The Quarterly Review
of Interest Rate Risk

Volume 3, Number 3 **Third Quarter, 1998**

Interest Rate Sensitivity Falls in the Third Quarter

At third-quarter end, the median sensitivity measure was 112 basis points, showing a decrease of 24 basis points from the previous quarter. The median effective durations of assets and liabilities fell substantially, especially for assets, due to decreased interest rates and accelerated mortgage prepayments. The industry's ability to absorb interest rate shocks fell slightly, as the median post-shock NPV ratio decreased to about 10.3 percent from the previous quarter.

AGGREGATE INDUSTRY TRENDS USING NPV MODEL RESULTS

The thrift industry's median sensitivity measure fell to 112 basis points by the end of the third quarter (Chart 1). This represents the sixth consecutive quarterly decline in the industry's median sensitivity measure, which peaked at 201 basis points at quarter end in March 1997.

The decline in median sensitivity was attributable to the steady decrease in interest rates that has occurred during the past two years. Over this same period, the Treasury yield curve also flattened substantially, and actually became slightly inverted in the second quarter of this year. Indeed, as Chart 2 illustrates, the Treasury yield curve became even more inverted for one- to five-year notes during the third quarter. The substantial dip in the yield curve at the five-year maturity point was probably caused by the movement of investors into five-year Treasury notes as a substitute for three-year notes that were last issued by the U. S. Treasury in May of this year.

Chart 3 shows that the median effective durations of the industry's assets and liabilities dropped noticeably during the third quarter.[1] The median effective duration for assets fell from 1.76 in the second quarter to 1.55 in the third quarter; while the median effective duration for liabilities dropped from 1.40 to 1.28 over the same period. Given that these decreases in asset and liability durations substantially exceeded any previous quarterly changes, we explore these duration decreases in the special topic section below.

The industry's median post-shock NPV ratio fell slightly to 10.3 percent in the third quarter, the second quarterly decline in this aggregate measure of the industry's ability to absorb additional interest rate shocks. These recent declines in the median post-shock NPV ratio are surprising given that median sensitivity has been falling and

equity capital ratios have been increasing for the industry over the same period. The noticeable declines in the median pre-shock NPV ratio in the second and third quarters most likely account for the falling post-shock NPV ratio (Chart 4). As was true in the second quarter of this year, the decrease in the pre-shock NPV ratio appears to be due to increased mortgage prepayments during the current refinancing boom that have continued into the third quarter.

GAINS AND LOSSES

Table 1 reports the percentage change in the aggregate net portfolio value and NPV ratio for the industry under different interest rate scenarios. In the third quarter of 1998, the thrift industry would lose 12.2 percent of its net portfolio value if rates rose by 200 basis points, and would gain 5.3 percent in value if rates fell by 200 basis points.

Most thrifts would be adversely affected by rising interest rates. The right panel of Chart 5 displays the number of institutions distributed across percentage changes in NPV for an increase in interest rates of 200 basis points. Of the 1,072 reporting thrifts, 80 percent would experience a loss of net portfolio value in this scenario, down from 86 percent in the second quarter. About 20 percent of the industry would lose more than 20 percent of their economic value, if interest rates rose by 200 basis points, representing an improvement of six percent over the previous quarter. The left panel of Chart 5 displays the industry distribution of gains and losses in net portfolio value for a decrease of 200 basis points in interest rates. Under this scenario, approximately 77 percent of reporting thrifts would experience increases in their net portfolio values, the same as in the second quarter.

Chart 6 compares the distributions of gains and losses for the third quarter of 1997 with those for the third quarter of 1998 for both a 200 basis point decrease and increase in interest rates. For the third quarter of 1998, only 18.2 percent of thrifts would lose 20 percent or more of their NPV when rates increase 200 basis points. This represents a substantial decline from the 35.5 percent of thrifts that had a similar degree of interest rate sensitivity one year ago.

