

# The Quarterly Review of Interest Rate Risk

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



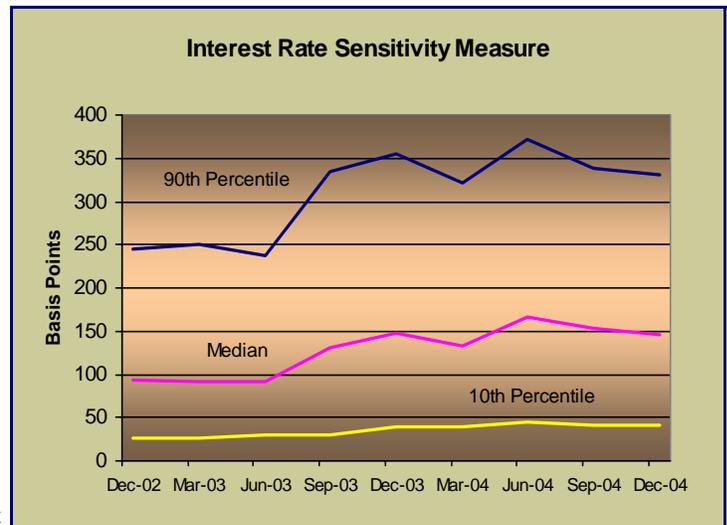
### Special points of interest:

- 30-yr mortgage commitment rate rises
- Treasury yield curve flattens in the fourth quarter
- Fourth quarter median interest rate sensitivity falls slightly
- Asset duration falls
- Comparative Regional Analysis
- Feature Article on FAS No. 133 and Its Impact on Risk Management

## Interest Rate Sensitivity Falls for Second Consecutive Quarter

The fourth quarter saw median interest rate sensitivity fall to 145 basis points from 153 basis points in the third quarter. The decline in sensitivity was due to the change in interest rates between the third and fourth quarters that caused the median duration gap between assets and liabilities to narrow for the industry.

Both the median pre-shock and post-shock Net Portfolio Value (NPV) ratios rose in the fourth quarter. Despite the overall improvement in these capital ratios, the number of thrifts with post-shock NPV ratios below 4.0 percent increased from three



to five institutions.

The fourth quarter saw the Treasury yield curve continue

its flattening trend as a result of increases made to the fed-

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## FAS No. 133 and Its Impact on Risk Management

Traditionally, the thrift industry with its heavy reliance on funding long-term, fixed-rate mortgages with short-term deposits has been exposed to significant interest rate risk. In the late 1970s and early 1980s, risk managers at thrifts had few tools at their disposal to hedge this type of financial risk.

Derivatives such as swaps, caps, floors, and futures were new financial contracts, and most thrifts did not have easy access to the markets for these products, or the analytical tools required to evaluate the

safety and soundness of derivatives use. As a result, most thrift executives were forced to use more traditional asset-liability techniques to hedge interest rate risk.

For example, reducing the duration mismatch between assets and liabilities by including more adjustable-rate mortgage loans or longer-term deposit products in thrift portfolios was a popular alternative approach for managing interest rate risk. Changing the balance sheet, however, can be time-consuming, and thrift customers may not always de-

mand the financial products that are most useful for risk management purposes.

Indeed, the thrift crisis of the 1980s illustrates the difficulties associated with properly executing this risk management strategy, since many thrift executives were unable to change their portfolios quickly enough to counter the rapid rise in short-term interest rates that occurred.

Today, the use of financial derivatives such as swaps, caps, floors, forwards, and futures has become widespread.

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## FAS No. 133 and Its Impact on Risk Management (continued)

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The markets for these products have matured, their pricing has become more transparent, and the analytical models necessary to be able to use these instruments effectively are readily accessible and affordable. As a result, the use of derivatives is an efficient and convenient way to manage interest rate risk. Despite this, the thrift industry largely continues to avoid using these products in hedging strategies, even though thrifts' balance sheets are still exposed to interest rate risk.

For example, in September 2004, only 44 thrifts reported financial derivatives on Schedule CMR. This number represents approximately five percent of the industry. Most of the thrifts that use derivatives are large, with 64 percent each having total assets in excess of \$1 billion. The failure of derivatives use to take hold in certain parts of the industry is understandable.

Many small- and medium-size thrifts are not comfortable using derivatives because of their association with some well-publicized derivative debacles in the 1990s (e.g., Gibson Greetings, Barings, and Orange County, CA). And, in some cases, they simply do not possess the management expertise or the financial wherewithal to properly use derivatives. Indeed, the transaction costs associated with acquiring derivatives can be prohibitive to smaller thrifts.

On the other hand, anecdotal evidence suggests that

risk managers at the larger thrifts often forego or limit using derivatives because of the complex accounting rules for derivatives laid out in Financial Accounting Standard (FAS) No. 133, "Accounting for Derivative Instruments and Hedging Activities." Moreover, the recent high-profile accounting problems at Fannie Mae and Freddie Mac dramatically illustrate the potential problems associated with using derivatives and have forced thrift executives, investors, and banking regulators to pay closer attention to the complexities associated with this accounting standard.

This article focuses on FAS 133 and attempts to accomplish the following. First, we introduce the reader to the concepts and terminology of FAS 133. Second, we discuss how FAS 133 differs from previous accounting standards for derivatives and hedging. Third, we explain how FAS 133 has impacted hedging strategies for interest rate risk in the thrift industry. And, finally, we discuss how to evaluate the effectiveness of an institution's hedging strategy.

### Derivatives Accounting Before FAS 133

Prior to the implementation of FAS 133, the accounting for derivatives and hedging was inconsistent and largely incomplete. Investors often found themselves in the dark when trying to assess the risks associated with a company's de-

derivatives use and hedging strategy. Most of the early accounting guidance relevant to the thrift industry was found in FAS 80, "Accounting for Futures Contracts." Under this accounting standard issued in 1984, futures were held off balance sheet, and any associated gains or losses were reported on the income statement when they occurred, unless the futures contract was part of a qualified hedge.

Under FAS 80, hedge accounting treatment was only allowed if certain criteria were satisfied. First, the futures contract had to be attached to a specific asset or liability, a forecasted transaction, or a group of similar assets or liabilities. Second, the hedge item, or items, had to expose the thrift to risk of loss on an enterprise-wide basis (i.e., the balance sheet as a whole). Third, the thrift was required to prove, at inception of the hedging strategy and on an on-going basis, that there was a high correlation between the gains and losses on the futures contract and the hedge item (i.e., that the hedge was highly effective).

Additional criteria applied if the futures contract was used to hedge a forecasted transaction. By definition, a forecasted transaction had to have identifiable terms and be highly probable.

FAS 80 had several weaknesses. First, it dealt only with futures contracts. The accounting treatment for other derivative instru-

ments such as swaps, caps, and floors was not discussed. As a result of this omission, practitioners began applying the accounting requirements of FAS 80 to these excluded derivatives by analogy. Second, the off-balance-sheet treatment of futures made it virtually impossible for investors to fully understand the extent of an institution's futures holdings or how they were being used. Finally, this rule offered no explicit guidance on measuring hedge effectiveness, determining whether a forecasted transaction was probable, and the type of documentation that an institution needed to retain for its records.

In an attempt to address the shortcomings of FAS 80, the Financial Accounting Standards Board (FASB) issued additional accounting statements in the early 1990s, including FASs 104, 105, 107, 115 and 119. In general, these accounting statements required management to provide additional disclosures on their derivatives holdings, including the rationale for owning such products, how the gains and/or losses on the derivatives are to be recognized on the income statement, and, when any forecasted transactions being hedged are likely to occur. In addition, FASB recommended that management make certain quantitative disclosures regarding the market risks associated with their derivatives use.

Despite these efforts by FASB, the accounting rules

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## FAS No. 133 and Its Impact on Risk Management (continued)

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surrounding derivatives use were still viewed as being insufficient. Meaningful reform did not occur until several high profile companies, including Procter & Gamble and Gibson Greetings, suffered massive losses from using derivatives. In response to these derivatives debacles, and after lengthy debate, FASB issued FAS 133 in June 1998.

### Accounting for Derivative Instruments and Hedging Activities in FAS 133

The goal of FAS 133 was to provide analysts and investors with a more complete understanding of the risks associated with an institution's derivatives use and hedging strategy. The standard became effective for companies with calendar year ends beginning with the first quarter of 2001. The new rule offered an immediate improvement over earlier accounting guidance because it covered all types of derivatives, and not just futures. Unlike previous accounting standards, FAS 133 defines exactly what constitutes a derivative for purposes of the rule.

The effort to define the term derivative was done, in part, to remove the confusion surrounding the accounting treatment for embedded derivatives (i.e., derivatives embedded in traditional financial instruments, such as callable corporate bonds). Prior to the implementation of FAS 133, embedded derivatives represented an accounting loop-

hole, since management was not required to segregate and separately disclose the existence of these derivatives on financial statements.

FAS 133 specifies a three-part test to determine whether an embedded derivative needs to be segregated and accounted for separately. The key issue is whether the embedded derivative is clearly and closely related to the host contract, such as a callable corporate bond. If this condition is not satisfied, the embedded derivative needs to be unbundled from the host contract and reported separately as a derivative in the financial statements.

From a practical standpoint, FAS 133 represents a significant departure from the way firms traditionally had reported their derivatives activity. In particular, it requires that all derivatives be reported on the balance sheet at fair or market value. Moreover, gains or losses on the derivative positions are reported in the income statement, whether realized or not, in the period when they occur, unless the derivative serves as a qualifying cash flow hedge.

### Hedge Accounting Under FAS 133

Under FAS 133, most assets, liabilities, or forecasted transactions that are subject to market price risk, interest rate risk, foreign exchange risk, or credit risk are eligible for hedge accounting treatment if the stringent requirements to achieve hedge accounting

are met. It is important to note that assets designated as held-to-maturity are not eligible for hedge accounting treatment related to interest rate risk or overall changes in fair value, because it contradicts the notion of the held to maturity classification.

