

The Quarterly Review Of Interest Rate Risk

Office of Examinations, Supervision, and Consumer Protection
 Economic Analysis Division



Special points of interest:

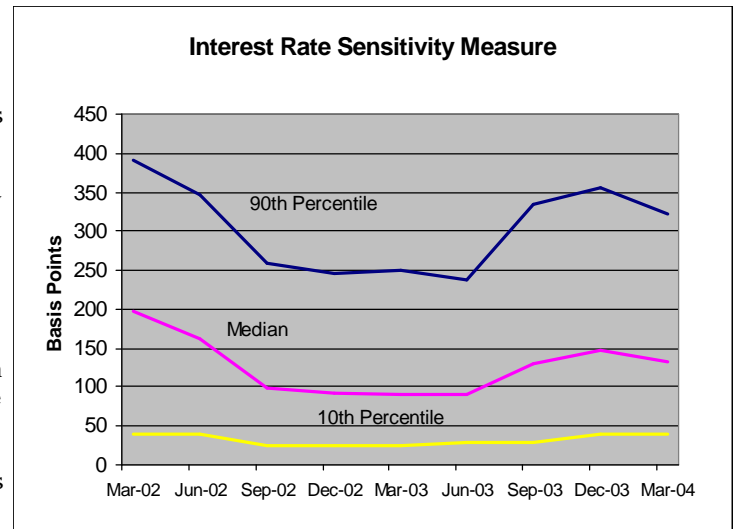
- 30-yr mortgage rate falls
- Yield curve shifts downward in the first quarter
- First quarter median interest rate sensitivity decreases
- Asset duration falls
- Comparative Regional Analysis
- Feature Article on Asset Securitization

Interest Rate Sensitivity Falls in First Quarter

Median interest rate sensitivity decreased from 148 basis points in the fourth quarter to 132 basis points in the first quarter of 2004. The fall in sensitivity for the thrift industry was due to the decrease in interest rates in the first quarter.

Both the median pre-shock Net Portfolio Value (NPV) ratio and the median post-shock NPV ratios rose in the first quarter.

The number of thrifts with post-shock NPV ratios below 4 percent rose to six institutions, up from five in the previous quarter.



(Continued on page 4)

Asset Securitization

An important financial innovation that has swept through the U.S. financial services sector during the past 25 years is asset securitization. The securitization of assets began back in the 1970s with the structured financing of mortgage pools.

Asset securitization refers to the pooling and packaging of homogeneous loan assets originated by financial and non-financial institutions for sale as securities. The cash flows associated with the loan assets serve as the collateral for the issued securities.

The purchasers of securitized assets can be retail investors, commercial banks, thrift institutions, or institutional investors. In-

stitutional investors typically include mutual funds, insurance companies, and pension funds.

Some of the most popular types of loans used for securitization purposes today are those involving residential mortgages, commercial mortgages, automobile loans, and credit-card receivables. Other types of loans that are also securitized include home equity loans, equipment leases, and health-care receivables, to name just a few.

For the most part, any type of asset can be securitized, so long as it is profitable to do so. The profitability of a particular asset securitization is related to how much of the asset serv-

ing as collateral for the securities exists, the degree of homogeneity of the asset, and the ease of valuing it. Clearly, the more difficult it is to value a loan or asset, the greater the costs of securitization.

Today, asset securitization is especially attractive to financial institutions, particularly the larger institutions, because of its many benefits.

In large measure, the popularity of securitization is due to recent advances in financial engineering and pressure on financial institutions to increase their fee, or noninterest, income and to improve their return on assets. Recent advances in

(Continued on page 2)

Charts in this issue:

Yield Curves	5
Mortgage Rates	5
Portfolio Mix	5
IRR & NPV Measures	6
TB13a S-Rating Matrix	7
Comparative Trends in the Four OTS Regions	8
Aggregate and Regional Appendices	9-13

Asset Securitization(continued)

(Continued from page 1)

financial engineering have facilitated the creation of the typical bond structure associated with a securitized asset from almost any type of asset's cash flow stream.

As such, the advances in financial engineering account for the dramatic increase in the types of so-called asset-backed securities, which are securities that are backed by loan assets other than mortgage loans.

More specifically, securitization allows financial institutions to get loans they originate off their balance sheets, and in the process, they are able to improve their return on assets in several ways. First, they are able to raise their return on equity through higher noninterest income.

Second, assuming there is no recourse involving the loans that are securitized, financial institutions can generally lower their risk-based capital requirements. Recourse refers to the ability of the buyer of a negotiable instrument to sell it back to the issuer according to the terms and conditions set forth in the sales contract.

Finally, by moving longer duration assets off their balance sheets and securitizing them, financial institutions are able to decrease their interest rate risk exposure by reducing the duration gap between assets and liabilities. This assumes the financial institutions use the proceeds to purchase assets of shorter duration or hold it as cash on the balance

sheet.

For example, many OTS-regulated institutions, while originating both fixed-rate and adjustable-rate mortgages, exhibit a strong tendency to retain the ARMs and sell the fixed-rate loans into pools of mortgage-backed securities, thus reducing their asset durations.

Overall, asset securitization provides a financial institution with an important source of fee income and a lower cost source of funding.

With regard to risk management, financial institutions, such as commercial banks and thrift institutions, have two techniques at their disposal to manage their interest rate risk exposure.

These techniques fall into two categories: on-balance-sheet methods and asset securitization. On-balance-sheet methods include such techniques as maturity matching and duration matching of assets and liabilities and the use of financial derivatives such as interest-rate futures, options, swaps, caps, collars, and floors to hedge interest rate risk.

Asset securitization, in the absence of recourse, allows financial institutions to manage interest rate risk by removing long duration assets such as mortgages from their balance sheets.

In what follows, we examine what asset securitization is in more detail and discuss the mechanics of a typical securitization. We also discuss the benefits accruing to the financial institutions that

originate the loans that are pooled for sale as securities, the investors who purchase these securities, and the borrowers. Finally, we discuss several of the risks associated with the securitization of assets.

What is Asset Securitization?

As noted above, asset securitization refers to the process where interests in the cash flows associated with loans and other receivables are pooled, packaged, underwritten, and sold to investors in the form of securities. (The following discussion draws from Fabozzi and Modigliani, *Mortgage and Mortgage-Backed Securities Markets*, Bhattacharya and Fabozzi, *Asset-Backed Securities*, Saunders, *Financial Institutions Management*, and Sinkey, *Commercial Bank Financial Management*).

As such, asset securitization is a form of what is known as contingent-commitment banking. Contingent-commitment banking refers to the use of off-balance sheet activities by financial institutions, such as loan commitments, lines of credit, and asset securitization, in asset/liability management.

For the sake of illustration, we focus our discussion on what is known as a pass-through security. There are five parties involved in a typical "pass-through" asset securitization: the loan originator, the loan purchaser, the loan packager, a guarantor, and inves-

tors.

By definition, a pass-through security, such as a pass-through MBS, is one where the principal and interest payments made by borrowers to the loan servicer, typically the loan originator, are forwarded to a trustee and then passed through to the investors that purchased the securities.

With regard to the five parties, loan originators are commercial banks, thrift institutions, or other financial institutions that originate the loans.

Loan purchasers are usually special purpose vehicles such as trusts affiliated with the originating institution or they can be separate trusts.

Loan packagers are the underwriters of the securities.

Guarantors, such as the federal government (Ginnie Mae), federal government-sponsored enterprises (Fannie Mae and Freddie Mac) or commercial banks, provide financial guarantee insurance or credit enhancement to the pool of loans before they are converted to securities. Credit enhancement can take the form of either a federal or agency guarantee or a letter of credit. Other forms include credit insurance, overcollateralization, excess spread, and cash collateral accounts.

Finally, investors are the individuals or financial institutions that purchase the securities.

Each of the five parties performs different functions in the securitization process. Loan originators

(Continued on page 3)

Asset Securitization(continued)

(Continued from page 2)

that decide to securitize a pool of loans (such as a thrift would do with, say, 30-year fixed-rate single-family mortgages) originate the loans and also typically service these loans in order to generate fee income.

In order to get the loans off the balance sheet, the loan originator will transfer these loans to a trust. The trust holds these loans as collateral for the underwriter, which issues the securities and then distributes them to investors and collects the initial cash proceeds.

The cash proceeds collected by the underwriter from the sale of the securities are then passed back to the loan originator via the trust.

Securitization Benefits to Issuers

There are many benefits of asset securitization to asset originators, such as commercial banks and thrift institutions. These benefits include broader funding sources, the potential for lower funding costs, generation of fee income and immediate recognition of excess servicing, and management of interest rate risk.

First, with asset securitization, asset originators are able to access a wider array of potential investors than with loan sales. The sale of whole loans as a liquidity source is more difficult due to greater concern by both originators and investors alike with the credit quality of the loan package.

