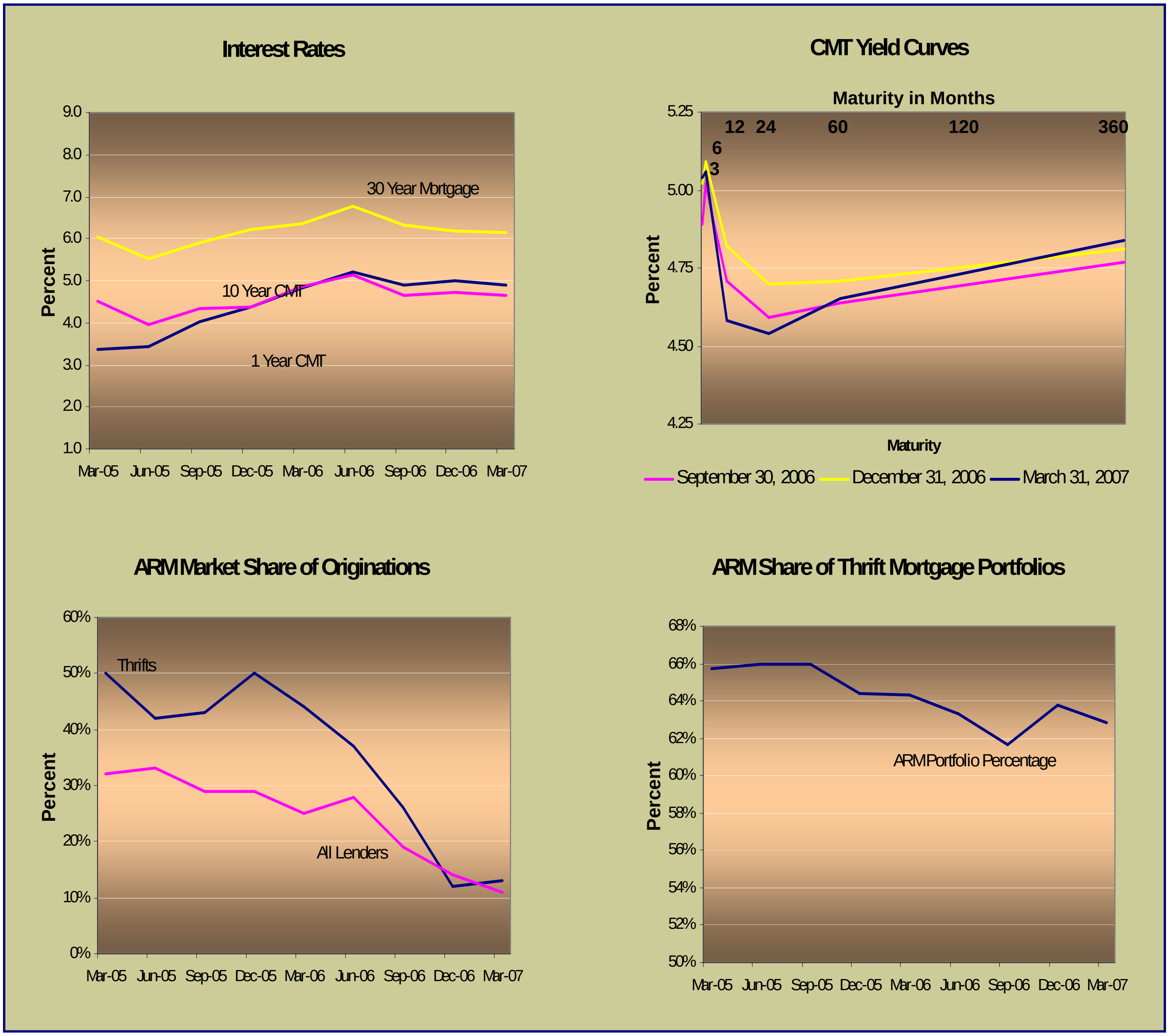
Interest Rates and ARM Market Share



First Quarter Sees Little Change in Sensitivity (continued)

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So far in 2007, tighter underwriting standards combined with less aggressive pricing in the non-agency ARM sector has generated a new surge in the origination volume of fixed-rate IO loans, including a substantial rise in agency IO loan production.

While there are several types of fixed-rate IO loans, the great majority are 30-year fixed-rate mortgages of the 10/20 type (i.e., interest-only for 10 years and then fully amortizing over 20 years).

According to Bear Stearns, there are three factors that are likely to support this trend for the remainder of 2007.

First, a flat yield curve will keep the fixed-to-ARM spread at historically low levels, while still low absolute rates will keep the IO feature attractive to borrowers.

Second, tighter underwriting guidelines now require borrowers to be qualified at the fully indexed rate.

Third, a significant number of hybrid ARM borrowers approaching reset will provide a provide a steady source of potential refinance candidates into fixed rate IO loans.

According to the Mortgage Bankers Association, the dramatic shift in affordability preference from ARMs into fixed-rate IOs is illustrated by the steady fall in the market share of ARM originations. ARM originations reached a peak market share of 35 percent to 40 percent in 2004, but they only account for 8 percent of originations today.