INDUSTRY PROFILE

The number of thrifts with exposure measures below 4 percent increased sharply in the third quarter to thirteen, up from nine in the second quarter and two in the first quarter of this year (Chart 7). This increase most likely reflects the decline in pre-shock NPV ratios (and the corresponding decline in post-shock NPV ratios) caused by acceleration in mortgage prepayment speeds associated with the continuing mortgage refinancing boom. The increase in the number of thrifts with exposure measures below 4 percent can be expected to continue in future quarters until the current refinancing boom ends.

The pre- and post-shock NPV ratios of each reporting thrift are plotted in Chart 8. In this chart, the 45 degree line represents the "zero sensitivity line," where pre- and post-shock NPV ratios are equal. Each dot denotes the pre- and post-shock NPV capital ratios for a thrift. Thirteen thrifts with post-shock NPV ratios of less than 4 percent appear in the area below the dotted horizontal line. A thrift whose post-shock NPV ratio is below the 4 percent line either

has a relatively low level of capital, a high degree of NPV sensitivity, or both.

REGIONAL PROFILE

The top panel of Chart 9 shows the median sensitivity measures for the entire industry and each OTS region for the third quarters of 1997 and 1998. The Northeast Region had the largest median sensitivity measure in the third quarter of 1998, while the Midwest Region had the smallest. In comparing the third quarter of 1997 and 1998, the Central Region experienced the largest decrease in median interest rate sensitivity, while the West Region had the smallest decrease in the median sensitivity measure.

The lower panel of Chart 9 shows the median post-shock NPV ratio for the thrift industry and each OTS region. For the industry, there was a decrease of 14 basis points in the post-shock NPV ratio between the third quarter of 1997 and 1998. The Northwest region did not change; however, the West and Southeast regions experienced substantial increases in their post-shock NPV ratios, while the Central and Northwest regions experienced declines.

THE DECREASE IN ASSETS AND LIABILITIES DURATIONS

In this section, we examine why the median effective durations of thrifts' assets and liabilities fell between the second and third quarters of this year. Tables 2 and 3 show changes in assets composition (based on estimated present values) and effective durations for various asset categories in the second and third quarters. Given that the current refinancing boom has primarily affected single-family, fixed-rate and adjustable-rate mortgages, we report results for these asset categories only. As a result, the percentages in Table 2 will not sum to 100 percent.

Table 2 shows that 30-year fixed-rate mortgages and mortgage-backed securities (MBS) increased as a percent of assets between the second and third quarters. In contrast, the percent of assets accounted for by 15-year fixed-rate mortgages and MBS, balloon mortgages and MBS, and adjustable-rate mortgages and MBS either fell or remained the same. These results are consistent with current mortgage refinancing activity, where home owners have been converting shorter-term fixed-rate and adjustable-rate mortgages into 30-year fixed-rate mortgages.

Table 3 shows the effective durations for all fixed-rate mortgages and MBS fell substantially between the second and third quarters. The effective durations for adjustable-rate mortgages and MBS also fell, with the exception of COFI ARMs with a one-month reset frequency, but the decrease was not as large as for the fixed-rate mortgages and securities. Overall, the decrease in effective durations for both fixed-rate and adjustable rate mortgages and MBS can be explained by increased mortgage loan prepayments and lower coupon rates on the mortgage pool.

While of no concern at the moment given the benign interest rate environment, the expanding portfolio share of 30-year FRMs will increase thrifts' assets duration and interest rate sensitivity as the current refinancing boom wanes, all else remaining the same. This change in assets composition could have important risk management implications in the future if interest rates begin to rise.

Tables 4 and 5 show changes in liabilities composition (based on estimated present values) and effective durations for various liabilities categories in the second and third quarters of this year. Table 4 shows deposits experienced the largest decrease in its percentage share of liabilities between the second and third quarters. Table 5 shows the decline in median liabilities duration was accounted for by the fall in effective durations for transaction accounts, Money Market Deposit Accounts (MMDAs), and passbook accounts. As such, these duration declines can be attributed to the decrease in interest rates between the second and third quarters.