Similar to previous accounting standards, FAS 133 permits a group of assets, or liabilities, to receive hedge accounting treatment provided these assets or liabilities are deemed to be similar. To satisfy the definition of similar, each individual item must share the same risk exposure, and changes in fair value due to the hedged risk must affect each item in a manner generally proportional to the aggregate portfolio.

FAS 133 identifies three types of hedges: fair value hedges, cash flow hedges, and foreign currency hedges. Given the lack of foreign currency exposure in the thrift industry, we focus on fair value and cash flow hedges. A fair value hedge is a hedge of the exposure to changes in the fair value of a recognized asset, liability, or firm commitment. A cash flow hedge is a hedge of the exposure to variability in the cash flows of a recognized asset, liability, or forecasted transaction.

### Fair Value Hedges

Fair value hedges are designed for assets, liabilities, or firm commitments that have fixed contractual terms, such as a fixed-rate bond. The potential change

in value stems directly from these preset terms. An available-for-sale, fixed-rate bond is an example of an asset that might typically be designated as the hedged item in a fair value hedge. Changes in interest rates would affect the market value of the bond because the coupon payments are fixed at a pre-determined rate.

In a fair value hedge relationship, the gains and losses on the hedged asset or liability and the derivative flow directly to the income statement, with the net difference between the two showing up as "hedge ineffectiveness." In addition, the carrying value of the hedge item(s) must be adjusted on the balance sheet to account for the change in value attributed to the risk being hedged. If at any point, a hedge relationship becomes ineffective, the relationship is terminated, and all gains and losses on the derivative flow directly to the income statement and the hedged item's carrying amount is no longer adjusted for changes in fair value related to hedge accounting.

To establish a fair value hedge, management must document the details of the hedge relationship. The documentation must specifically identify at inception the derivative(s) and the hedged item(s), the specific risk being hedged (e.g., interest rate risk, credit risk) and the means of assessing the effectiveness of the hedge (e.g., correlation testing, dollar offset). Also, the

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## FAS No. 133 and Its Impact on Risk Management (continued)

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documentation must show that there is a reasonable expectation that the hedge will be “highly effective” at inception of the hedge and on an on-going basis. Unfortunately, FAS 133 does not define “highly effective,” and instead merely states that the method for determining effectiveness should be “reasonable and consistent.” From a practical standpoint, however, a highly effective hedge is one where the designated derivatives successfully offset between 80 and 125 percent.

This increased attention to documentation is a key provision of FAS 133, since FASB wanted to eliminate management’s ability to retroactively identify a hedged relationship. Under previous accounting standards for derivatives, the documentation requirements were weak, thus increasing the opportunity for management manipulation.

The following is an example of how a fair value hedge works in practice. Assume that ABC Bank wants to hedge 100 percent of the interest rate risk for a \$50 million, five-year, fixed-rate, non-callable corporate bond designated as available-for-sale (AFS). The coupon is set at 6 percent, and the current market value as well as the carrying value of the bond is \$51 million. On the basis of simulation models, the risk manager for ABC Bank determines that when interest rates change by (+/-) 50 basis points, or less, there is a high degree of correlation between the

gains and losses on the bond and the gains and losses on a \$50 million pay-fixed, receive 3-month LIBOR swap. Accordingly, the manager designates the swap as hedging the \$50 million AFS corporate bond at inception and assembles the necessary documentation.

One month later, at quarter end, interest rates have increased, corporate credit spreads have widened, and the market value of the bond has declined by \$2 million, with \$1.5 million of the decrease attributed to changes in interest rates and \$0.5 million attributed to widening credit spreads. Conversely, the swap has increased in value by \$1.48 million. The gains on the swap and losses on the bond attributed to changes in interest rates are recorded on the income statement with the net \$20,000 loss showing up as “hedge ineffectiveness.”

On the balance sheet, the carrying value of the swap is written up to \$1.48 million (the fair value at the balance sheet date). The carrying value of the bond is written down by \$2 million, with \$1.5 million of this loss is attributed to changes in interest rates recorded in the income statement and the remaining \$0.5 million loss attributable to widening credit spreads recorded as an unrealized loss on AFS securities in other comprehensive income (OCI). The \$0.5 million decline in value attributed to changes in credit spreads is reflected in the balance sheet in the “Accumulated Other Com-

prehensive Income” account (AOCI) in the equity section.

### Cash Flow Hedges

Cash flow hedges are designed for assets, liabilities, or forecasted transactions that have variable cash flows. Similar to previous accounting standards, FAS 133 does not allow hedge accounting treatment for forecasted transactions which are less than probable of occurring or with a high degree of “uncertainty in timing.”

In addition, any forecasted transaction that is part of a cash flow hedge relationship must be with a third party external to the entity and the risk being hedged must affect reported earnings.

Cash flow hedges can be used to convert variable-rate borrowings to fixed-rate borrowings, or to lock in future costs associated with the rolling over of short-term fixed rate borrowings (this would constitute a “forecasted transaction”). It is important to note that the hedged item does not necessarily have to be a variable rate asset or liability. For example, if management knew that for the next two years they were going to be rolling over \$5 million in three-month borrowings, they may want to “lock in” the costs associated these borrowings by entering into a two-year, fixed-for-floating rate swap tied to three-month LIBOR. In this case, the cash flow hedge would be hedging the vari-

ability of costs associated with a series of forecasted transactions involving fixed rates.

The primary reporting difference between a fair value hedge and a cash flow hedge is the way in which gains and losses are recognized in the financial statements. In a qualifying cash flow hedge, the effective portion of the derivative gain or loss is reported as a component of OCI (outside of earnings), and reclassified into earnings in the same period(s) during which the hedged forecasted transaction affects earnings. In the roll over example above, the effective portion of the quarter-to-quarter gains or losses on the swap would be recorded in OCI and reclassified into earnings over the two-year borrowing period.

It should be noted that, in the example, if rates fall over the two-year period, the actual costs associated with rolling over the borrowings will also fall, but the benefits resulting from this decline in rates would be offset by the derivatives losses that would occur on the swap. These would have to be amortized into earnings each time the debt was rolled over. This is the end result of locking in borrowing costs. As with a fair value hedge, any ineffectiveness in a cash flow hedge is recorded in earnings immediately.

Cash flow hedges require the same level of documentation as fair value hedges in that management must specifically identify the deriva-

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## FAS No. 133 and Its Impact on Risk Management (continued)

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 tive(s) and the hedged item (s), the specific risk being hedged (e.g., interest rate risk or credit risk) and the means of assessing the effectiveness of the hedge (e.g., correlation testing or dollar offset). They also must document that there is a reasonable expectation that the hedge will be “highly effective” at inception, and on an on-going basis

### The Short-Cut Method

Although the documentation requirements under FAS 133 are strict, the standard has a provision that relaxes those standards in very limited situations. In general, if the hedge relationship involves an interest rate swap on an interest-bearing asset or liability that is tied to the same benchmark interest rate and the terms of the swap and the hedged match, FAS 133 allows for “short-cut” accounting treatment.

Under short-cut accounting treatment, the hedge is assumed to have perfect correlation and the documentation requirements are greatly minimized. Use of this exception, however, is closely scrutinized. Some of the accounting-related problems at Fannie Mae recently can be attributed to misapplication of this rule.

### Disclosures

As part of the move to fair value accounting for derivatives and the adoption of FAS 133, FASB relaxed some of the disclosure requirements in FAS 119 that

were very useful to investors.

Two provisions that were dropped merit special attention. First, firms are no longer required to separately identify derivatives gains and losses under FAS 133. As result, it is difficult for an investor to determine the total impact of derivative use on earnings, since only hedge ineffectiveness is disclosed on the financial statements.

Second, firms are no longer required to disclose the notional values of each type of derivative they hold. In the past, some believed that these disclosures provided a useful measure of the intensity of derivatives use at a firm. Although the Securities and Exchange Commission has expanded its requirements for disclosure of information on derivatives use, many analysts believe that the adoption of FAS 133 has led to the loss of valuable information about derivatives use.

### The Implications of FAS 133 for Risk Management

#### Increased Administrative Costs

FAS 133 places greater emphasis on record keeping and on accurate instrument valuations and estimates of hedge effectiveness. As a result, firms that plan to use derivatives must be prepared to incur additional administrative costs. In particular, firms that use derivatives will have to hire people with the appropriate accounting and risk management exper-

tise. The firms will have to acquire valuations models that are capable of not only producing accurate valuations, but have the ability to estimate the effectiveness of hedge relationships by identifying the impact of various risks factors on the overall value of an instrument.

Many firms that have a desire to use derivatives may not be able to absorb these increased costs, or they may not view the benefits from using derivatives as outweighing the additional costs.

#### Increased Accounting Risk

FAS 133 is a complex accounting standard (which spans nearly 900 pages, including appendixes and Derivative Implementation Group issues), and even the most well intentioned firm may not meet the requirements to avail itself the *privilege* to use hedge accounting. Specifically, an institution must possess the ability to not only value derivatives, but to estimate how that value will change under different scenarios.

The analytical models that produce these estimates rely on numerous assumptions, and if these models produce incorrect estimates, or if certain modeling assumptions later prove to be flawed, hedge effectiveness may be compromised.

Even in the absence of model risk, firms may have difficulty interpreting some of the more vague aspects of FAS 133. For example, the standard does not specify a method for determining

hedge effectiveness. The two most widely used methods, “dollar offset” and “statistical correlation,” have well-known problems.

The dollar-offset method is the simplest to apply, and involves dividing the change in value of the derivative by the change in value of the hedged item. But this method only considers cumulative changes in value over the measurement period, not the incremental changes of value during the measurement period.

The statistical correlation method attempts to measure the degree to which two values move together. To measure the strength of such correlation, one typically relies on the correlation coefficient measure. A coefficient value of  $-1.0$  would indicate perfect negative correlation. Relying exclusively on such a measure, however, overlooks the fact that one can have perfect negative correlation, but the total gains and losses on the derivative and the hedge item may not be equal unless hedge ratios are set appropriately.