The first quarter saw the

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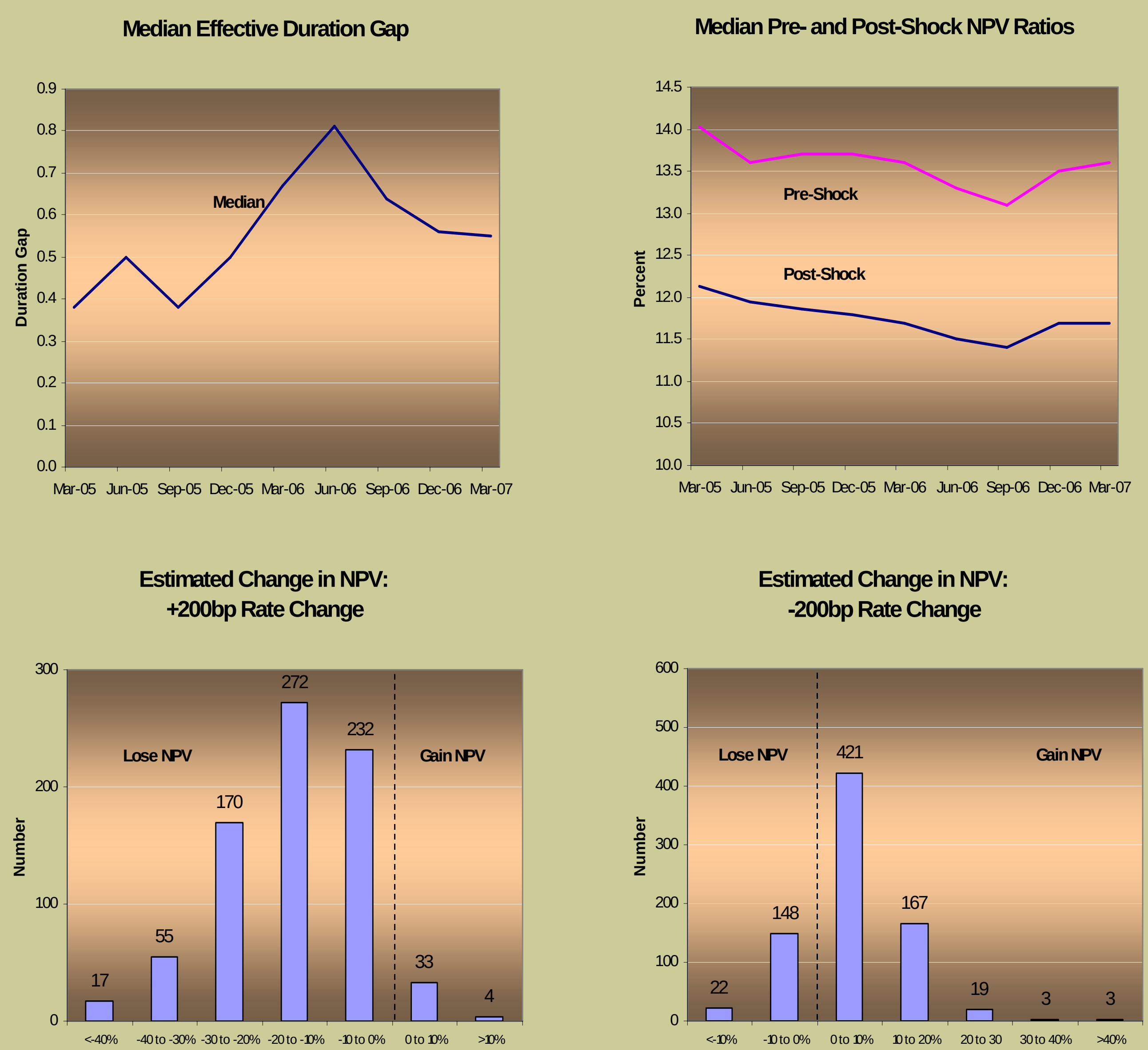
Duration and NPV Sensitivity Measures



First Quarter Sees Little Change in Sensitivity (continued)

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industry's median effective duration of liabilities fall from 1.25 to 1.24. The drop in the effective duration of assets relative to the drop in the duration of liabilities resulted in a slight decrease in the duration gap for the thrift industry in the first quarter.

The median effective duration gap declined to 0.55 in the first quarter, down from 0.56 in the prior quarter.

The number of thrifts with a post-shock NPV ratio below four percent rose to four in the first quarter, up from three institutions in the prior quarter.

Of the thrifts that submitted Schedule CMR data in the first quarter, about 95 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 78 percent of thrifts would have experienced increases in the their net portfolio values.

The thrift industry would have lost 18 percent of its net portfolio value if rates rose by 200 basis points in the third quarter. On the other hand, the industry would have gained five percent if rates fell by 200 basis points.

The number of thrifts with a post-shock NPV ratio below six percent rose to 16 institutions in the first quarter,

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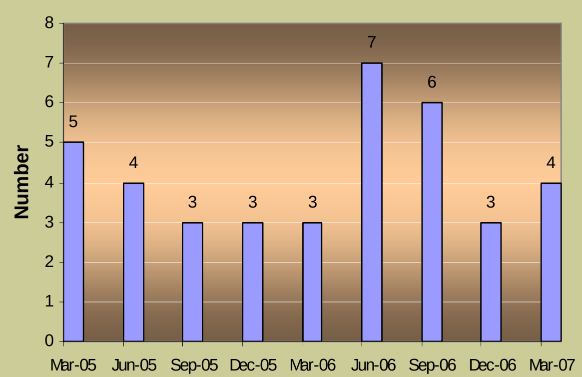
Interest Rate Risk Measures

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	% Change in NPV
	Dec-06	**Mar-07**	**Dec-06**	**Mar-07**
+300	8.74%	8.53%	-28%	-30%
+200	9.94%	9.85%	-17%	-18%
+100	10.90%	10.94%	-7%	-8%
Base	11.60%	11.71%	0%	0%
-100	11.94%	12.09%	4%	4%
-200	12.00%	12.18%	5%	5%
-300	N/A	N/A	N/A	N/A

Post-Shock NPV Ratio and Sensitivity Measure Matrix December 2006

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
Over 10%	181	168	178	27	**554**
6% to 10%	29	70	106	15	**220**
4% to 6%	0	1	7	2	**10**
Below 4%	0	1	1	1	**3**
Total	**210**	**240**	**292**	**45**	**787**

Minimal Moderate Significant High

Post-Shock NPV Ratio and Sensitivity Measure Matrix March 2007

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
Over 10%	171	172	172	34	**549**
6% to 10%	23	71	113	11	**218**
4% to 6%	1	3	5	3	**12**
Below 4%	0	1	1	2	**4**
Total	**195**	**247**	**291**	**50**	**783**

Minimal Moderate Significant High

First Quarter Sees Little Change in Sensitivity (continued)

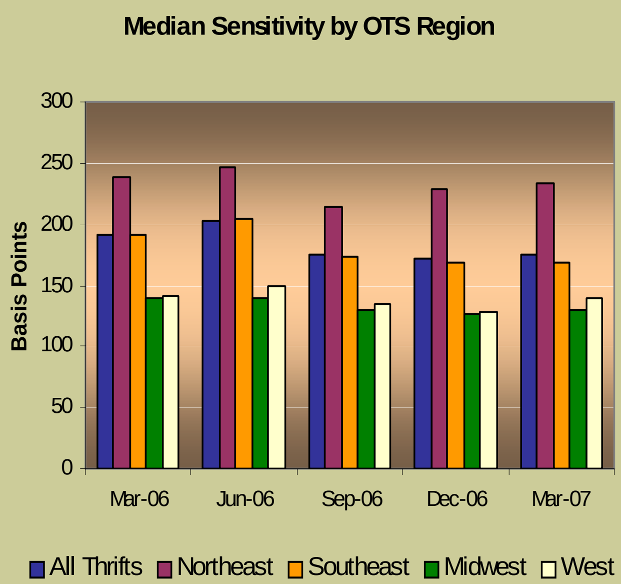
(Continued from page 6)
up from 13 in the prior quarter. The number of thrifts with interest rate sensitivity of 100 basis points or below fell to 195 in the first quarter, down from 210 in the previous quarter.