TRENDS IN MORTGAGE-RELATED INTEREST RATES

Chart 10 displays plots of two mortgage-related interest indices and the Freddie Mac commitment rate for 30-year fixed-rate mortgages, as reported by the Federal Reserve Board, during the past two years. The two interest indices are the one-year constant maturity Treasury (one-year CMT), which is representative of the various indices used to set one-year adjustable-rate mortgages (ARMs), and the ten-year constant maturity Treasury (ten-year CMT). As shown in Chart 10, there has been a sharp decline in the two interest indices since the second quarter of this year. Although the commitment has also fallen, its decrease has been considerably less. The commitment rate probably has not fallen as sharply because of the substantially higher demand for mortgage refinancing and the desire by mortgage lenders not to accelerate already very high prepayment rates.

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Sarah Bryant, Ph. D.
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Chart 1
Sensitivity Measure

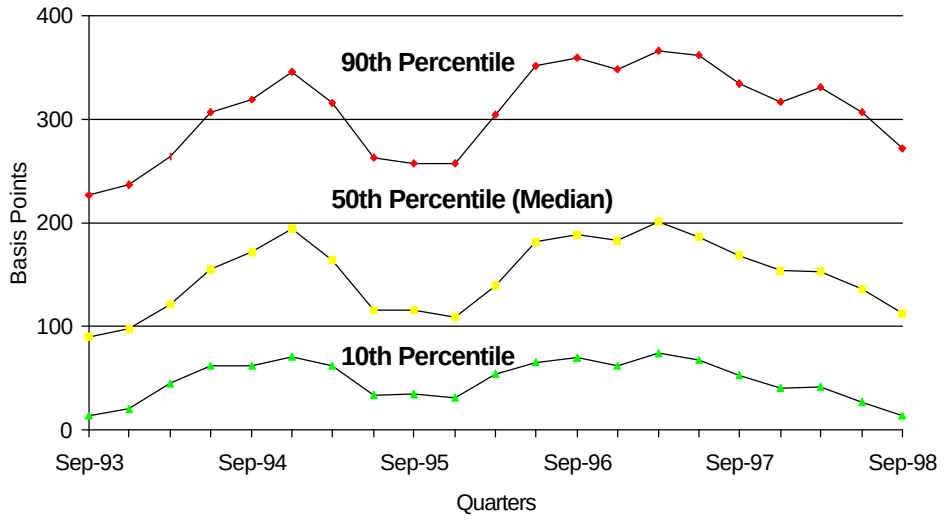
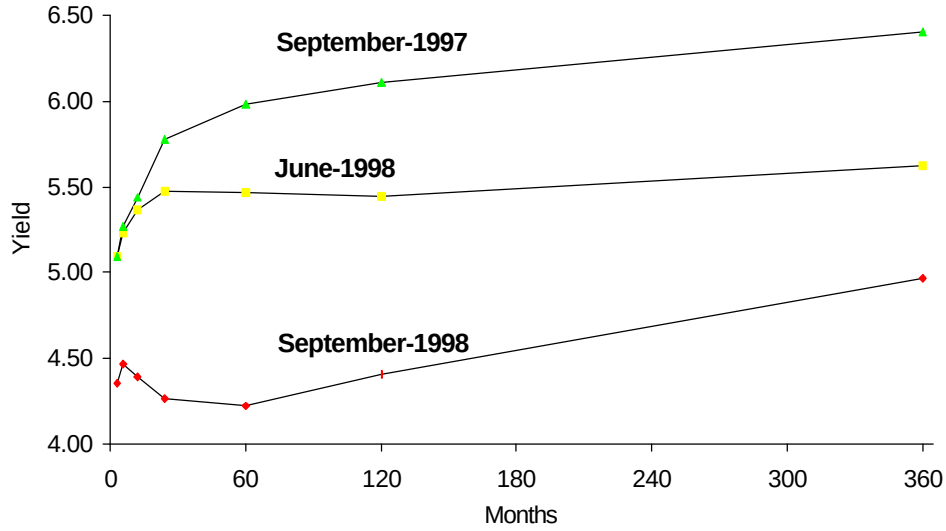
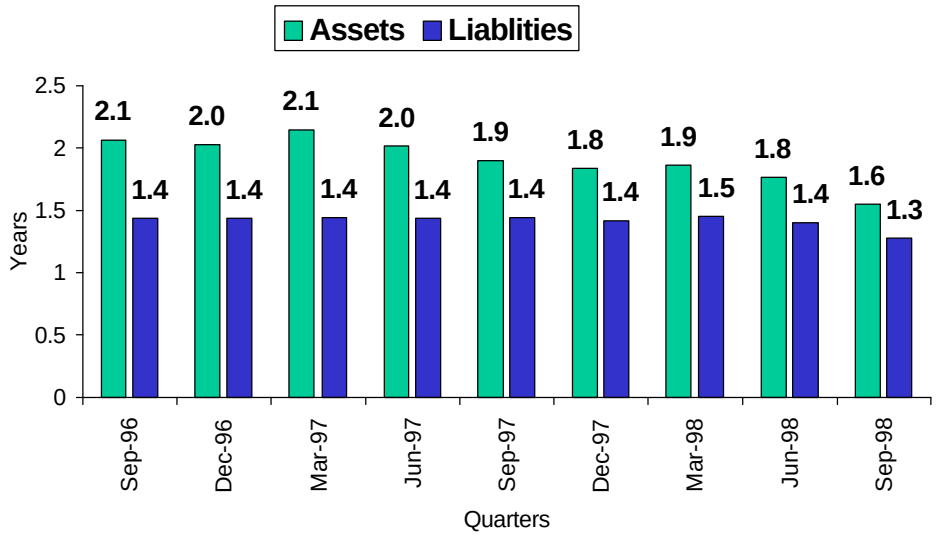