It is important to note that a firm cannot change back and forth between the two methods for measuring hedge effectiveness. The firm must specify at inception the method it will use to measure hedge effectiveness, and it should assess effectiveness for similar hedges in a similar manner. The use of different measuring methods for similar hedges must be justified. If a firm identifies an improved

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## FAS No. 133 and Its Impact on Risk Management (continued)

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method of assessing hedge effectiveness going forward, it must discontinue the existing hedging relationship and designate the relationship anew using the improved method.

Similarly, FAS 133 provides no guidance on how far into the future a firm can “forecast” a transaction. In the late 1980s, some regulatory agencies determined that forecasted transactions more than three years into the future were not probable. Although this policy is not enforced today, it is possible that firms that are too aggressive in this area run the risk of restatement, if FASB ever does provide additional clarification.

Given the high degree of accounting risk associated with FAS 133, both large and small firms, fearing the risk of bad publicity and the potential for earnings restatement, may ultimately decide to forego the use of

derivatives altogether, and instead use a less efficient means of hedging risk.

### **Increased Use of Macro Hedging**

Given the increased costs and risks associated with hedge accounting treatment under FAS 133, some firms may choose to use derivatives, but forego the process of placing them into formal individual hedge relationships. Such a hedging approach is typically referred to as macro hedging.

Although many risk managers agree that macro hedging is the most economically efficient, a firm will not be able to qualify for hedge accounting treatment. This results in the risk of earnings volatility because absent hedge accounting, the gains and losses on the derivative often will not be recognized in the same financial reporting period as the income effects of the

hedged item. Specifically, the gains and losses on all derivatives that are not part of qualified hedge relationships are run directly through the income statement in the period they occur.

This mark-to-market requirement can potentially create problems because the gains and losses on most other assets and liabilities on a bank’s balance sheet are not immediately recognized in earnings. Instead, the market value changes on some assets, such as available-for-sale securities, are reflected in OCI and not recorded on the income statement until the gain or loss is realized when the asset is sold.

Complicating the situation even further, some other types of assets, such as mortgage servicing rights, are carried at the lower of cost or market, and thus can never be adjusted above their cost basis. Given the

fact that management at some firms may not be willing to defend the use of macro hedging, they may forgo using derivatives altogether.

### **Conclusion**

FAS 133 represents a significant improvement over previous accounting standards for derivatives use. Whether it has achieved its goal of producing more transparency regarding a firm’s use of derivatives is still in question. Nonetheless, it has had a tremendous impact on the hedging process.

Given its complexities, firms that plan to use derivatives must invest in the necessary infrastructure to ensure that it is done in a safe and sound manner. The use of derivatives should reduce a savings association’s risks, not exacerbate them. ■

## Interest Rate Sensitivity Falls for Second Consecutive Quarter (continued)

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eral funds target rate by the Federal Reserve. Between the third and fourth quarters of 2004, rates rose for all maturities, except for those at the long end of the yield curve or beyond the 20-year maturity point.

For example, the two-year CMT yield rose by 46 basis points, while the “estimated 30-year CMT yield” fell by 7 basis points (the 30-year CMT yield is estimated using an adjust-

ment factor applied to the daily 20-year CMT yield).

Changes in the slope of the yield curve, as measured by the difference between two-year CMT and 10-year CMT yields, provides evidence of a substantially flatter curve. In December 2003, the difference was 242 basis points. This difference fell to 152 basis points in September 2004, and was 115 basis points by the end of December 2004.

LIBOR rates also rose

over the past year. One-month LIBOR increased from 1.12 percent to 2.40 percent between December 2003 and December 2004, while three-month LIBOR rose from 1.15 percent to 2.56 percent over the same period.

Typically, flatter yield curves put pressure on the net interest margins of financial institutions because the spread between yields on assets and the costs of liabilities narrows. Despite

the flatter yield curve and higher liability costs in the fourth quarter, average net interest margins actually rose by two basis points for the thrift industry. This modest increase in net interest margins was due largely to higher asset yields on new and repricing assets.

Although the narrowing of spreads between asset yields and funding costs has so far not severely adversely impacted the industry, this

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## Interest Rate Sensitivity Falls for Second Consecutive Quarter (continued)

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will probably not continue in the future.

Between June 2004 and December of 2004, the Federal Reserve raised the federal funds target rate five times, resulting in an overall increase of 125 basis points. After the target rate was raised again by 25 basis points in both February 2005 and March 2005, the federal funds rate now stands at 2.75 percent. The federal funds target rate is the benchmark of short-term interest rates in the United States.

Elevated market expectations for inflation implied by the current yield curve suggest that the Federal Reserve will continue to aggressively raise the target federal funds rate. The current spread between 10-year Treasury Inflation Protected Securities (TIPS) and Treasury notes implies that the market expects an inflation rate of 2.70 percent.

TIPS are a special type of Treasury note that protects investors from inflation. The coupon payments and underlying principal of these securities are increased to compensate for inflation, as measured by the Consumer Price Index.

Historically, the Federal Reserve prefers that the inflation spread be about 2.00 percent. Because it appears likely the Fed will continue to raise rates throughout 2005, thrifts should determine how such an increase would affect profitability, and if necessary, devise portfolio-rebalancing strategies. One possible strategy,

although it may not be appropriate for all thrifts, is to shorten asset duration and lengthen liability duration.

Thrifts have already responded to a flattening yield curve over the past year by changing the composition of the assets and liabilities they hold in their portfolios. Between December 2003 and December 2004, thrifts increased their portfolio holdings of single-family adjustable-rate mortgages and mortgage-backed securities (MBS) from \$333.4 billion to \$453.7 billion. In percentage terms, thrifts held 64.8 percent of their single-family mortgages in ARMs at the end of December 2004 compared to 60.6 percent at the end of December 2003.

By increasing their portfolio holdings of ARMs, thrifts can decrease the duration mismatch between the assets and liabilities in their portfolios and lower their exposure to interest rate risk. This occurs because adjustable-rate mortgages typically have lower effective durations than fixed-rate mortgages.

Particularly for periods when interest rates are rising, adjustable-rate mortgages are attractive because they reprice much more often than fixed-rate mortgages.

Besides an overall increase in the proportion of ARMs held in portfolio during 2004, there was also a change in the portfolio mix of adjustable-rate mortgages. Between December 2003 and December 2004, thrift portfolio holdings of non-teaser, lagging index

ARMs with a reset frequency of one-month rose 60.3 percent.

Over the same period, thrift portfolio holdings of non-teaser CMT ARMs with reset frequencies of six months or less and between seven months and two years rose 37.9 percent and 42.7 percent, respectively.

During 2004, the liabilities side of the balance sheet for thrifts witnessed some notable changes. For example, total variable-rate borrowings rose from \$135.6 billion to \$165.8 billion. Also, brokered deposits with an original maturity of 12 months or less rose dramatically. Between December 2003 and December 2004, these deposits rose from \$5.5 billion to \$26.5 billion. This represents a 376 percent increase.

From a risk management perspective, brokered deposits are considered a more volatile source of funding, because the depositors associated with these accounts are more rate sensitive than traditional "core" deposits. As such, the NPV Model assigns no intangible value to these deposits and assumes an effective duration of zero.

Total thrift industry earnings rose to \$3.76 billion in the fourth quarter, up seven percent from \$3.50 billion in the prior quarter. Consistent with the rise in earnings, thrift profitability also rose from the previous quarter. The average return on assets for the industry rose to 1.17 percent in the fourth quarter, up from 1.15 percent in the third quarter.

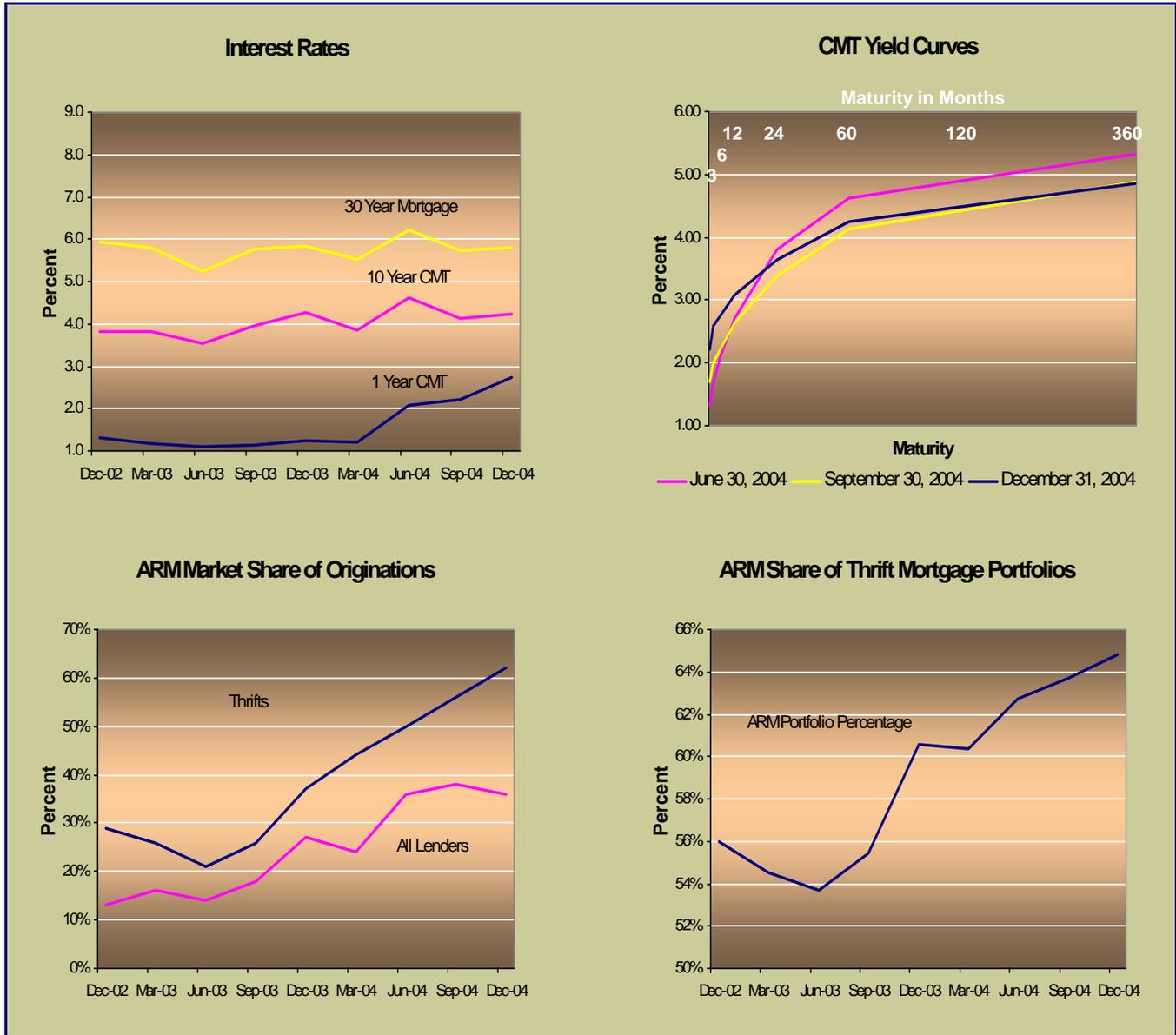
The 30-year mortgage rate, as measured by the contract interest rate on Freddie Mac commitments for fixed-rate 30-year mortgages, rose to 5.81 percent at the end of the fourth quarter, up modestly from 5.72 percent at the end of the third quarter. Between December 2003 and December 2004, the 30-year mortgage rate showed very little change, moving from 5.85 percent to 5.81 percent.