Whole loan sales also require the asset originator to find investor groups with investment profiles that are consistent with the characteristics of the loans that are being sold.

Second, asset securitization permits risk sharing and the allocation of the asset originator's balance sheet risk to a variety of investor groups. The credit enhancement that is usually associated with securitized assets results in wider acceptance by investors in the capital markets, leading to tighter spreads or higher prices on the securitized assets than the prices on packages of whole loans.

To the extent that the net proceeds from the sale of securitized assets are greater than the net proceeds associated with loan sales, asset originators are able to achieve liquidity at lower cost. Securitization costs typically include legal fees, investment banking fees, and distribution and underwriting costs. These must be subtracted from gross proceeds.

Third, financial institutions, such as commercial banks, thrift institutions, and insurance companies, can use asset securitization to manage their risk-based capital requirements.

In order to comply with the 1988 Basel Accord, a 2001 interagency regulation on recourse and residuals, and interagency guidance on asset securitization issued in 2003, financial institutions must hold capital reserves that reflect the credit risk of the assets

that they hold in portfolio. Risk weights associated with the credit risk that is assumed to exist for different asset categories are used in calculating the required level of risk-based capital.

As a result, financial institutions can lower their required capital by purchasing securitized assets or by securitizing and then holding the securitized loans (that would otherwise be held in portfolio as whole loans) and take a much smaller net risk-based capital charge.

For example, for banks and thrift institutions, single-family, residential mortgages have a risk weight of 50 percent, whereas Fannie Mae and Freddie Mac pass-through MBSs have a risk weight of only 20 percent.

Thus, it is clear that financial institutions can use asset securitization to take advantage of this risk-weight differential, and by doing so, lower their required risk-based capital. When institutions do this, they are said to be engaging in what is known as "regulatory capital arbitrage."

To some extent, however, the adoption of FAS 115 has served to make holding loans on the balance sheet more attractive in some circumstances, because loans do not need to be marked to market, unlike securitized assets available for sale.

Fourth, financial institutions can increase servicing and originating fees by securitizing and selling loans while retaining servicing. Also, securitization allows financial institu-

tions to immediately recognize as earnings the present value of excess servicing.

In contrast, excess servicing on whole loans can only be recognized as earnings over the life of the loans.

Finally, asset securitization allows financial institutions to lower their interest rate risk exposure by reducing the duration gap between assets and liabilities on the balance sheet. This reduction in risk exposure is accomplished by securitizing longer maturity assets and removing these more interest rate sensitive assets from the balance sheet.

Securitization Benefits to Investors

Investors who purchase securitized assets enjoy the following benefits. First, these securities are much more liquid than the assets that serve as collateral.

Second, there is reduced credit risk associated with investing in securitized assets. This reduction in credit risk is due to diversification in the pool of assets underlying the securities and to the private credit enhancement or government insurance guarantee attached to the packaged assets.

Securitization Benefits to Borrowers

In general, borrowers will be able to obtain funds from asset origina-

(Continued on page 4)

Asset Securitization(continued)

(Continued from page 3)

tors, who then securitize these assets, at a lower interest rate.

This occurs because securitized assets trade at a lower spread relative to Treasuries. As a result, borrowers can obtain a lower lending rate.

Securitization Risks

Several risks or concerns surround the use of asset securitization by both financial and nonfinancial entities. These include concerns about the window dressing of financial statements, the potential for a concentration of lower quality assets kept on the balance sheet, and over-reliance on securitization as a funding source.

For the most part, these represent concerns that are typically raised in

association with asset-backed securitizations and not mortgage-related securities such as pass-through mortgage-backed securities or collateralized mortgage obligations.

Concerns with the window dressing of financial statements relate to the use of securitization by financially distressed companies to create off-balance sheet financing. As a result, these companies are able to show improvements in their capitalization, leverage, and profitability ratios. These improvements are, of course, only cosmetic in nature.

Because reduced credit enhancement costs and lower due diligence expenses are associated with securitizing lower risk assets, concerns arise over the possibility that institutions will want to securitize their higher

quality loans or assets. As a result, institutions will be left with a concentration of lower quality assets on their balance sheets.

Finally, over-reliance on securitization as a funding source can also pose problems for an institution. Without a diversified funding base, an institution could potentially encounter liquidity problems if it is unable to securitize its assets quickly.

In the next issue of this publication, we will examine several of the different forms that securitization takes. We will discuss the characteristics of pass-through mortgage-backed securities, collateralized mortgage obligations, stripped mortgage-backed securities, such as interest-only and principal-only securities, and asset-backed securities.†

Interest Rate Sensitivity Falls in First Quarter (continued)

(Continued from page 1)

Treasury rates fell for all maturities in the first quarter, except for the three-month maturity, which rose slightly. The decrease for short-term and medium-term maturities between two years and five years was greater than for longer-term maturities.

In comparing the yield curve to that in the fourth quarter, it was less steeply sloped up to the ten-year maturity point.

The Freddie Mac contract interest rate on commitments for fixed-rate 30-year mortgages decreased to 5.52 percent at

the end of the first quarter from 5.85 percent at the end of the previous quarter.

Thrift profitability was lower in the first quarter. The average return on assets (ROA) for the industry fell to 1.19 percent from 1.26 percent in the prior quarter.

This decrease in ROA for the thrift industry was attributed to higher loan loss provisions, lower fee income, and increased impairment charges for mortgage servicing rights.

The first quarter saw an average net interest margin of 288 basis points, a level unchanged

from the fourth quarter. Thrift industry earnings fell three percent to \$3.34 billion in the first quarter, from \$3.45 billion in the prior quarter.

In the first quarter, total fee income, which includes mortgage loan servicing fee income and other fee income, fell to 0.64 percent of average assets, down from 1.15 percent in the fourth quarter. This substantial drop in total fee income was due to lower mortgage loan servicing fee income in the first quarter.

Other fee income fell to 0.90 percent of average

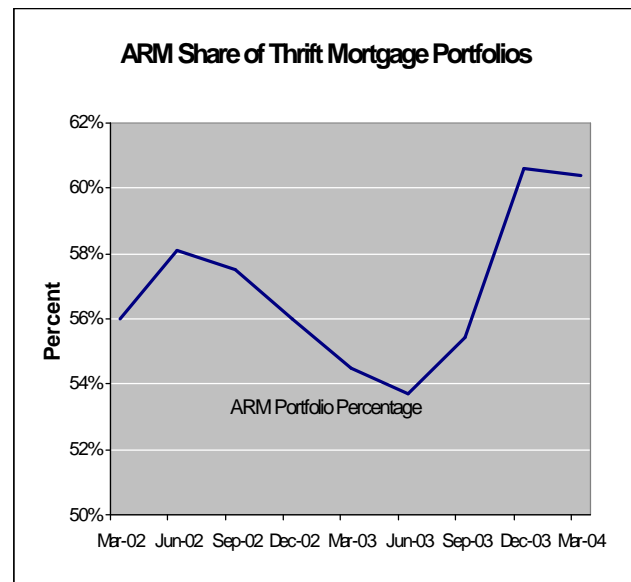
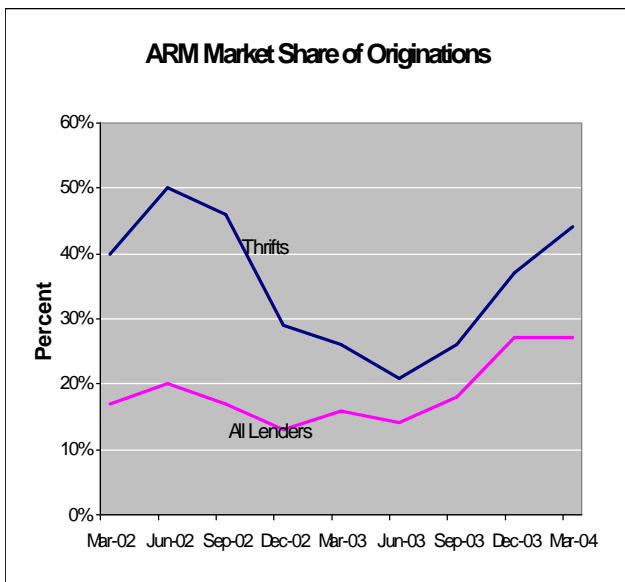
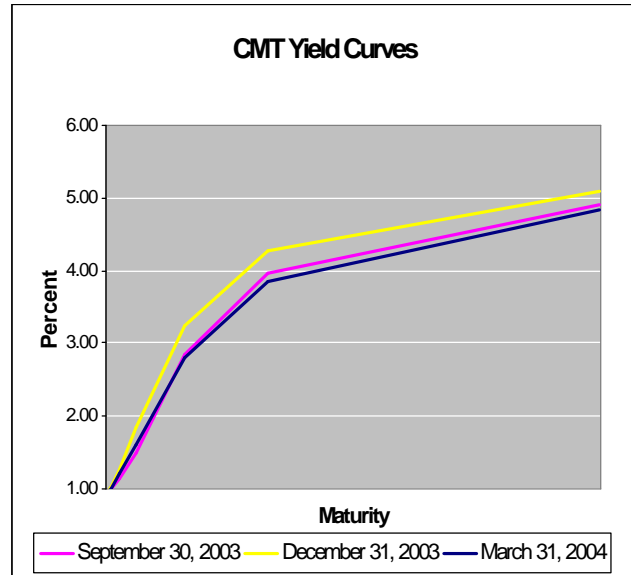
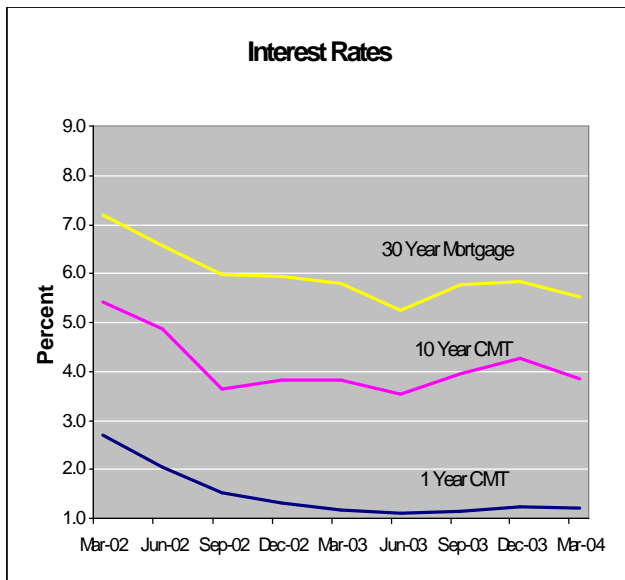
assets in the first quarter, down from 0.96 percent in the prior quarter.