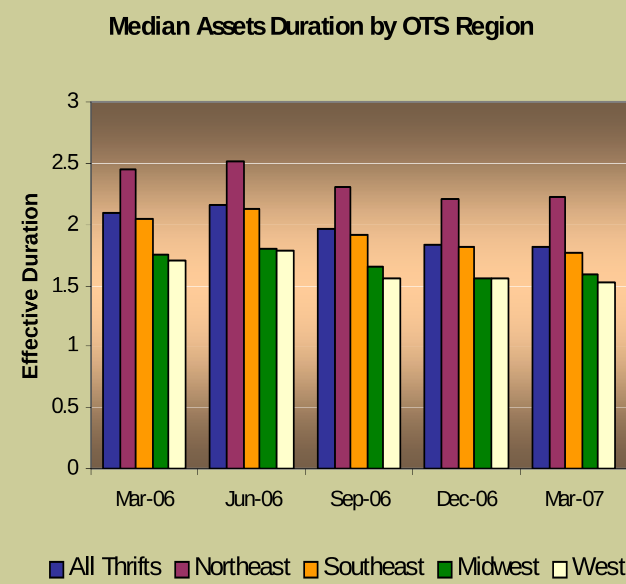
The number of thrifts with over 400 basis points in interest rate sensitivity rose to 50 in the first quarter, up from 45 in the prior quarter.

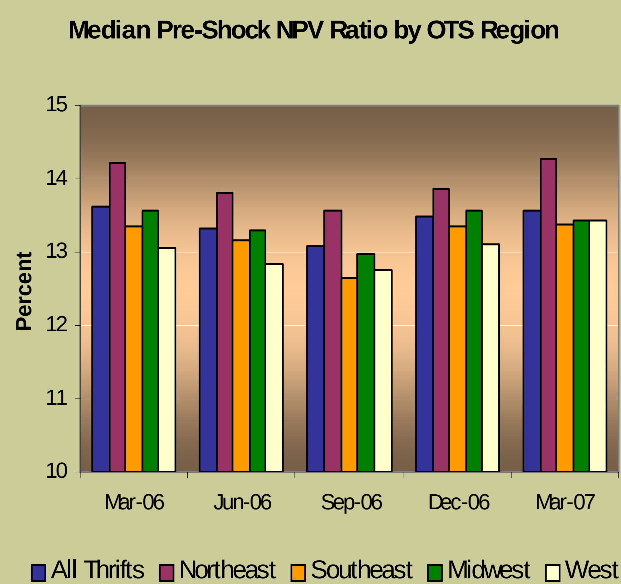
Based on TB 13a guidance for the "S" rating, 610 thrifts (77.9 percent) initially would be assigned a minimal interest rate risk rating, 150 thrifts (19.1 percent) a moderate rating, 17 thrifts (2.2 percent) a significant rating, and six thrifts (0.8 percent) a high rating in the fourth quarter.

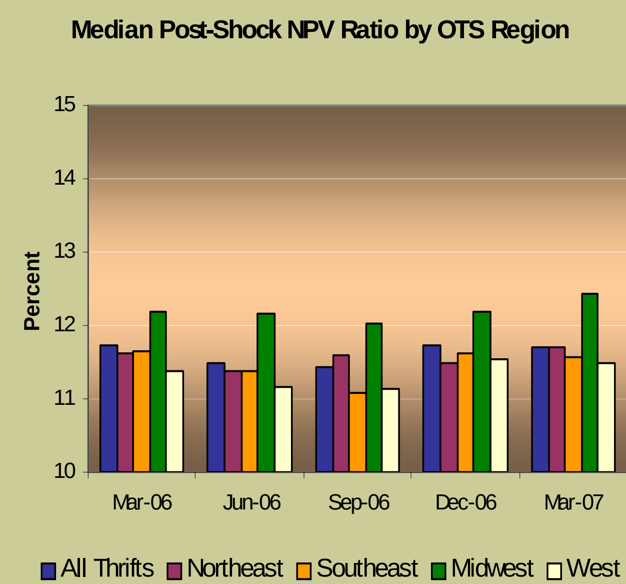
The number of thrifts with significant or high interest rate risk fell to 23 in the first quarter, down from 27 in the prior quarter.■

Comparative Trends in the Four OTS Regions









Regional Comparisons

At the end of the first quarter, the Northeast Region had the highest median sensitivity at 233 basis points, while the Midwest Region had the lowest median sensitivity at 130 basis points.

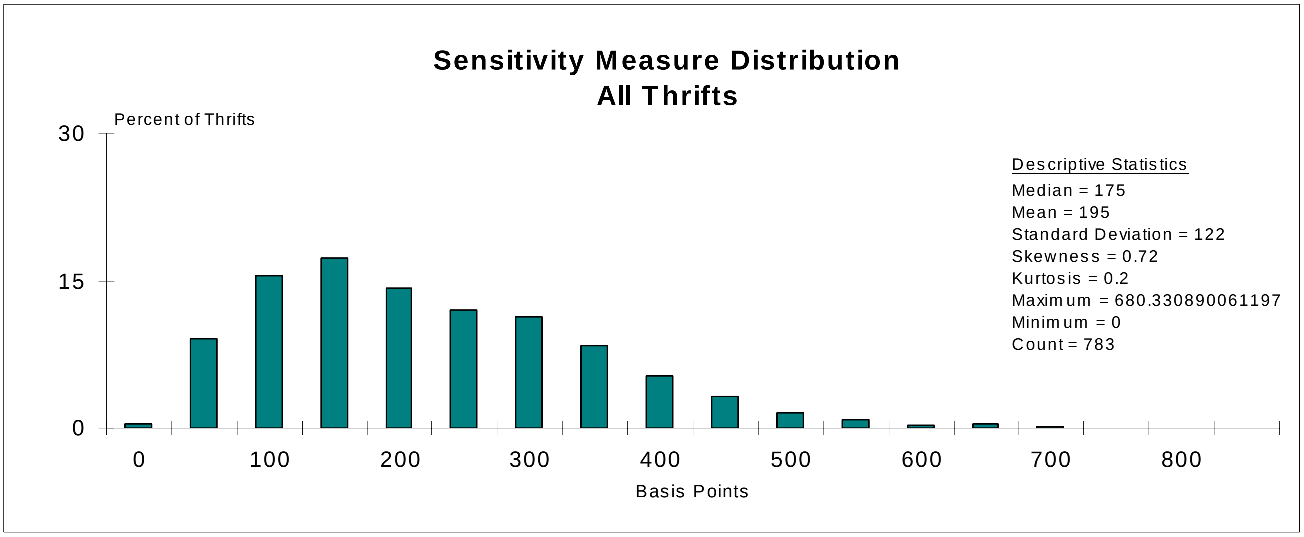
The Northeast, Midwest, and West Regions saw their median sensitivities rise by five, three, and 11 basis points, respectively. In contrast, the Southeast Region saw its median sensitivity remain unchanged.