The small rise in 30-year quarter-end mortgage rates, however, is misleading when looking at refinancing activity for the fourth quarter. The fourth quarter actually saw mortgage-refinancing volume increase from the level in the third quarter. This was due to the substantial degree of volatility displayed by the mortgage rate between September 30, 2004 and December 31, 2004. Between October 6 and October 22, the mortgage rate fell 28 basis points. It then continued to trend upward, rising 29 basis points between October 23 and December 2. Finally, between December 15 and December 31, the mortgage rate increased about 16 basis points.

Fourth-quarter 1-4 family mortgage originations by thrifts rose to \$154.1 billion, up from \$145.4 billion in the third quarter. Total mortgage originations by thrifts in the fourth quarter were \$176.6 billion, up from \$167.1 billion in the third quarter. With regard to mortgage pipeline activity, the notional amount of optional

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## Interest Rates and ARM Market Share



### Interest Rate Sensitivity Falls for Second Consecutive Quarter (continued)

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 commitments to originate mortgages fell from \$67.2 billion in the third quarter to \$59.9 billion in the fourth quarter. The notional amount of firm commitments to originate mortgages fell only slightly, falling from \$3.4 billion to \$3.2 billion over the same period.

The fourth quarter saw the ARM share of total thrift

mortgage originations rise to 62 percent, up from 55 percent in the prior quarter. Consistent with the rise in the share of thrift ARM originations, the ARM share of total 1-4 family mortgages held by thrifts in their portfolios rose to 64.8 percent in the fourth quarter, up from 63.7 percent in the prior quarter.

Mortgage refinancing activity accounted for 35.8 per-

cent of thrift originations of single-family mortgages in the fourth quarter, up from 31.5 percent in the third quarter. This increase is consistent with the mortgage refinancing activity of all lenders, where the proportion rose to 42 percent from 33 percent between the third and fourth quarters.

The industry's median effective duration of assets fell from 1.82 to 1.79 between

the third and fourth quarters. With the decrease in longer-term interest rates during the fourth quarter, the rate of mortgage prepayments rose.

As a result of the rise in prepayments, the durations of both mortgages and total assets fell. The industry's median effective duration of liabilities fell from 1.66 to 1.62 in the fourth quarter.

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## Duration and NPV Sensitivity Measures

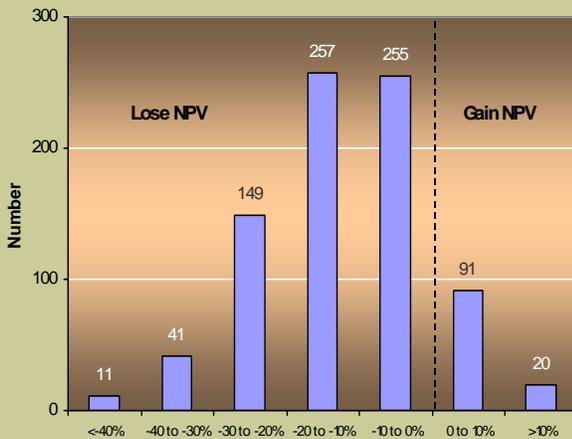
Median Effective Duration



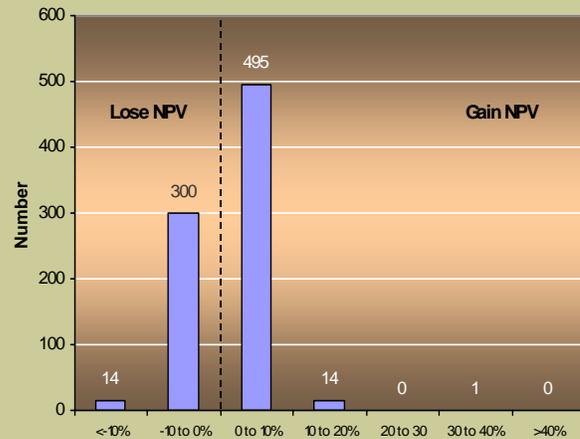
Median Pre- and Post-Shock NPV Ratios



Estimated Change in NPV: +200bp Rate Change



Estimated Change in NPV: -100bp Rate Change



### Interest Rate Sensitivity Falls for Second Consecutive Quarter (continued)

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This was due to the rise in short- and medium-term interest rates.

The median pre-shock NPV ratio for the industry rose from 13.4 percent in the third quarter to 13.6 percent in the fourth quarter. Similarly, the median post-shock NPV ratio also rose, moving

from 11.8 percent at the end of the third quarter to 12.1 percent at the end of the fourth quarter.

The number of thrifts with a post-shock NPV ratio below 4 percent rose from three to five institutions between the third and fourth quarters. Despite this increase, the number of thrifts highly exposed

to interest rate risk remains low.

Of the 824 thrifts filing Schedule CMR in the fourth quarter, 86.5 percent would have experienced a loss of net portfolio value if interest rates rose by 200 basis points. About 24 percent of thrifts would have lost more than 20 percent of their value if rates

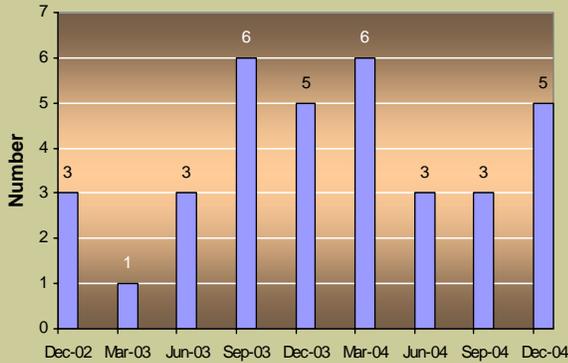
rose by 200 basis points. If rates fell by 100 basis points, about 64 percent of reporting thrifts would have experienced increases in their net portfolio values.

The percentage of thrifts with a post-shock NPV ratio over 6 percent rose between the third and fourth quarters.

(Continued on page 10)

## Interest Rate Risk Measures

**Thriffs with Post-Shock NPV Ratios Under 4 Percent**



**Interest Rate Risk Measures Industry Aggregates Last Two Quarters**

	NPV as % of PV of Assets		% Change in NPV	
	Sep-04	Dec-04	Sep-04	Dec-04
<b>+300</b>	9.29%	8.48%	-23%	-28%
<b>+200</b>	10.35%	9.70%	-13%	-16%
<b>+100</b>	11.13%	10.67%	-5%	-7%
<b>Base</b>	11.60%	11.29%	0%	0%
<b>-100</b>	11.49%	11.35%	0%	1%
<b>-200</b>	N/A	N/A	N/A	N/A
<b>-300</b>	N/A	N/A	N/A	N/A

**Post-Shock NPV Ratio and Sensitivity Measure Matrix September 2004**

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
<b>Over 10%</b>	246	156	176	27	605
<b>6% to 10%</b>	70	60	79	8	217
<b>4% to 6%</b>	1	0	13	2	16
<b>Below 4%</b>	1	1	0	1	3
<b>Total</b>	<b>318</b>	<b>217</b>	<b>268</b>	<b>38</b>	<b>841</b>

Minimal    Moderate    Significant    High

**Post-Shock NPV Ratio and Sensitivity Measure Matrix December 2004**

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
<b>Over 10%</b>	240	172	173	22	607
<b>6% to 10%</b>	66	52	74	9	201
<b>4% to 6%</b>	0	0	11	0	11
<b>Below 4%</b>	1	1	1	2	5
<b>Total</b>	<b>307</b>	<b>225</b>	<b>259</b>	<b>33</b>	<b>824</b>

Minimal    Moderate    Significant    High

### Interest Rate Sensitivity Falls for Second Consecutive Quarter (continued)

(Continued from page 9)  
In the fourth quarter, these thrifts comprised 98.1 percent of the industry, compared to 97.7 percent in the third quarter.

The number of thrifts with a post-shock NPV ratio below 6 percent fell to 16 institutions in the fourth quarter, down from 19 in the prior

quarter.