Other non-interest income rose to 0.94 percent of average assets from 0.46 percent between the fourth and first quarters. Other non-interest income can be extremely volatile because it includes gains and losses on assets sold and also reflects balance sheet restructuring activities. In the first quarter, several thrifts reported large increases in income from asset sales.

The first quarter saw the ARM share of total

(Continued on page 5)

Interest Rates and ARM Market Share



Interest Rate Sensitivity Falls in First Quarter (continued)

(Continued from page 4)
 thrift mortgage originations rise to 44 percent, up from 37 percent in the prior quarter.

Despite the rise in the share of thrift ARM originations, the ARM share of total 1-4 family mortgages held by thrifts in their portfolios fell slightly to 60.4 percent from 60.6 percent in the prior quarter.

First-quarter 1-4 family mortgage originations by thrifts fell to \$130.2 billion, down from \$143.9 billion in the fourth quarter.

Total mortgage originations in the first quarter were \$144.0 billion, down from \$163.9 billion in the fourth quarter. Despite the drop in total mortgage loan origination volume, the volume of mortgage refinancing activity increased in the first quarter. This occurred as a result of the decline in interest rates.

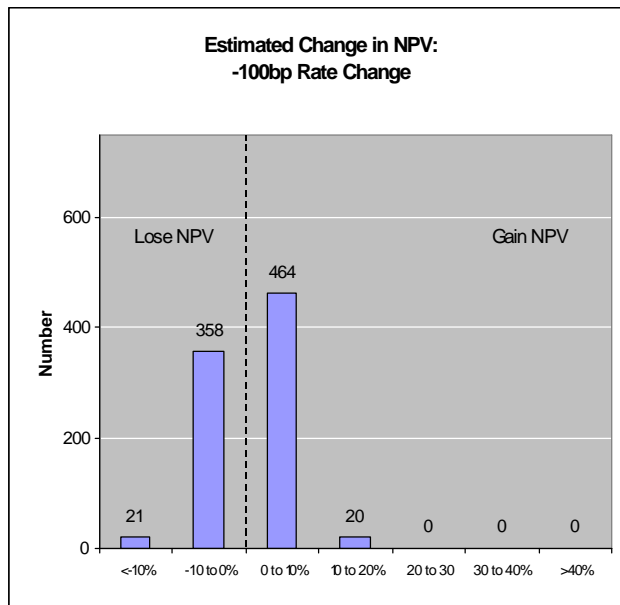
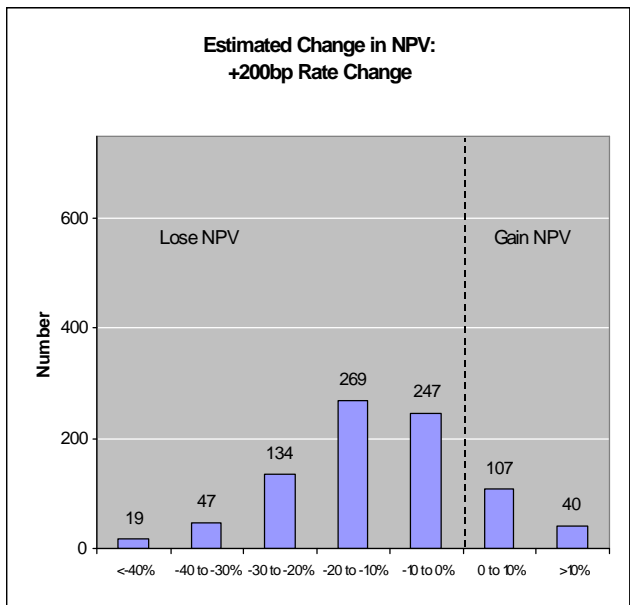
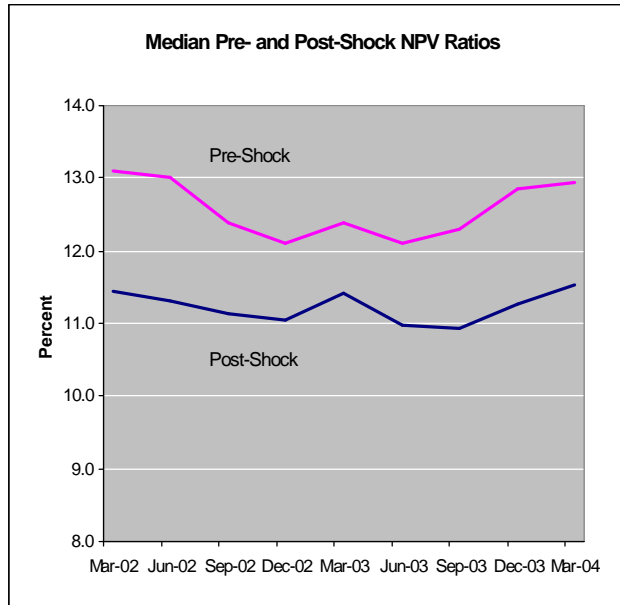
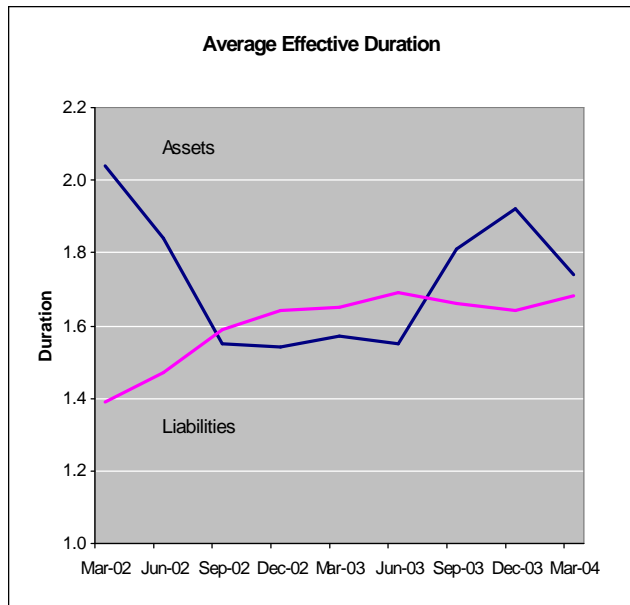
Thrifts' share of all 1-4 family originations was 22.1 percent in the first quarter, down from 25.9 percent in the fourth quarter.

The rate of U.S. home ownership stood at 68.6 percent at the end of the first quarter, unchanged from the fourth quarter. Refinancing accounted for 37.4 percent of thrift originations of single-family mortgages in the first quarter, up from 25.9 percent in the fourth quarter.