Chart 2
Treasury Yield Curves



Source: Bloomberg

Chart 3
Effective Duration of Assets and Liabilities



Note: Aggregate industry data. Asset durations have been adjusted to exclude deposit intangibles; liability durations have been adjusted to include deposit intangibles.

Chart 4
Median Pre-Shock and Post-Shock NPV Ratios

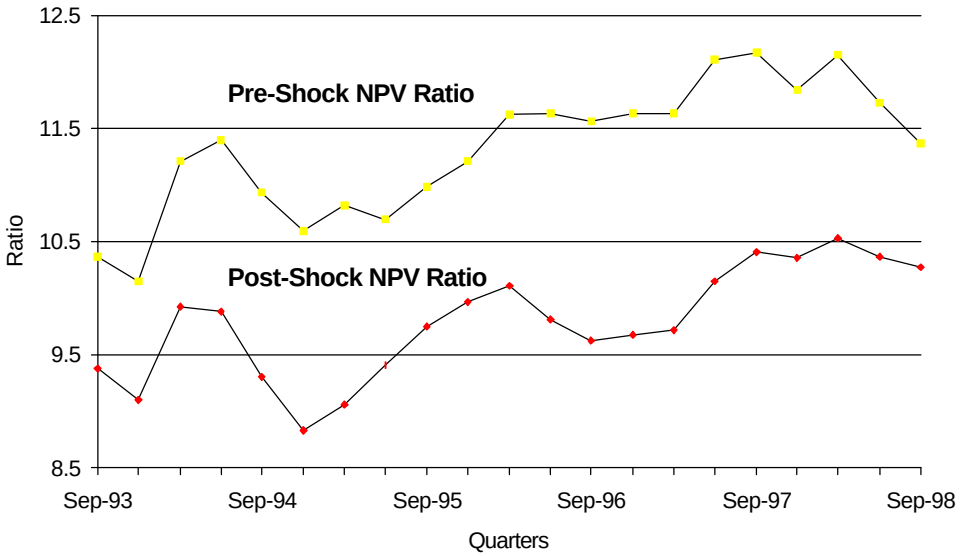


Chart 5
Estimated Change in NPV
(Industry Distributions, Third Quarter 1998)