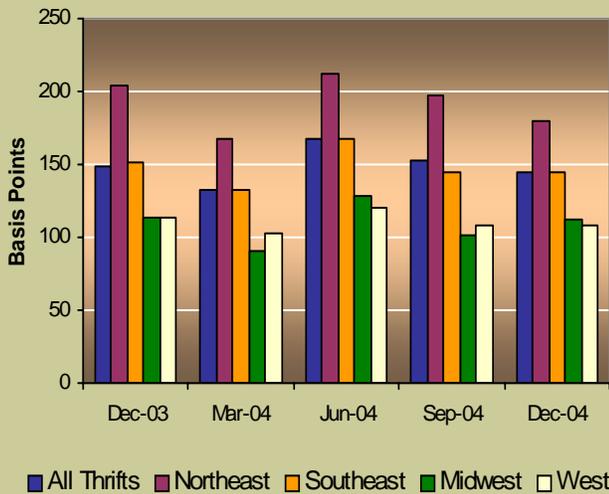
The percentage of thrifts with interest rate sensitivity of 200 basis points or less increased in the fourth quarter, rising to 64.6 percent from 63.6 percent in the prior quarter.

Finally, the percentage of thrifts with over 400 basis points in interest rate sensi-

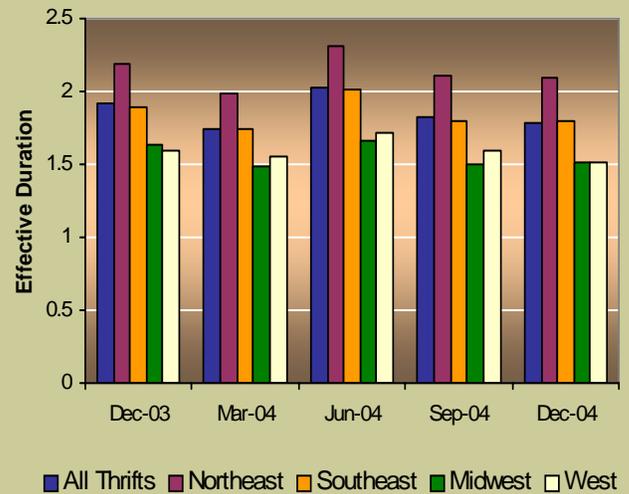
tivity fell to 4 percent in the fourth quarter from 4.5 percent in the prior quarter. ■

## Comparative Trends in the Four OTS Regions

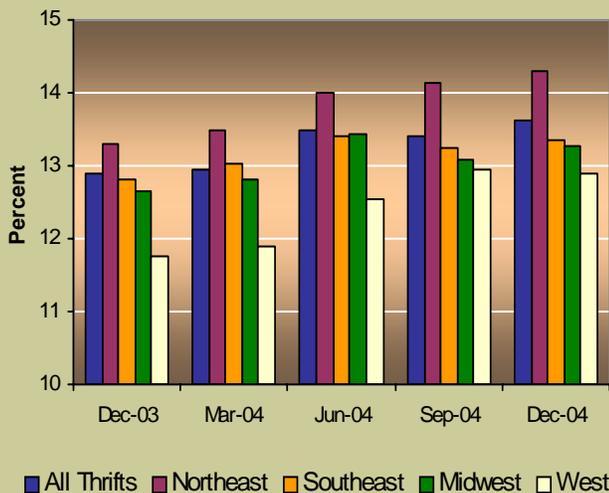
**Median Sensitivity by OTS Region**



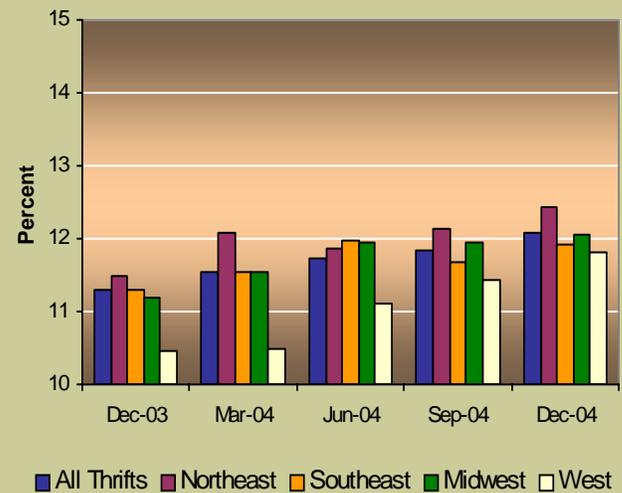
**Median Assets Duration by OTS Region**



**Median Pre-Shock NPV Ratio by OTS Region**



**Median Post-Shock NPV Ratio by OTS Region**



### Regional Comparisons

The Northeast Region had the highest median sensitivity, at 180 basis points at the end of the fourth quarter, while the Midwest Region had the lowest median sensitivity, at 108 basis points.

Two of the four OTS regions experienced a decrease in their interest rate sensitivity in the fourth quarter. The Northeast and

Southeast Regions saw their median sensitivities fall by 8.6 percent, and 0.69 percent, respectively.

In contrast, the Midwest Region saw its median sensitivity rise 9.8 percent, while median sensitivity remained unchanged in the West Region between the third and fourth quarters.

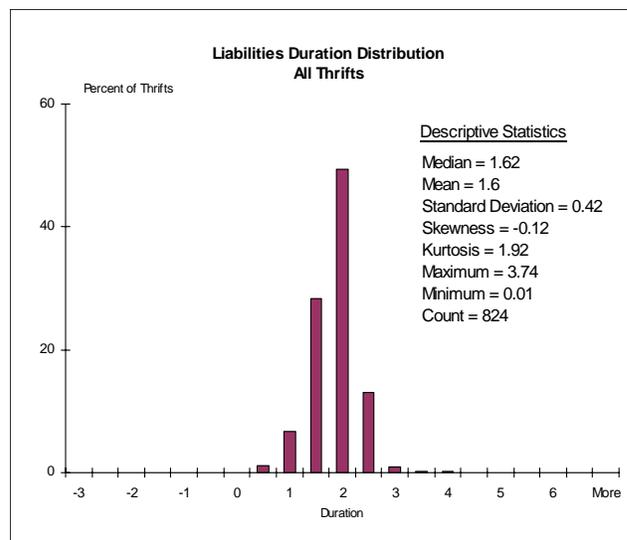
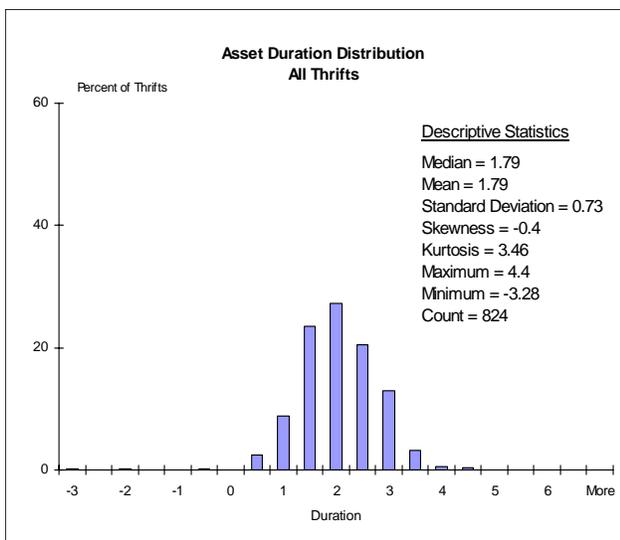
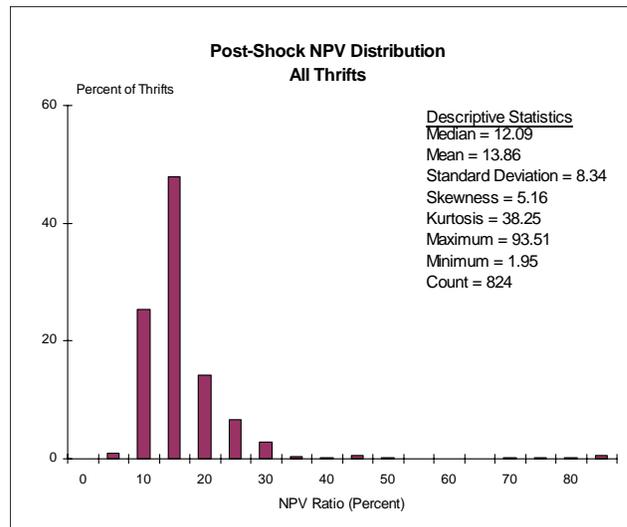
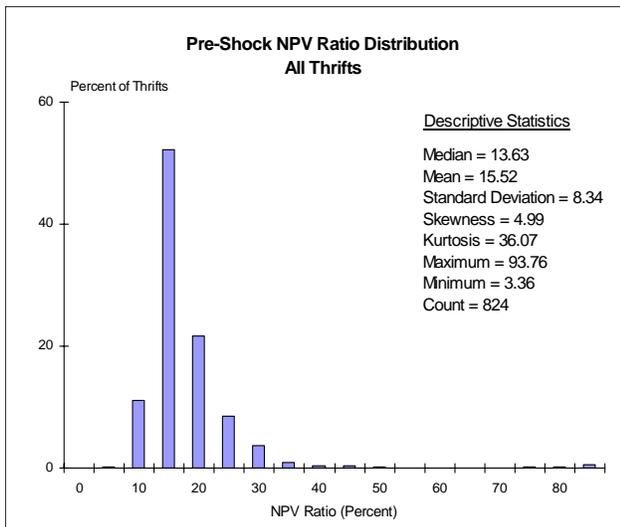
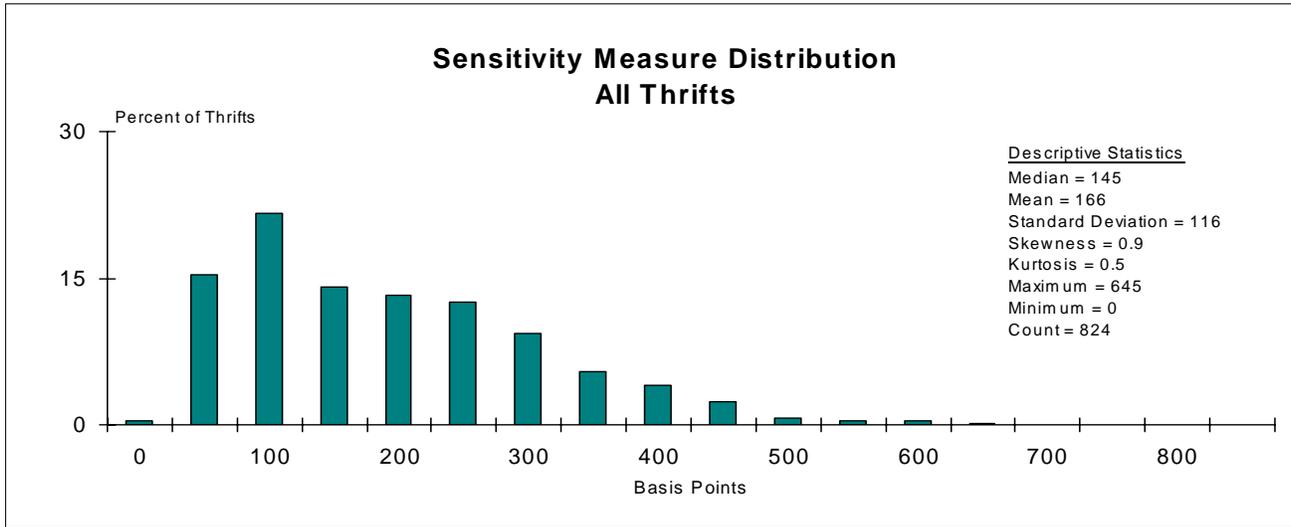
The Northeast Region had the highest median asset duration, at 2.09 at the end of the fourth quarter. Both the Midwest and West Regions had the lowest median asset duration, at 1.52.