This increase is consistent with the refinancing activity of all lenders,

(Continued on page 6)

Duration and NPV Sensitivity Measures



Interest Rate Sensitivity Falls in First Quarter (continued)

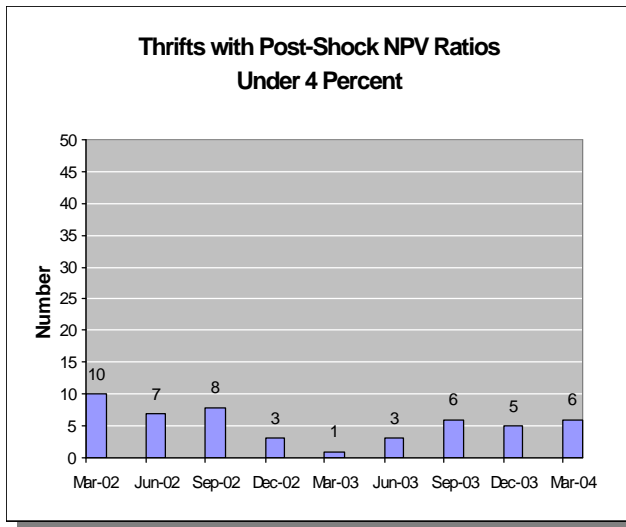
(Continued from page 5)
 where the rate rose to 53 percent from 49 percent between the fourth and first quarters.
 The industry's effective duration of assets fell from 1.92 to 1.74 between the fourth and first quarters. With the decrease in interest rates in the first quarter, the NPV model predicted an increase in the

rate of prepayments of mortgages held in portfolio.
 This lowered the duration of mortgages and, therefore, total assets duration.
 The industry's effective duration of liabilities rose slightly from 1.64 to 1.66 in the first quarter.
 The changes in asset and liability durations in the first quarter produced

a decrease in the positive duration gap for the thrift industry as a whole. This reverses the trend of the past two quarters which saw the positive duration gap widen for the industry.
 The median pre-shock NPV ratio for the industry rose during the first quarter from 12.9 percent to 13.0 percent.
 Along with this rise in

the median pre-shock NPV ratio, the median post-shock NPV ratio also rose, moving from 11.3 percent at the end of the fourth quarter to 11.5 percent at the end of the first quarter.
 The number of thrifts with a post-shock NPV ratio below 4 percent rose to six institutions from five in the previous quarter.
 (Continued on page 7)

Interest Rate Risk Measures



Interest Rate Risk Measures Industry Aggregates Last Two Quarters

	NPV as % of PV of Assets		% Change in NPV	
	Dec-03	Mar-04	Dec-03	Mar-04
+300	8.09%	7.87%	-29%	-31%
+200	9.24%	9.11%	-17%	-18%
+100	10.20%	10.12%	-7%	-7%
Base	11.07%	10.80%	0%	0%
-100	10.87%	10.92%	3%	2%
-200	N/A	N/A	N/A	N/A
-300	N/A	N/A	N/A	N/A

Post-Shock NPV Ratio and Sensitivity Measure Matrix December 2003

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
Over 10%	227	148	158	26	559
6% to 10%	79	73	101	15	268
4% to 6%	3	7	18	3	31
Below 4%	0	1	4	0	5
Total	309	229	281	44	863

Post-Shock NPV Ratio and Sensitivity Measure Matrix March 2004

	Under 100bp	101-200bp	201-400bp	Over 400bp	Total
Over 10%	258	157	141	17	573
6% to 10%	93	79	73	8	253
4% to 6%	3	5	21	2	31
Below 4%	0	1	3	2	6
Total	354	242	238	29	863

Minimal Moderate Significant High

Minimal Moderate Significant High

Interest Rate Sensitivity Falls in First Quarter (continued)

(Continued from page 6)

The percentage of thrifts with a post-shock NPV ratio over 6 percent remained largely unchanged between the fourth and first quarters. In both the fourth and first quarter, these thrifts comprised 95.8 percent of the industry.

The number of thrifts with a post-shock NPV ra-

tio below 6 percent rose to 37 institutions in the first quarter, up from 36 in the prior quarter.

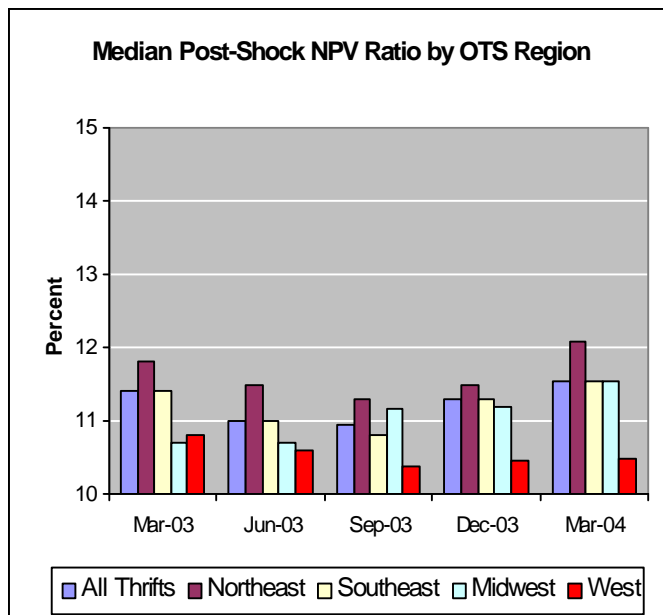
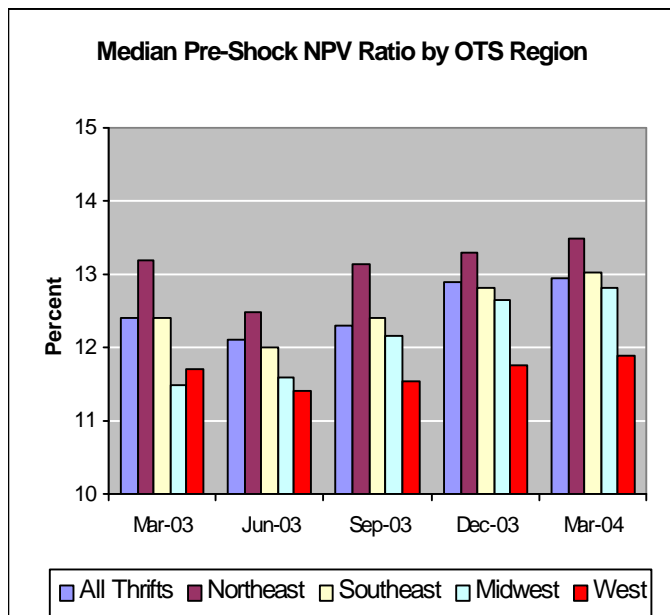
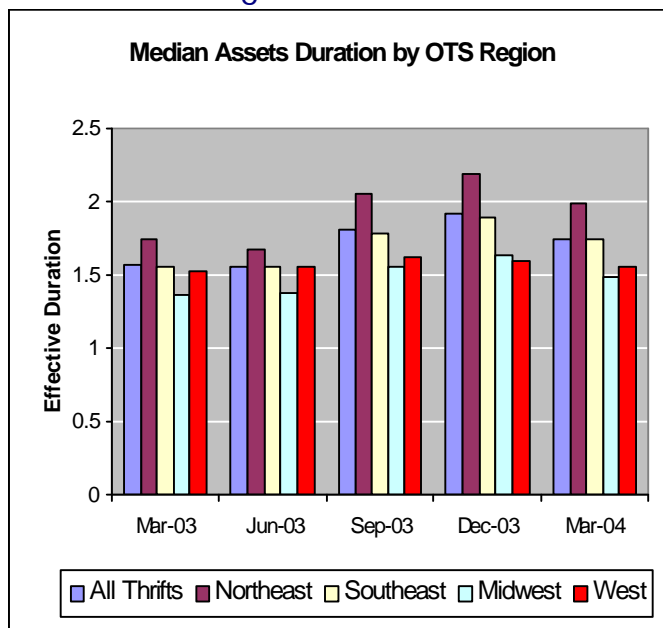
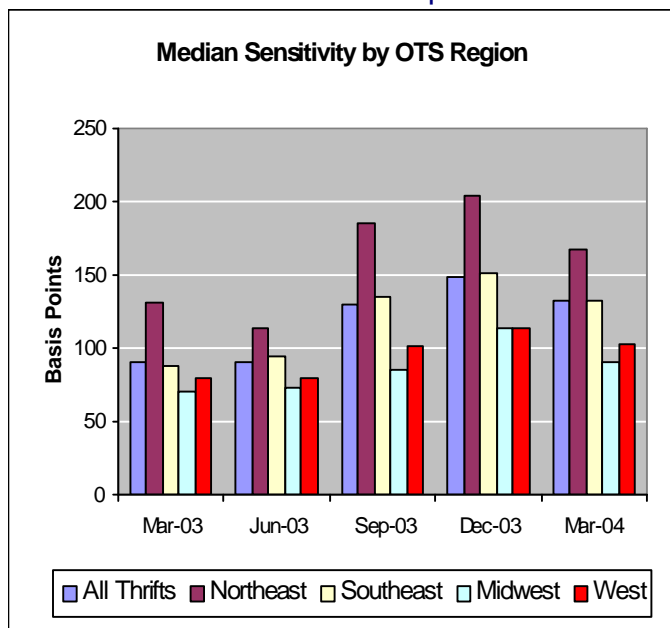
The percentage of thrifts with a sensitivity of 200 basis points or less increased in the first quarter, rising to 69.1 percent from 62.3 percent in the prior quarter.