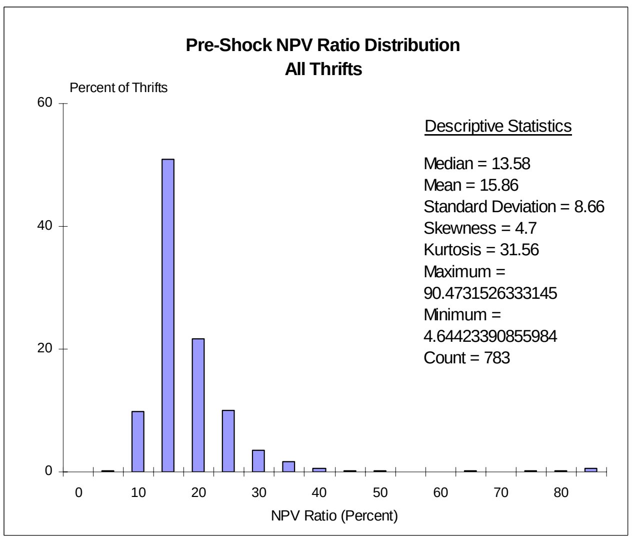
The Northeast Region had the highest median pre-shock NPV ratio at 14.3 percent, while the Southeast Region had the lowest median pre-shock NPV ratio at 13.4 percent. The Midwest Region had the highest median post-shock NPV ratio at 12.4 percent, while the West Region had the lowest at 11.5 percent.

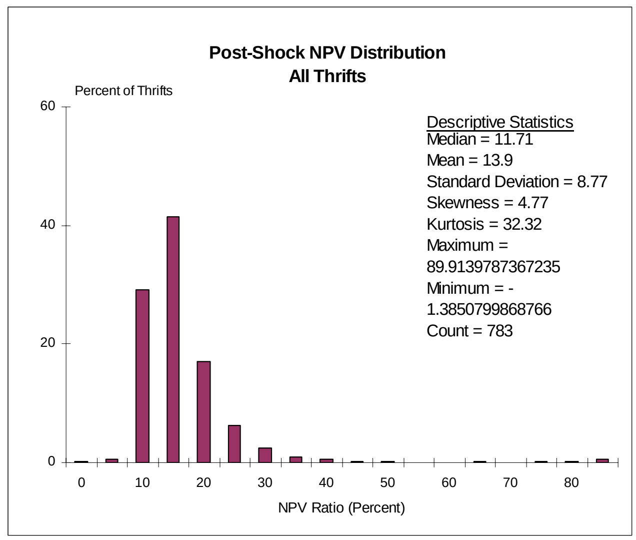
The Northeast Region had the highest median asset duration, at 2.2, while the West Region had the lowest, at 1.53, at the end of the first quarter.

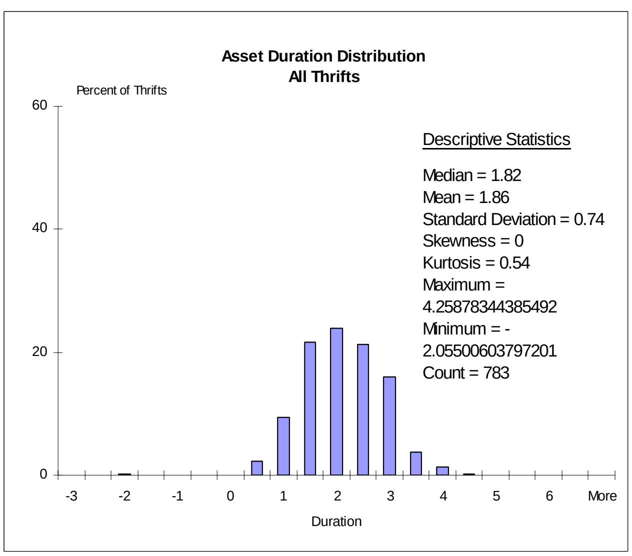
The Southeast Region had the lowest median liability duration, at 1.17, while the Northeast Region had the highest, at 1.34.■