For the fourth quarter, the Northeast Region had the highest pre-shock NPV ratio at 14.3 percent, while the

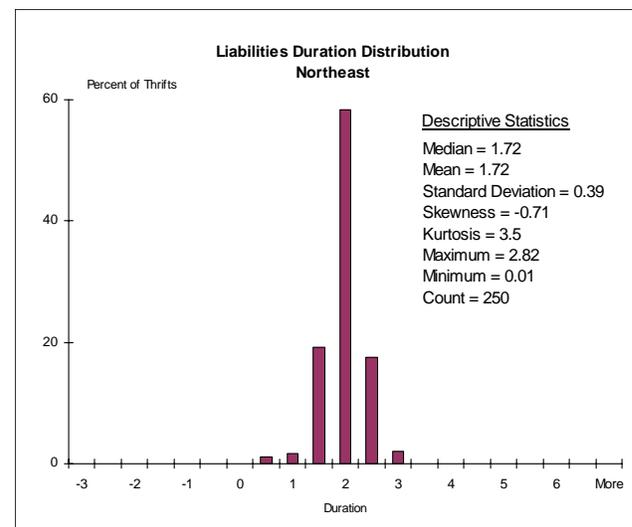
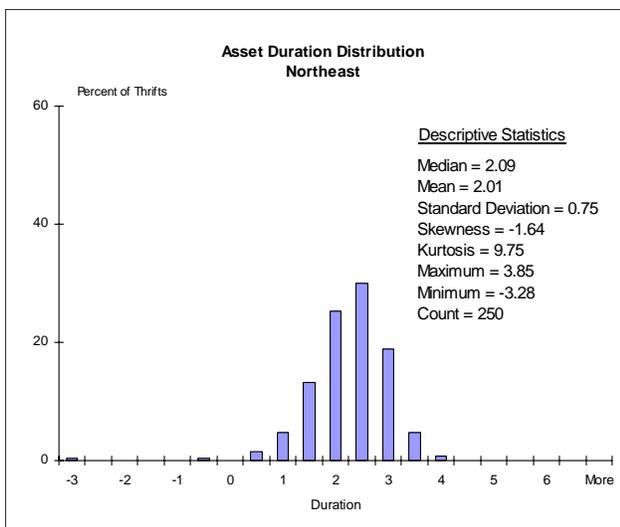
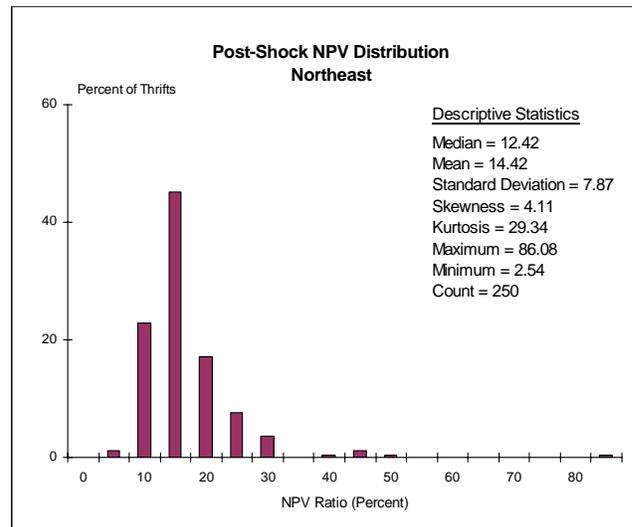
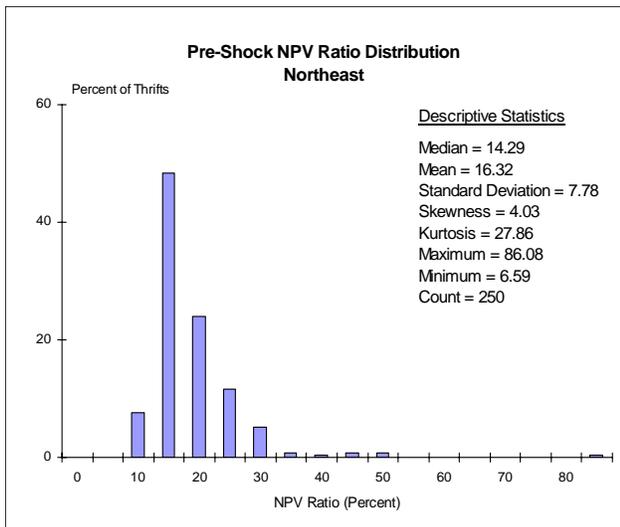
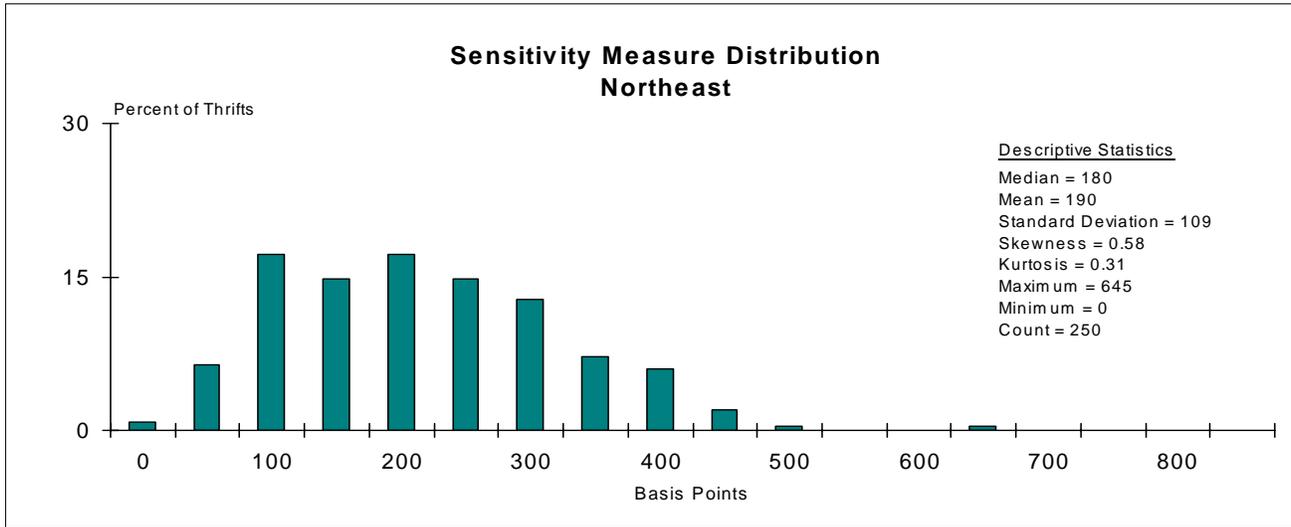
West Region had the lowest pre-shock NPV ratio at 12.9 percent. All OTS regions saw their median post-shock NPV ratios rise in the fourth quarter.