In addition, the percentage of thrifts with over

400 basis points in sensitivity fell to 3.4 percent from 5.1 percent in the prior quarter.

These results are consistent with the fall in the industry's effective duration gap and with the fall in its median sensitivity in the first quarter. †

Comparative Trends in the Four OTS Regions



Regional Comparisons

The Northeast Region had the highest median sensitivity, at 167 basis points at the end of the first quarter, while the Midwest Regions had the lowest median sensitivity, at 91 basis points.

All OTS regions experienced a decrease in their interest rate sensitivity in the first quarter. The Midwest Region saw its me-

dian sensitivity fall by 19.5 percent, the largest relative decrease of the four regions. The Northeast, Southeast, and West Regions saw their median sensitivities fall by 18.1 percent, 11.9 percent, and 8.8 percent, respectively.

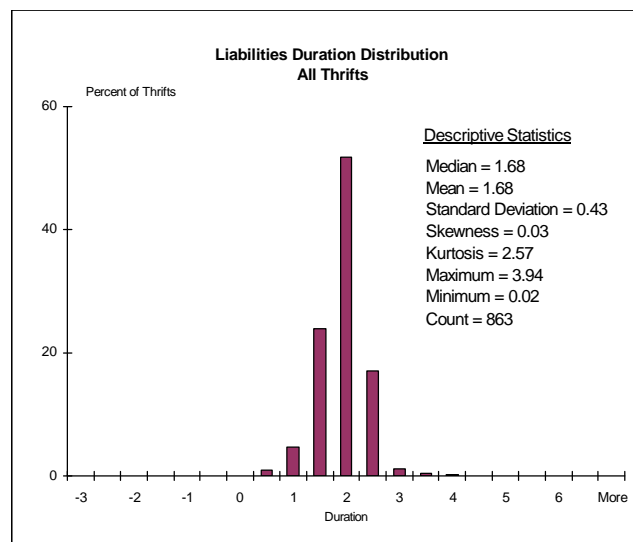
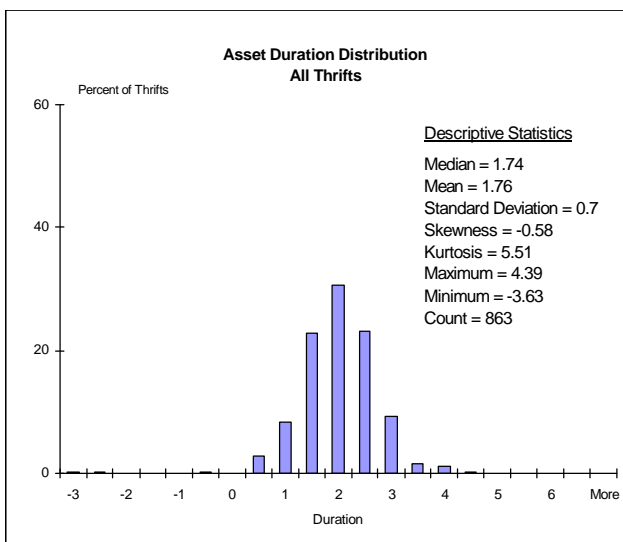
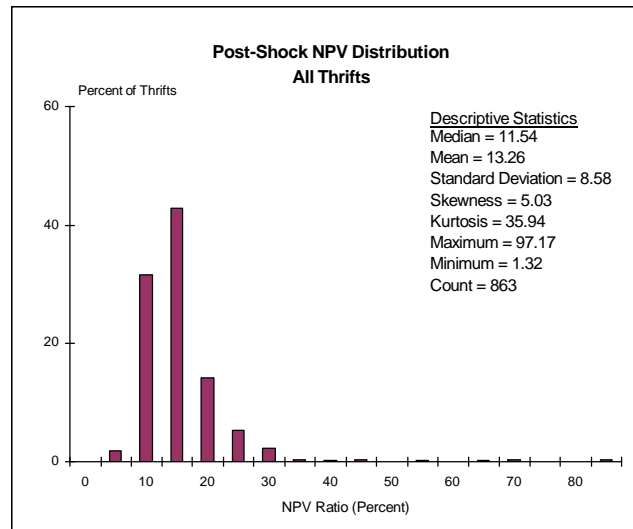
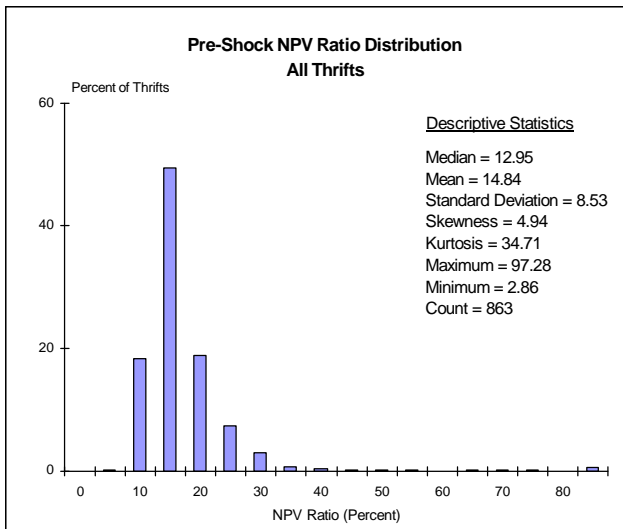
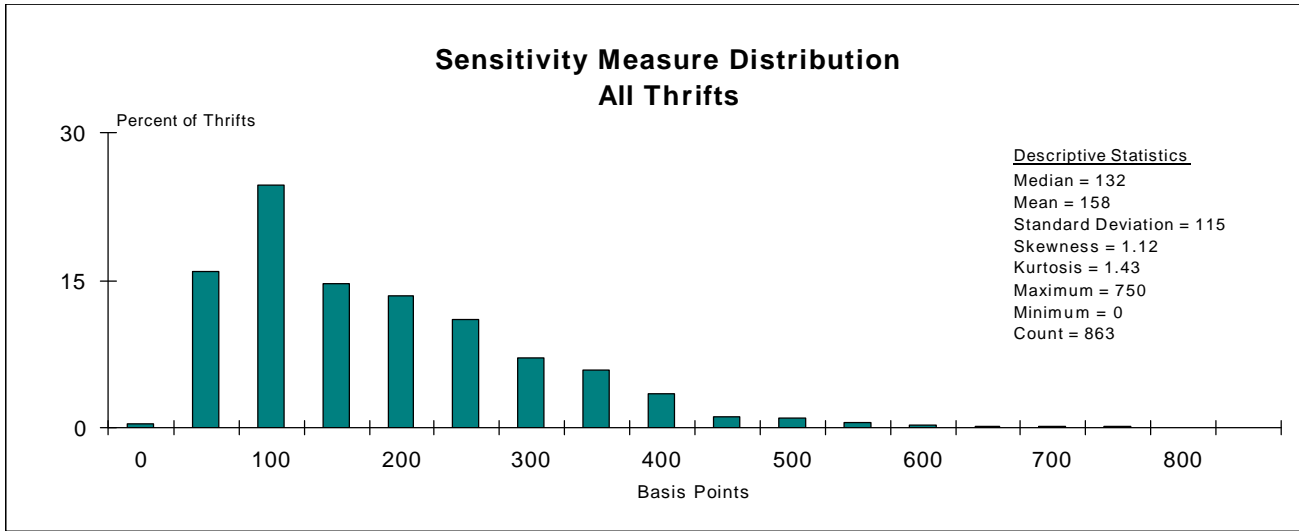
The Northeast Region had the highest median asset duration, at 1.98 at the end of the first quarter.

All four OTS regions witnessed a fall in their median asset durations.