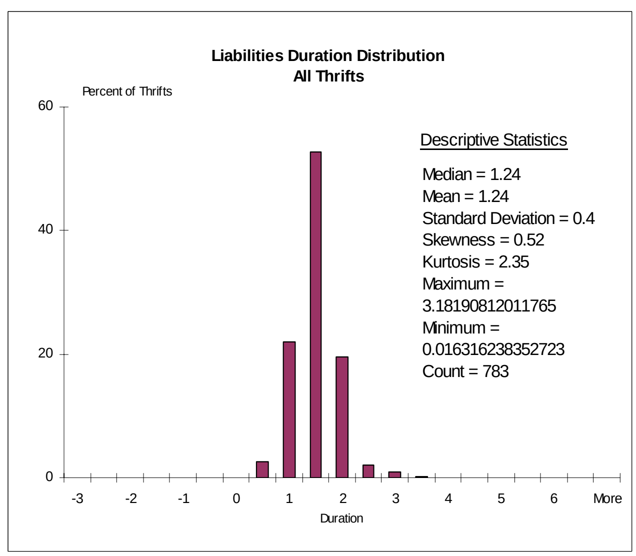
Appendix A — All Thrifts



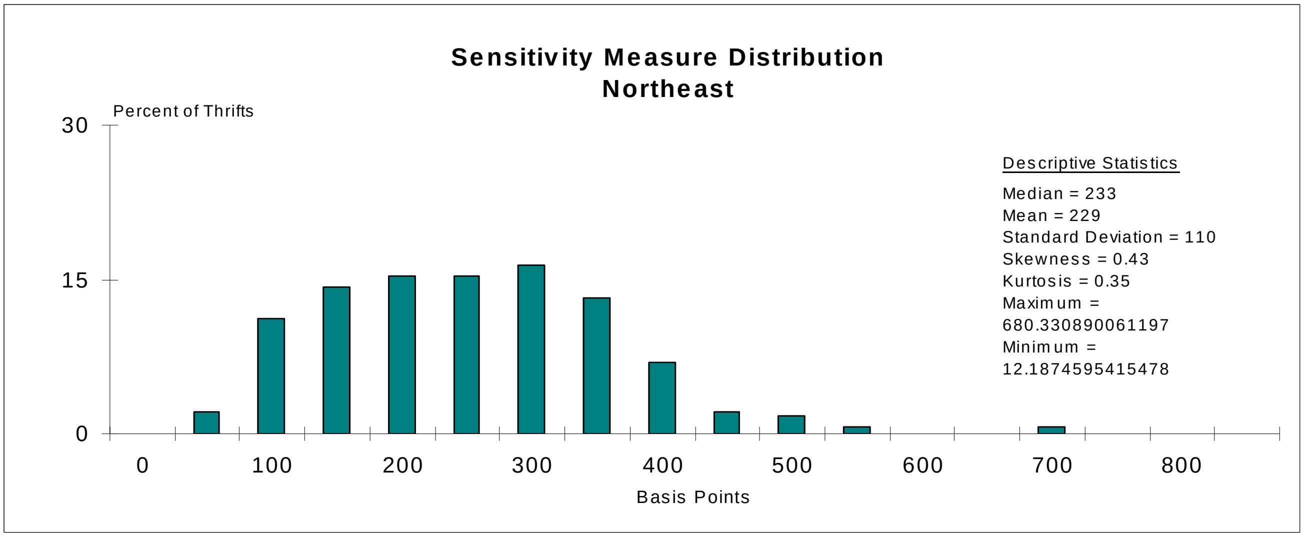


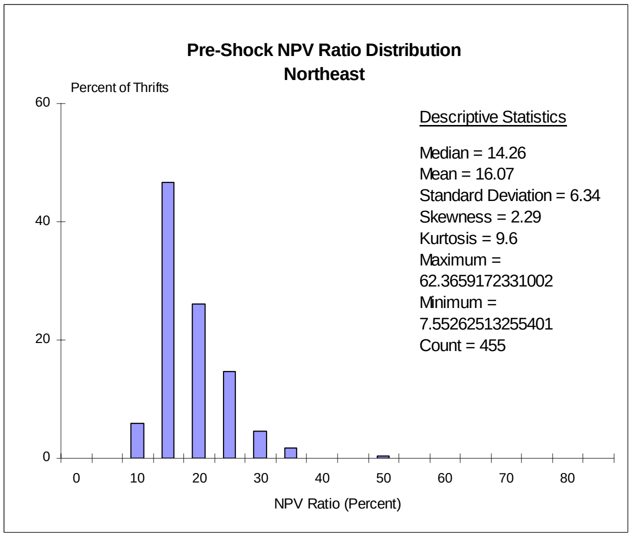


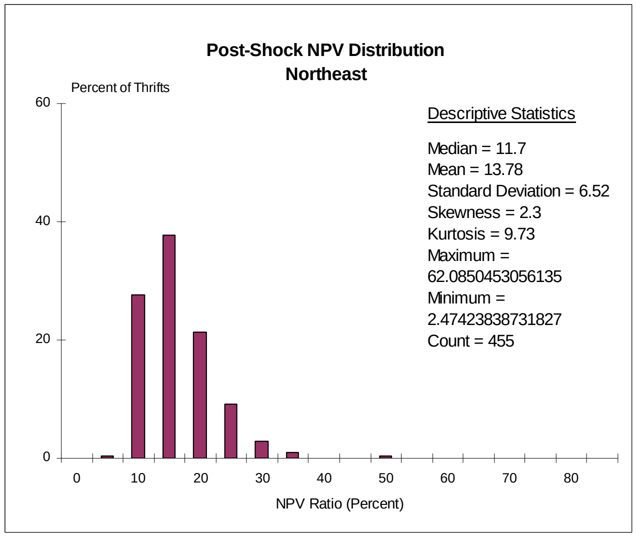


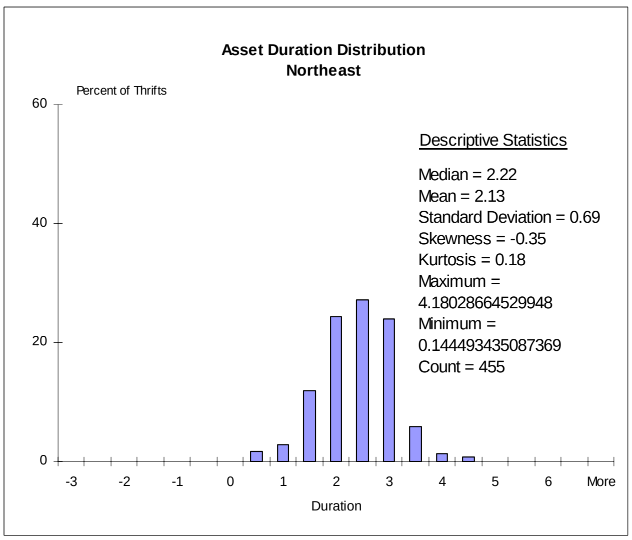


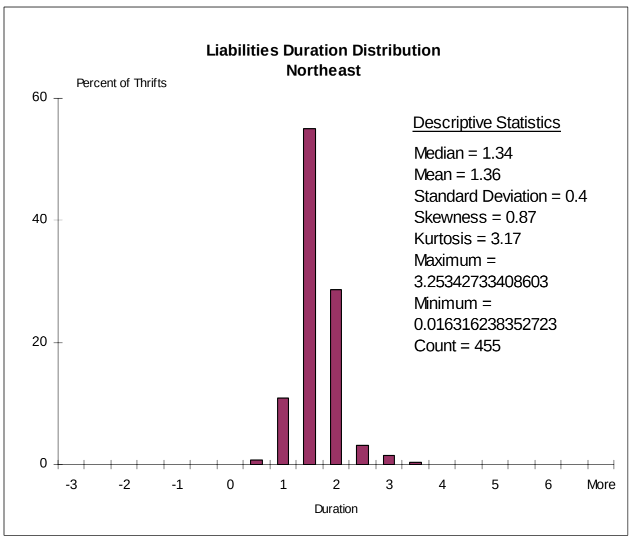
Appendix B — Northeast Region



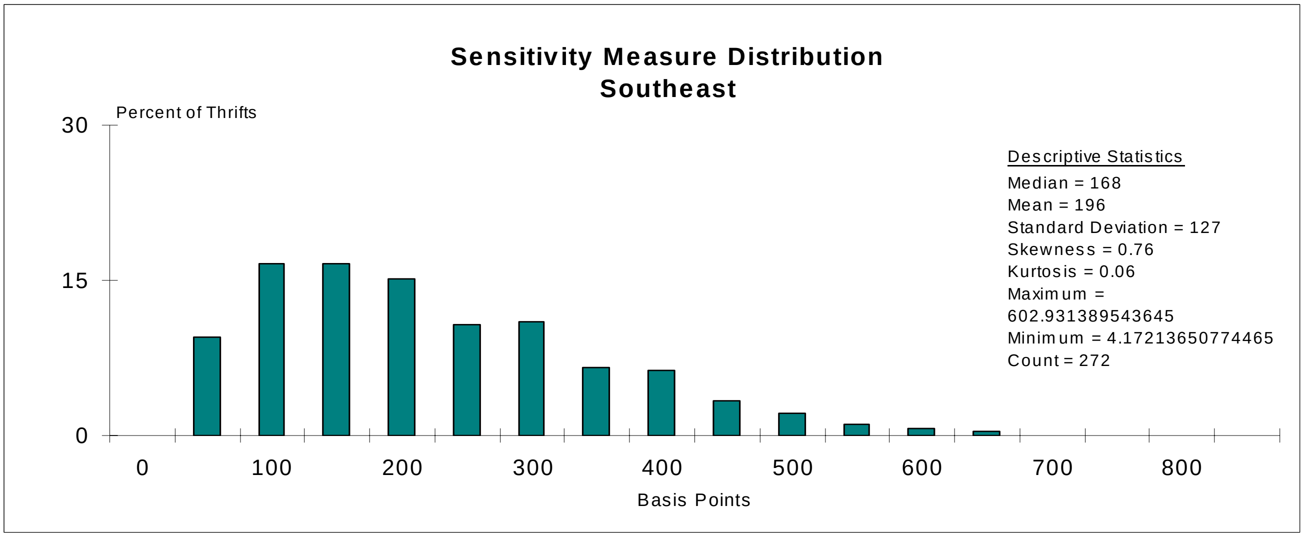