Finally, all OTS regions saw their median liability duration fall as a result of the change in interest rates. ■

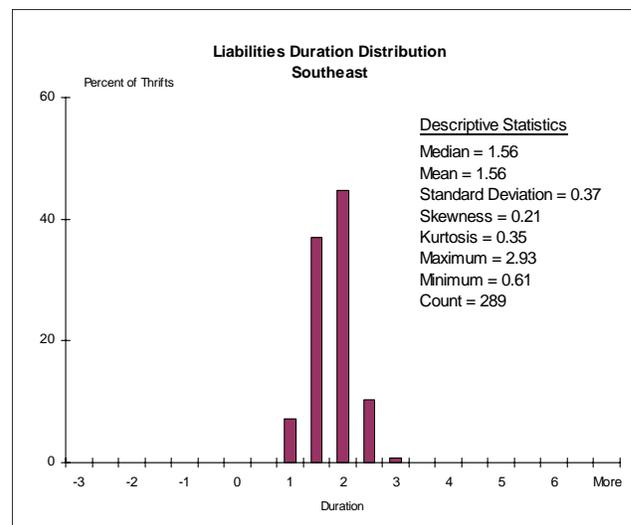
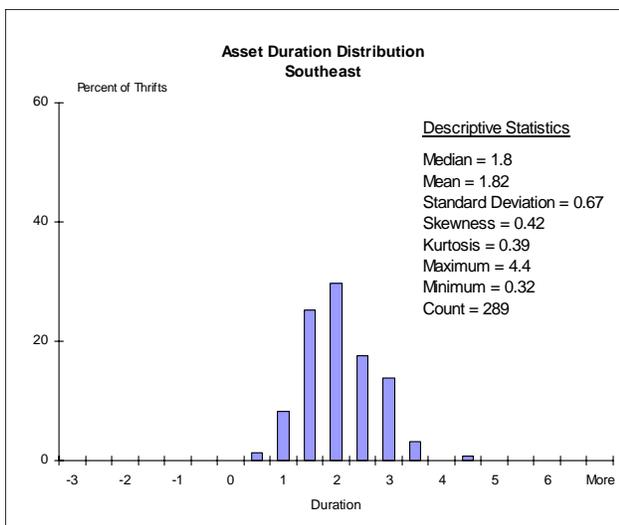
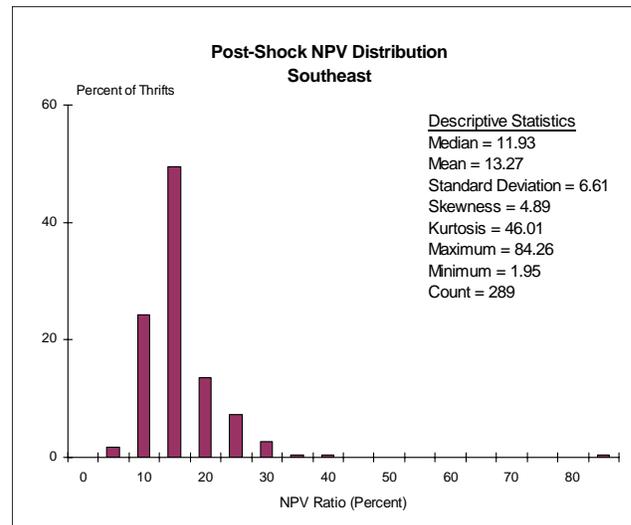
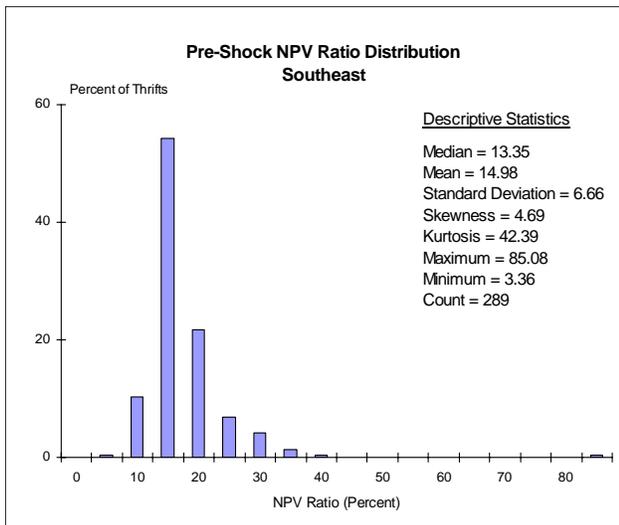
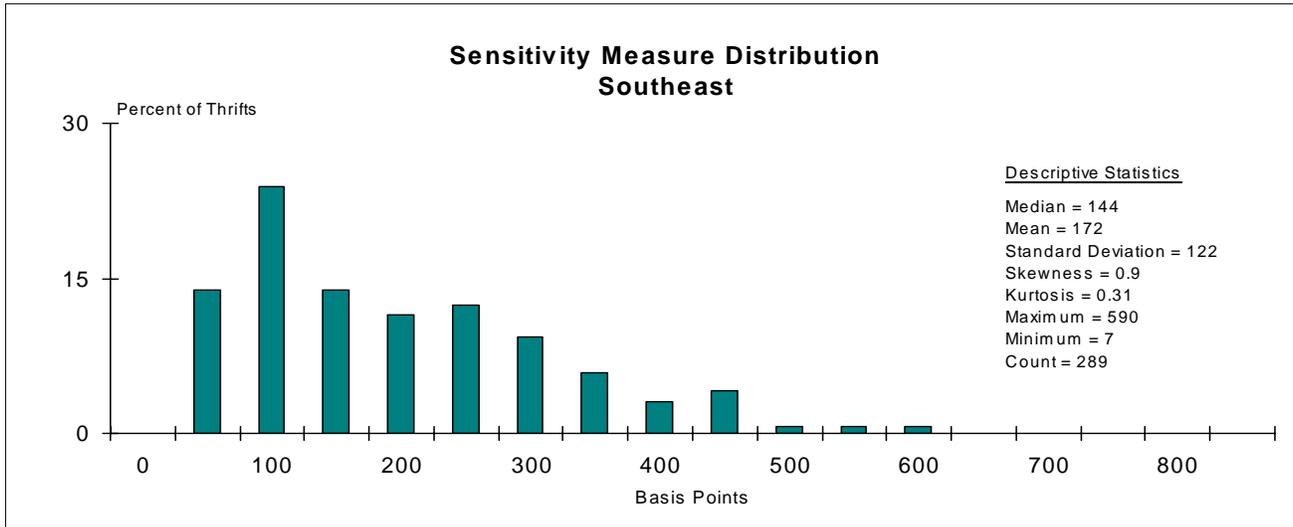
## Appendix A – All Thrifts



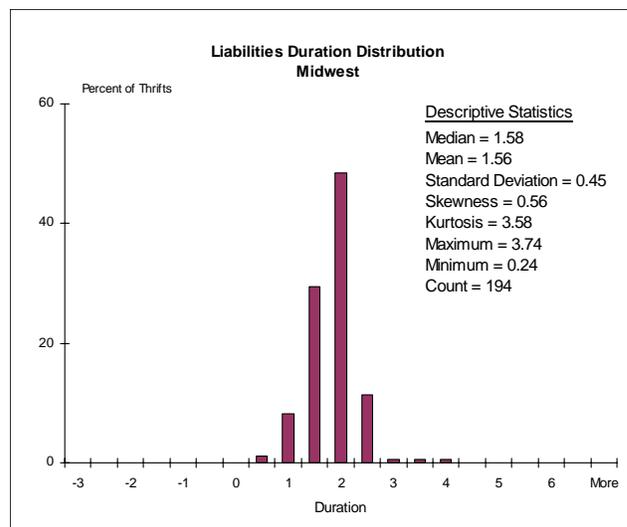
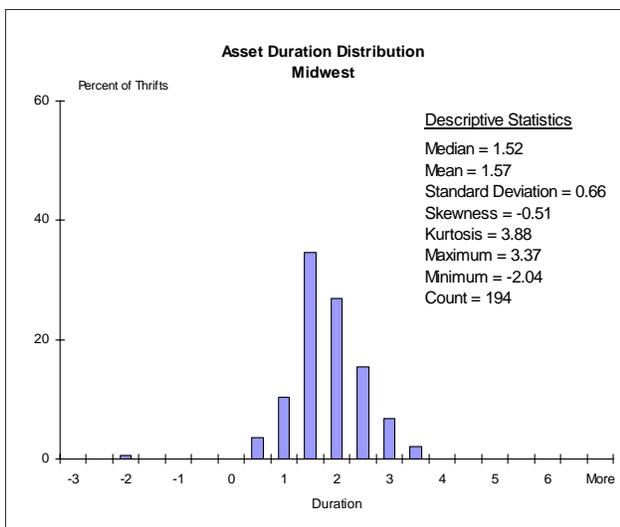
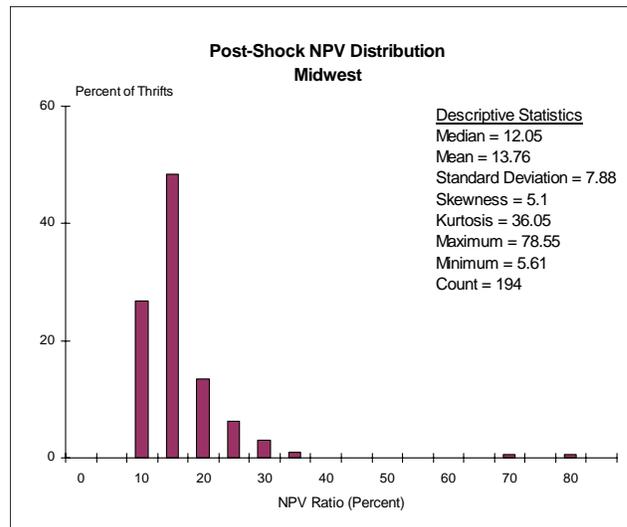
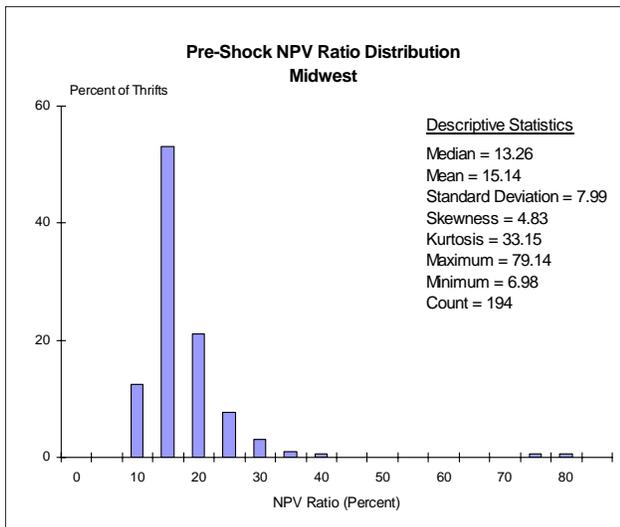
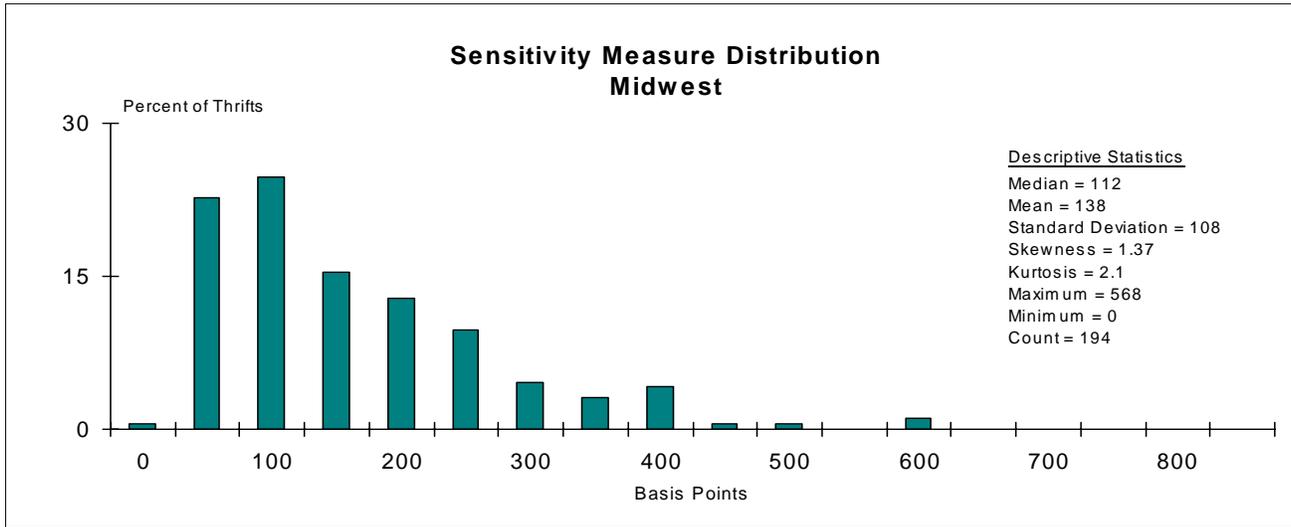
## Appendix B – Northeast Region