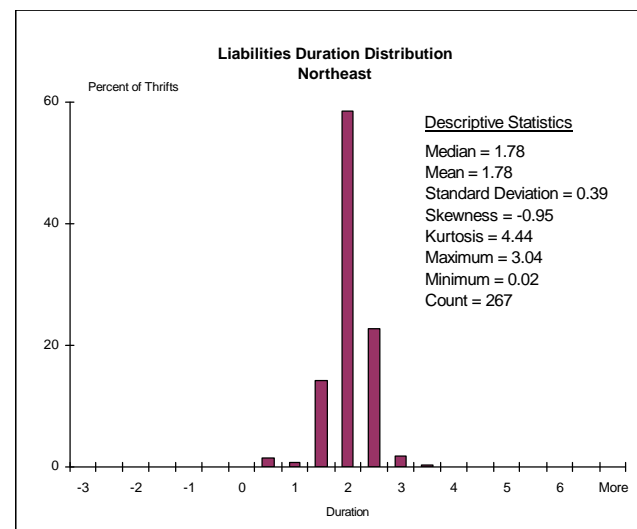
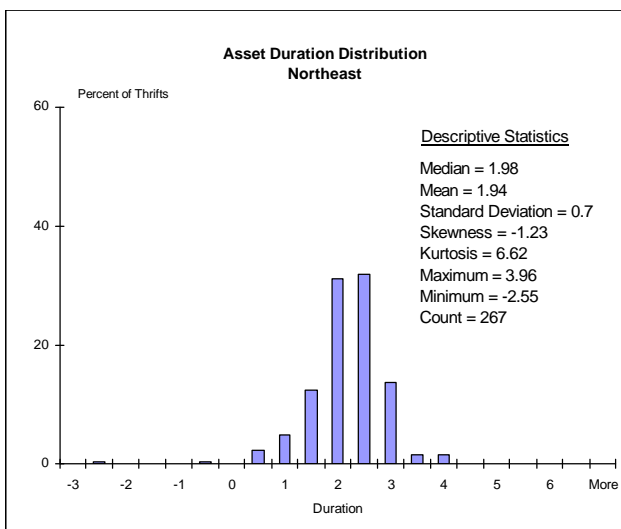
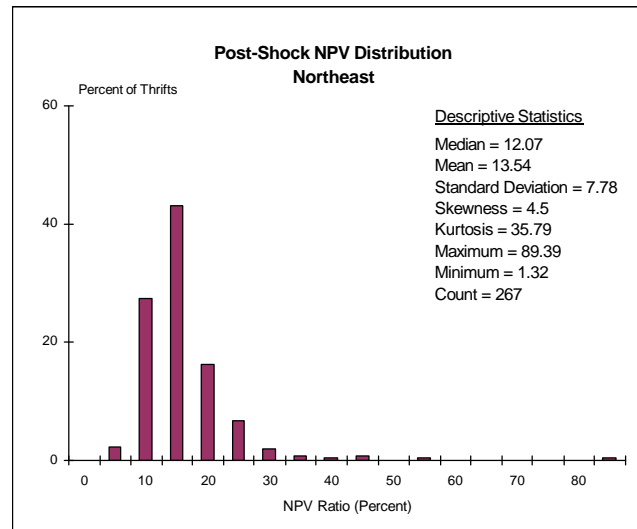
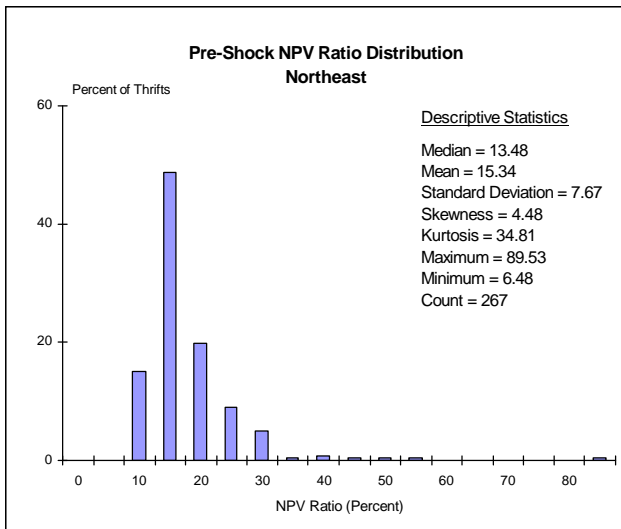
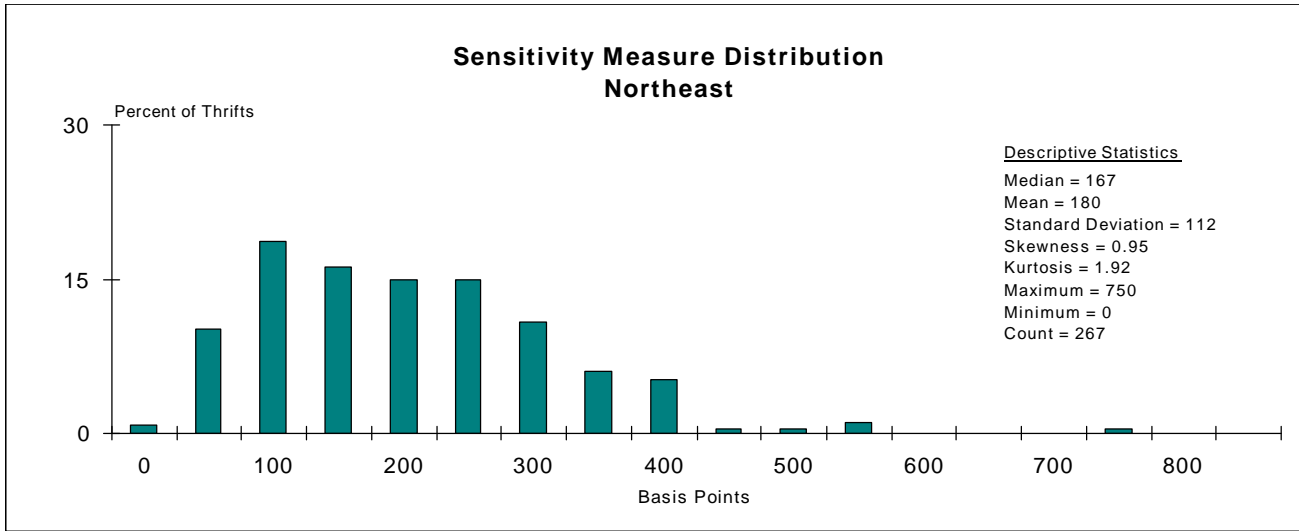
All OTS regions saw their median pre-shock NPV ratios rise in the first quarter. The Northeast Region had the highest pre-shock NPV ratio at 13.5 percent, while the West Region had the lowest pre-shock NPV ratio at 11.9 percent.

Finally, median post-shock NPV ratios also rose in each of the four OTS regions in the first quarter.