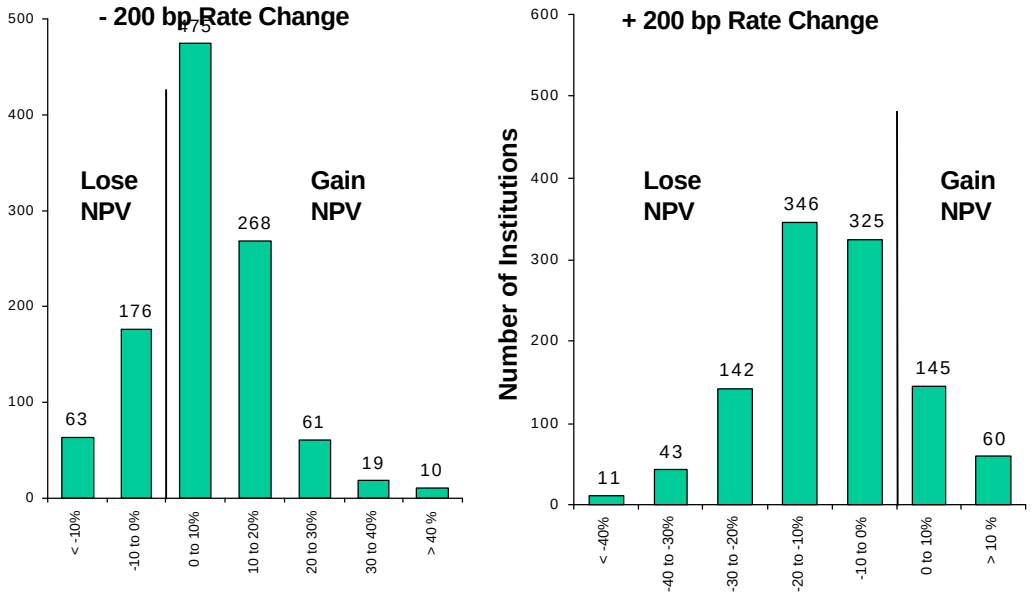


Chart 6
Estimated Change in NPV
(Industry Distributions - Percentage of Total)