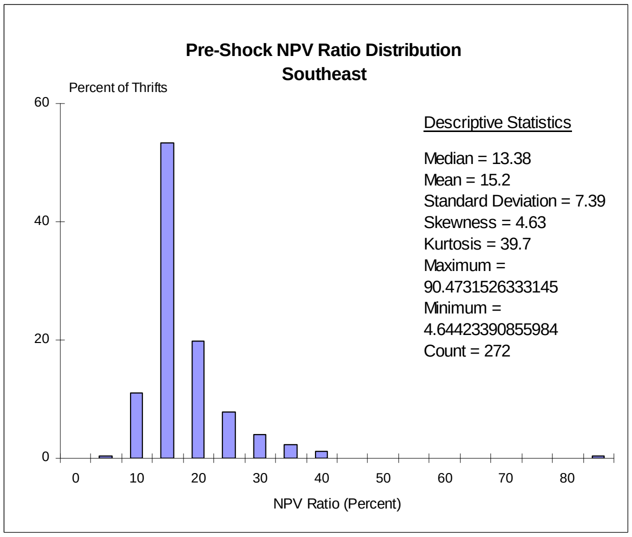


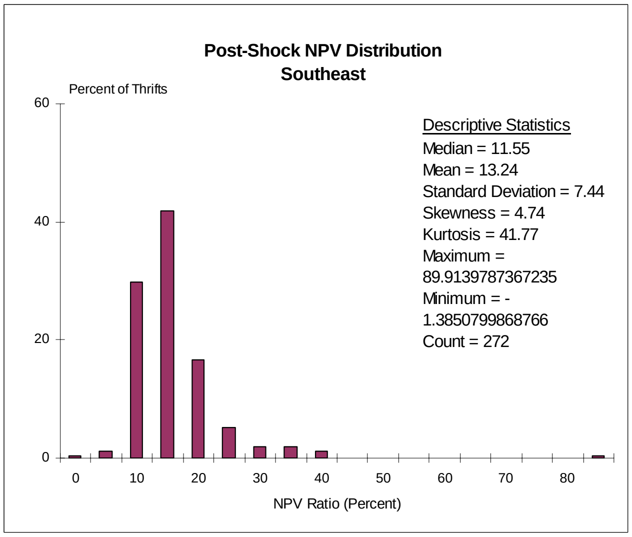


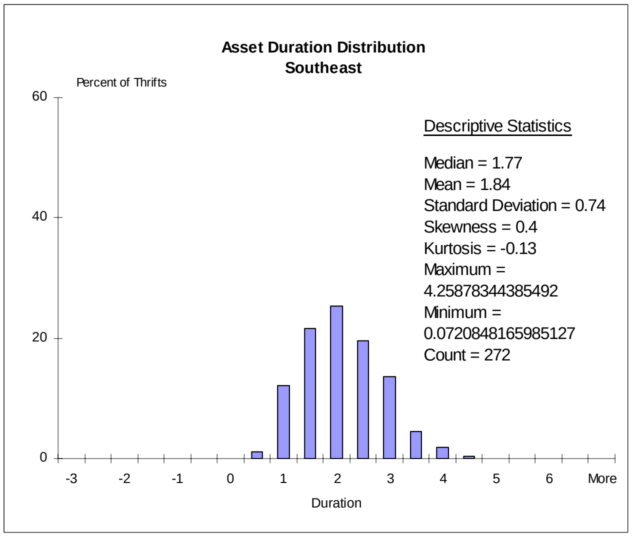


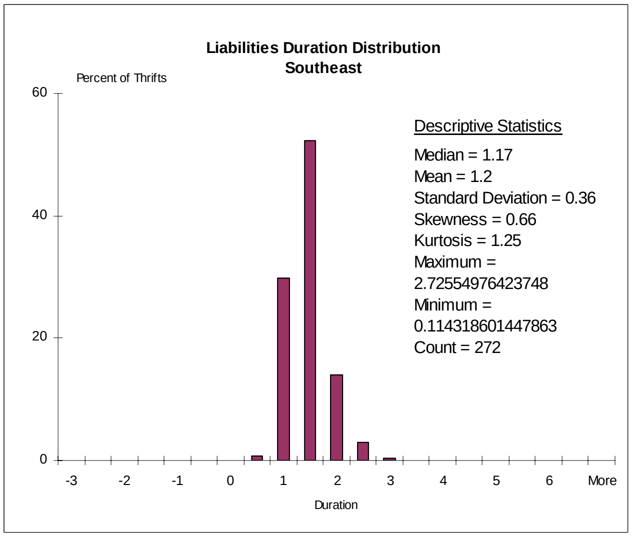
Appendix C — Southeast Region



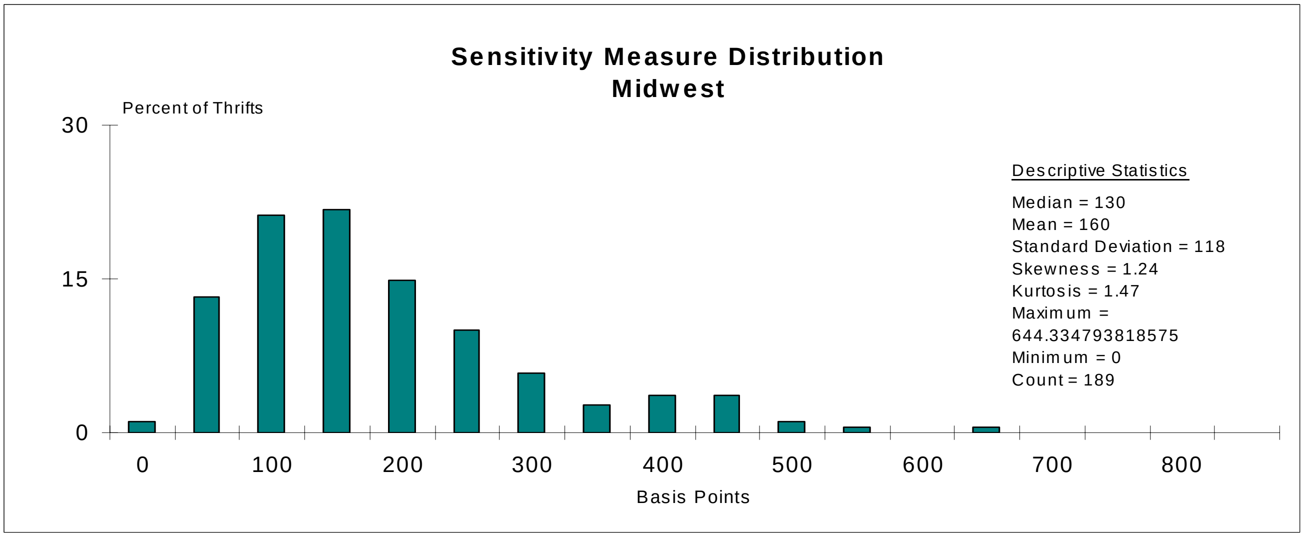


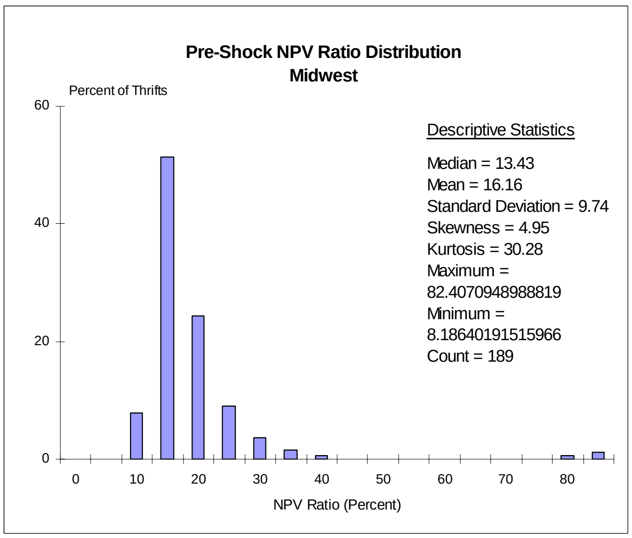


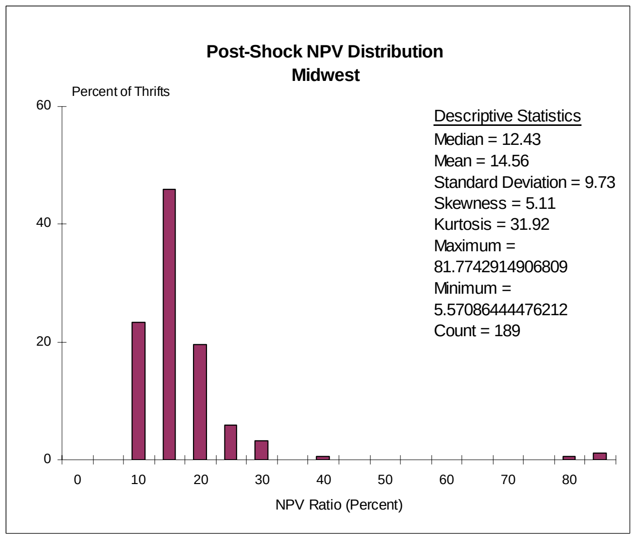