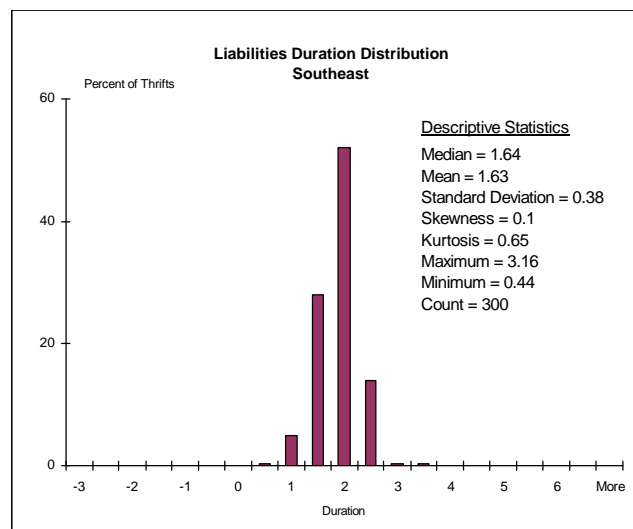
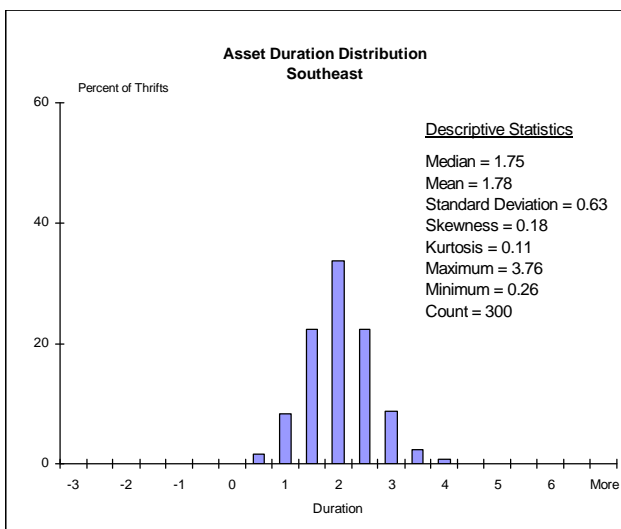
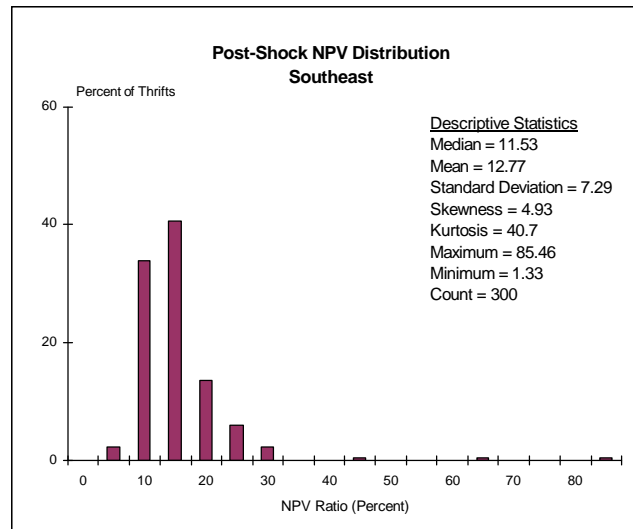
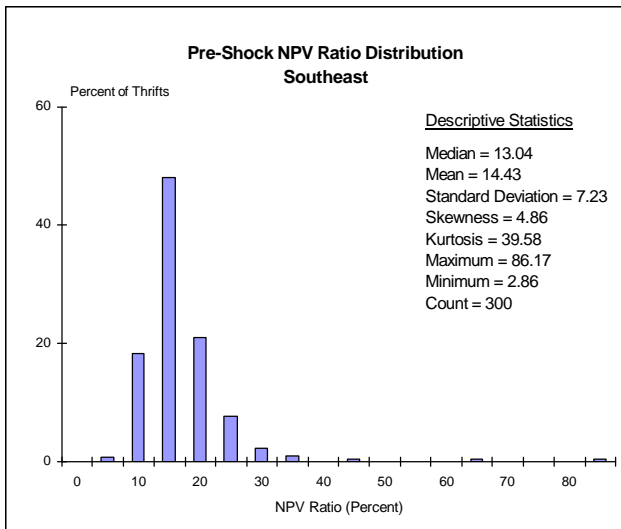
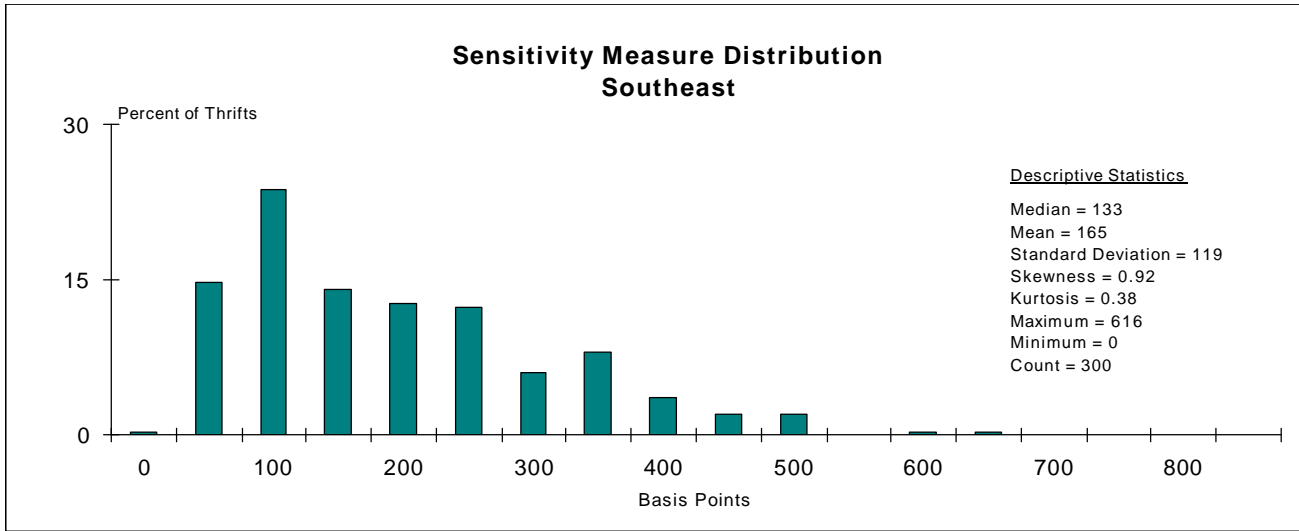
Appendix A – All Thrifts



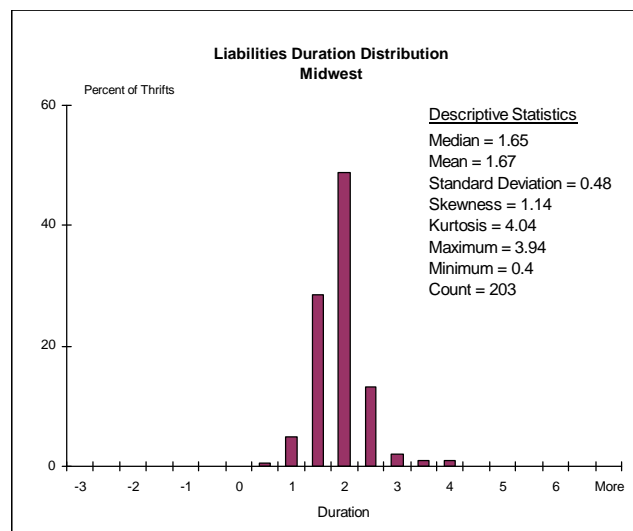
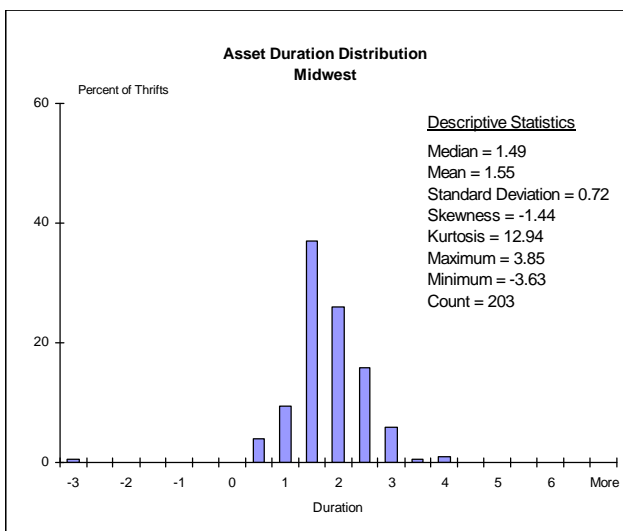
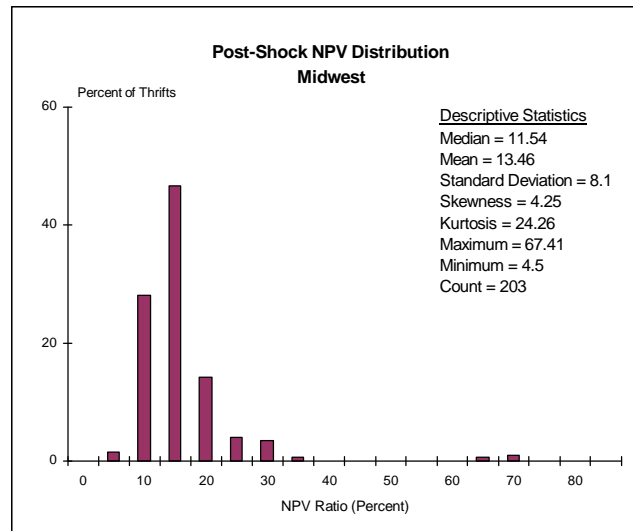
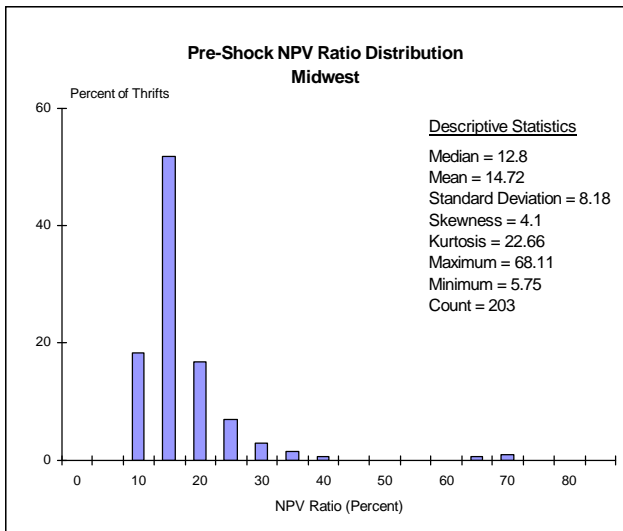
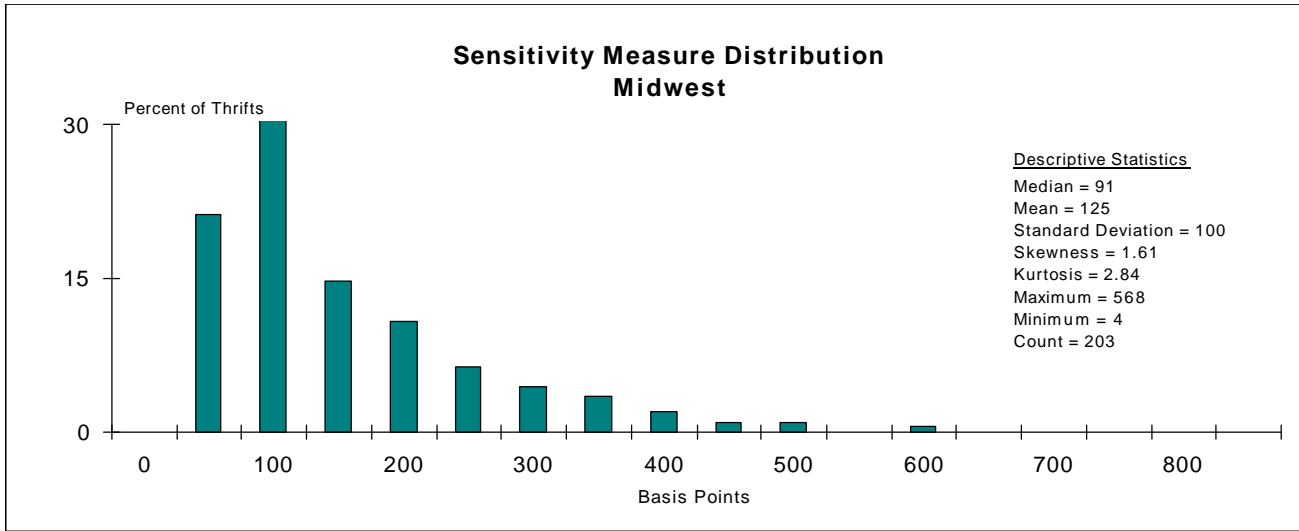
Appendix B – Northeast Region