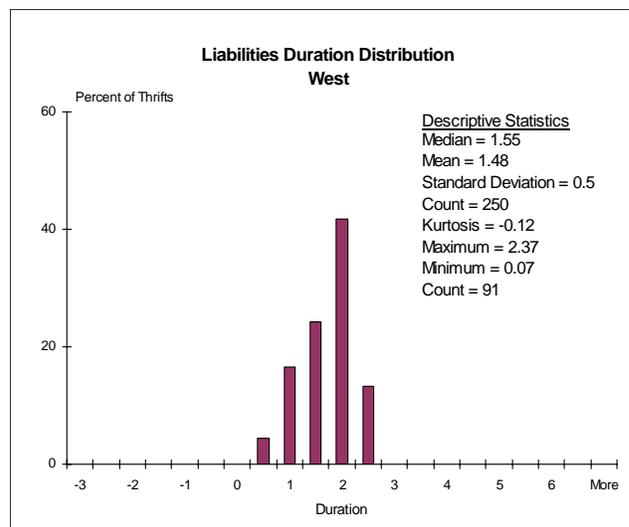
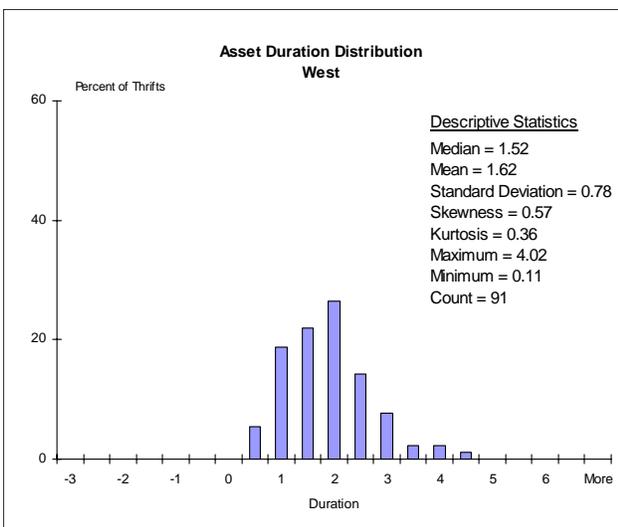
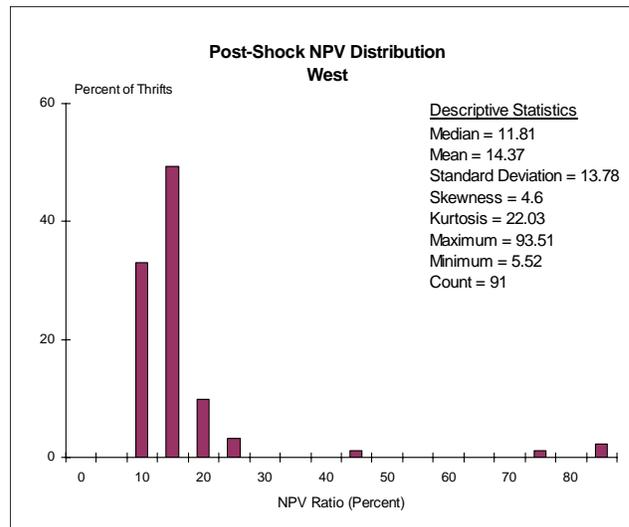
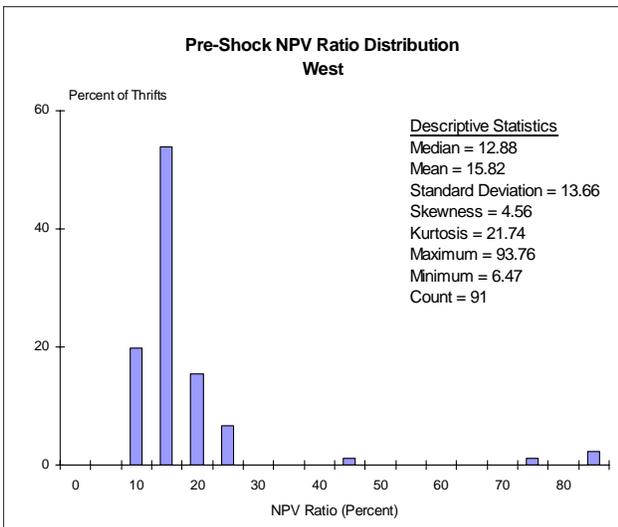
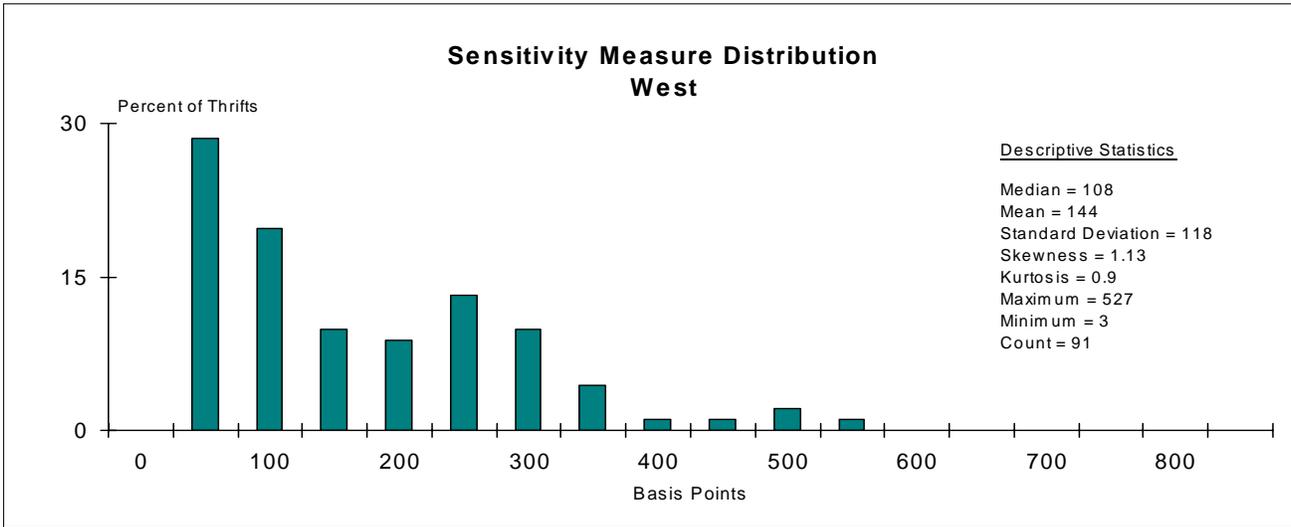
## Appendix C – Southeast Region



## Appendix D – Midwest Region



## Appendix E – West Region



## *Glossary*

**Duration:** A first-order approximation of the price sensitivity of a financial instrument to changes in yield. The higher the duration, the greater the instrument's price sensitivity. For example, an asset with a duration of 1.6 would be predicted to appreciate in value by about 1.6 percent for a 1 percent decline in yield.

**Effective Duration:** The average rate of price change in a financial instrument over a given discrete range from the current market interest rate (usually, +/-100 basis points).

**Estimated Change in NPV:** The percentage change in base case NPV caused by an interest rate shock.

**Kurtosis:** A statistical measure of the tendency of data to be distributed toward the tails, or ends, of the distribution. A normal distribution has a kurtosis statistic of three.

**NPV Model:** Measures how six hypothetical changes in interest rates (three successive 100 basis point increases and three successive 100 basis point decreases, assuming a normal interest rate environment) affect the estimated market value of a thrift's net worth.

**Post-Shock NPV Ratio:** Equity-to-assets ratio, following an adverse 200 basis point interest rate shock (assuming a normal interest rate environment), expressed in present value terms (i.e., post-shock NPV divided by post-shock present value of assets). Also referred to as the exposure ratio.

**Pre-Shock NPV Ratio:** Equity-to-assets expressed in present value terms (i.e., base case NPV divided by base case present value of assets).

**Sensitivity Measure:** The difference between Pre-shock and Post-shock NPV Ratios (expressed in basis points).

**Skewness:** A statistical measure of the degree to which a distribution is more spread out on one side than the other. A distribution that is symmetric will have a skewness statistic of zero.

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