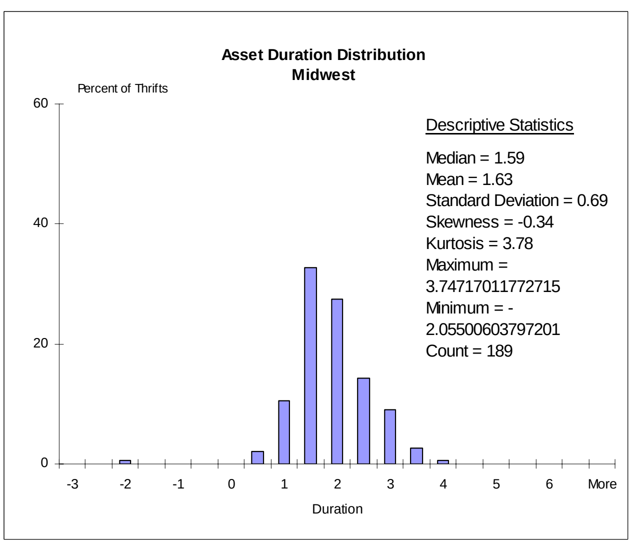


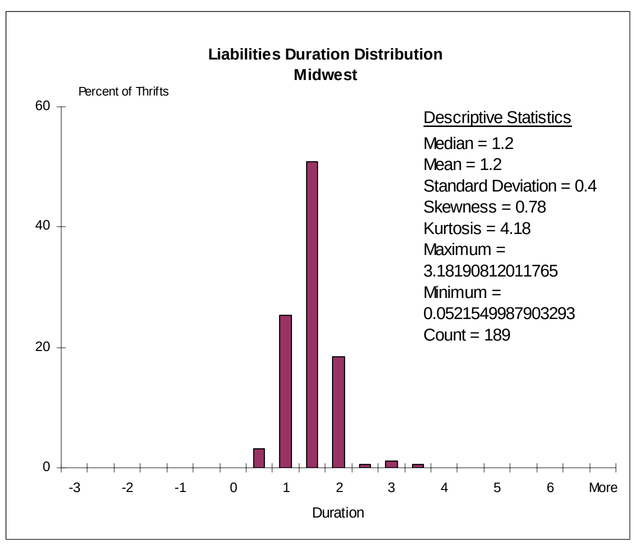
Appendix D — Midwest Region



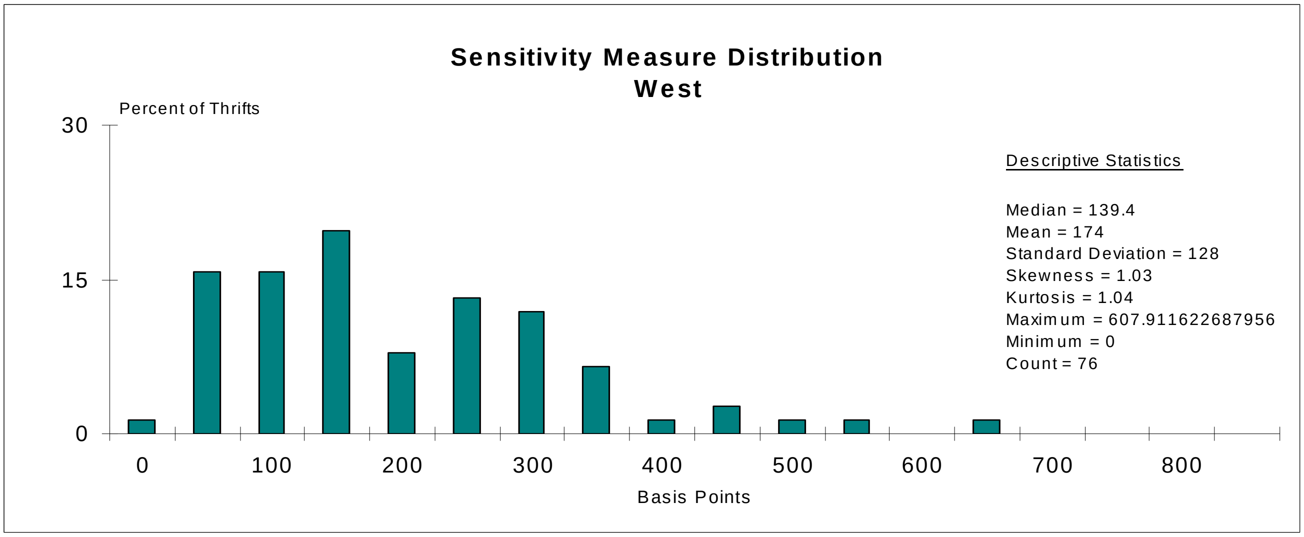


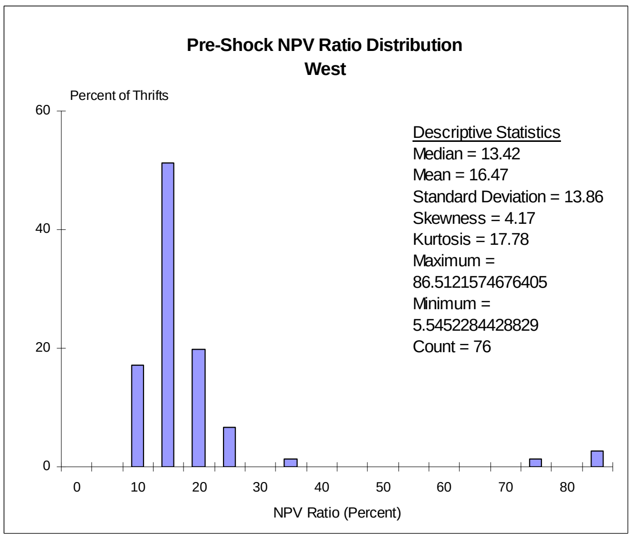


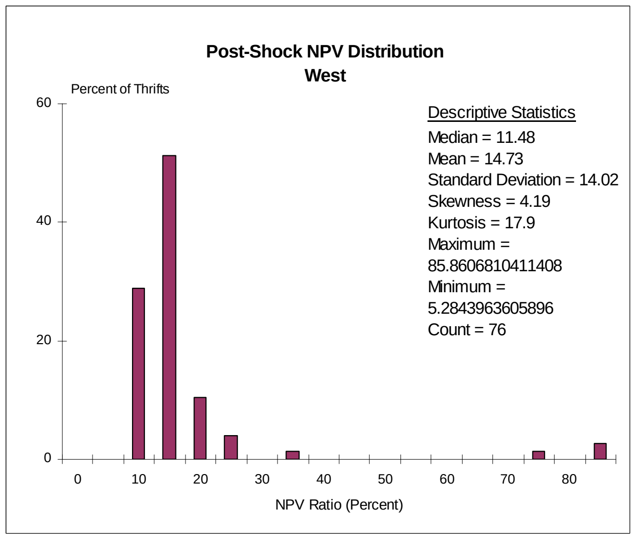


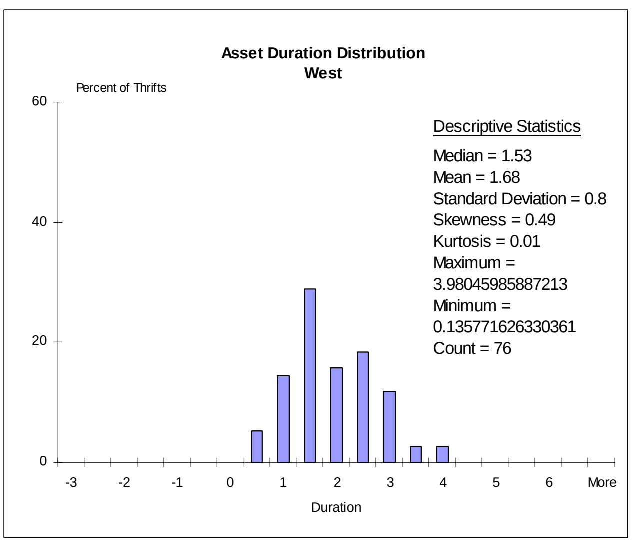


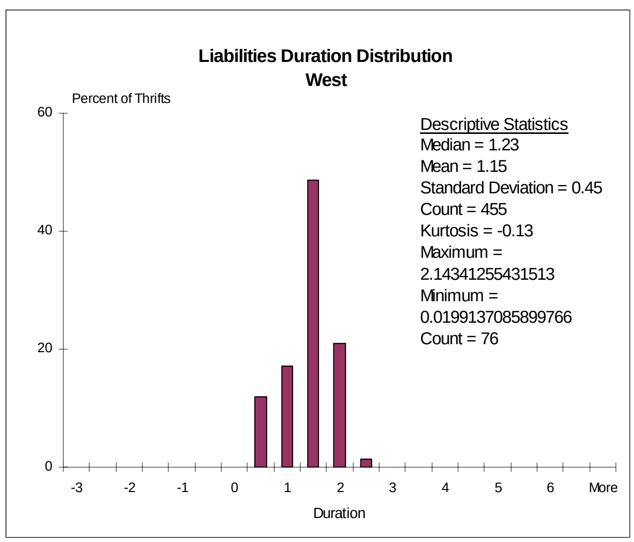
Appendix E — West Region











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: Currently measures how five hypothetical changes in interest rates (three successive 100 basis point increases and two successive 100 basis point decreases) 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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