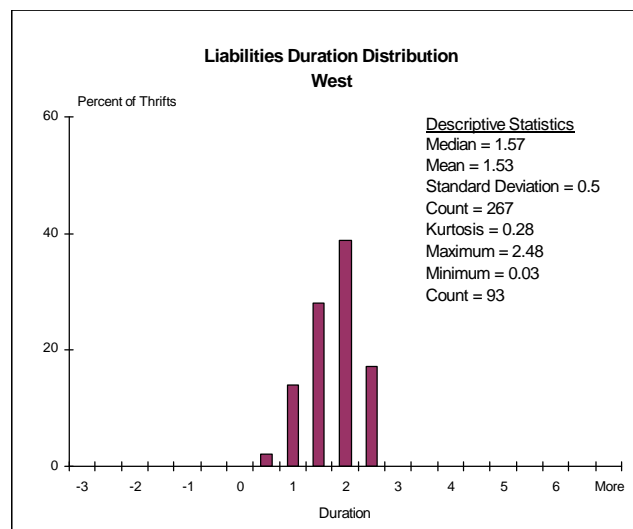
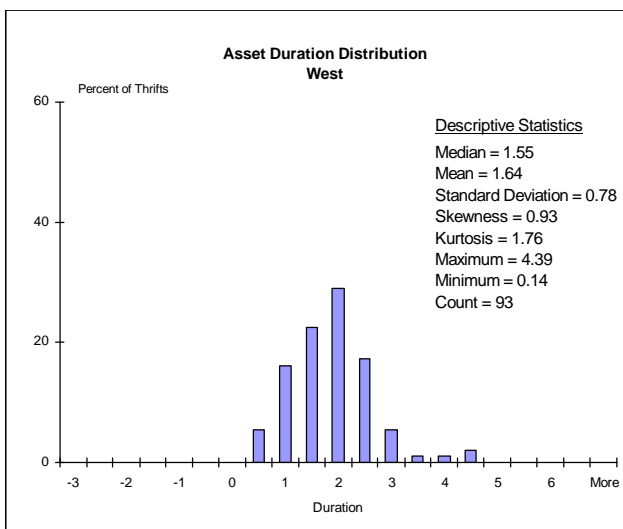
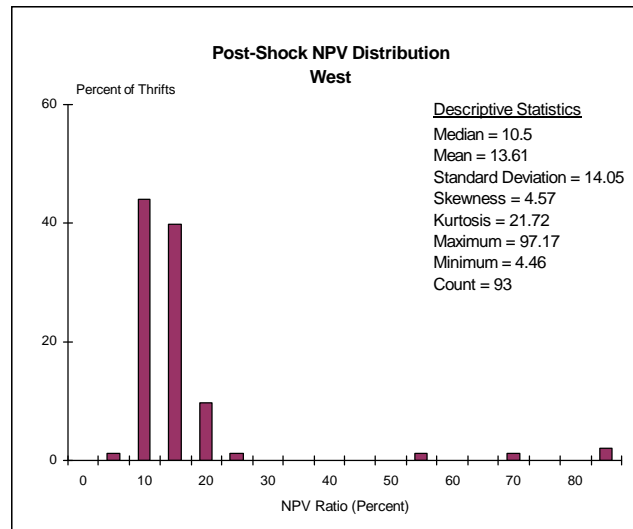
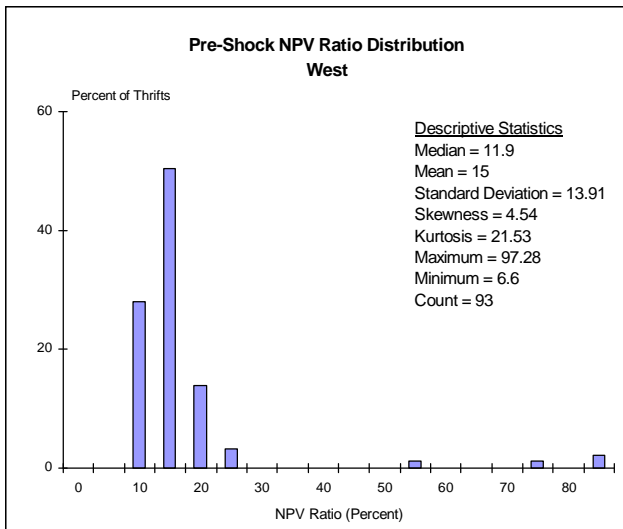
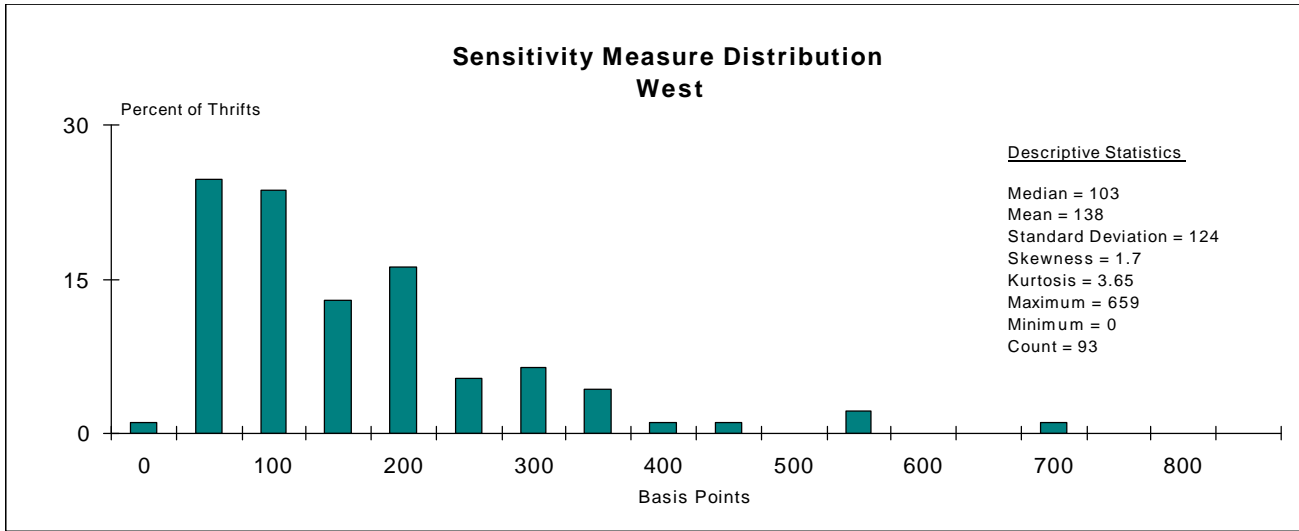
Appendix C – Southeast Region



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.

Economic Analysis Division

Office of Thrift Supervision
1700 G Street, NW
Washington, DC 20552

David Malmquist, Director
Economic Analysis Division
Phone: 202-906-5639
Email: david.malmquist@ots.treas.gov

Prepared by:

Jonathan D. Jones
Economic Analysis Division
Phone: 202-906-5729
Email: jonathan.jones@ots.treas.gov

Robert Sutter, IT Specialist, assembled the data reported in the Appendices.

We're on the Web!
www.ots.treas.gov/statisticalreleases