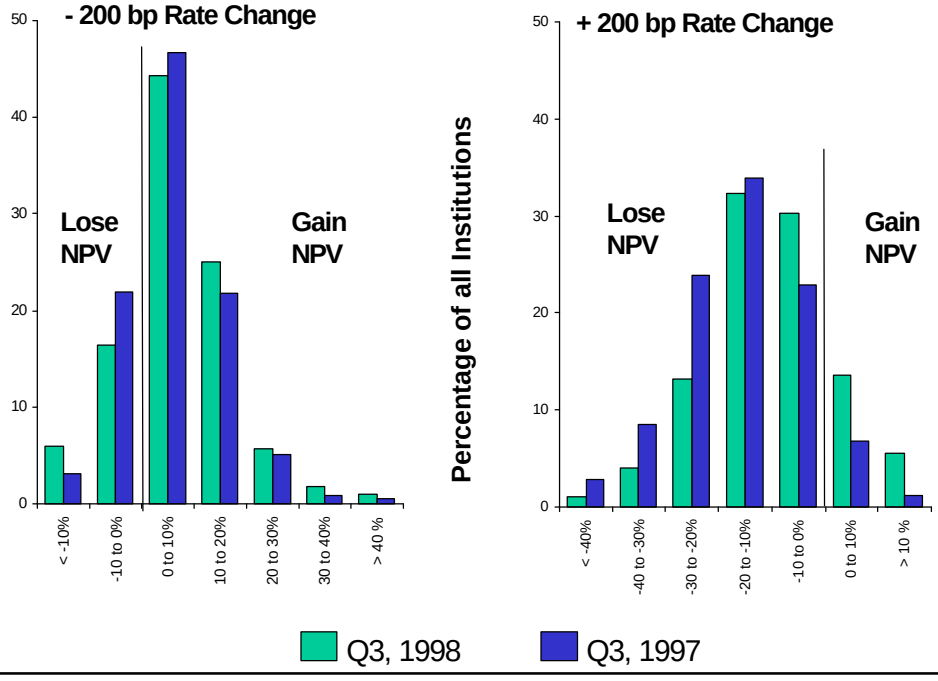


Chart 7
Institutions with Exposure Ratios Under 4.0 Percent

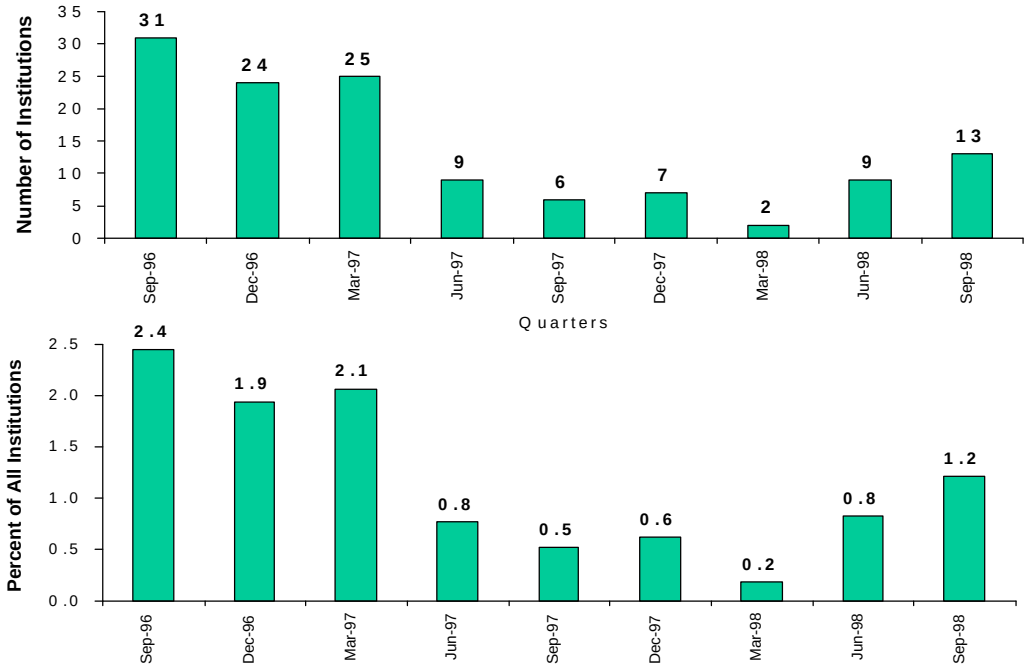


Chart 8
Sensitivity Chart
(Third Quarter, 1998)

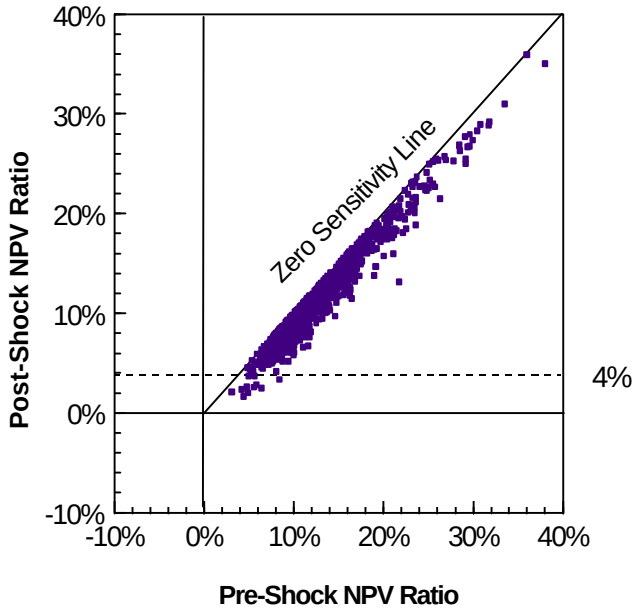


Chart 9
Median Sensitivity Measure

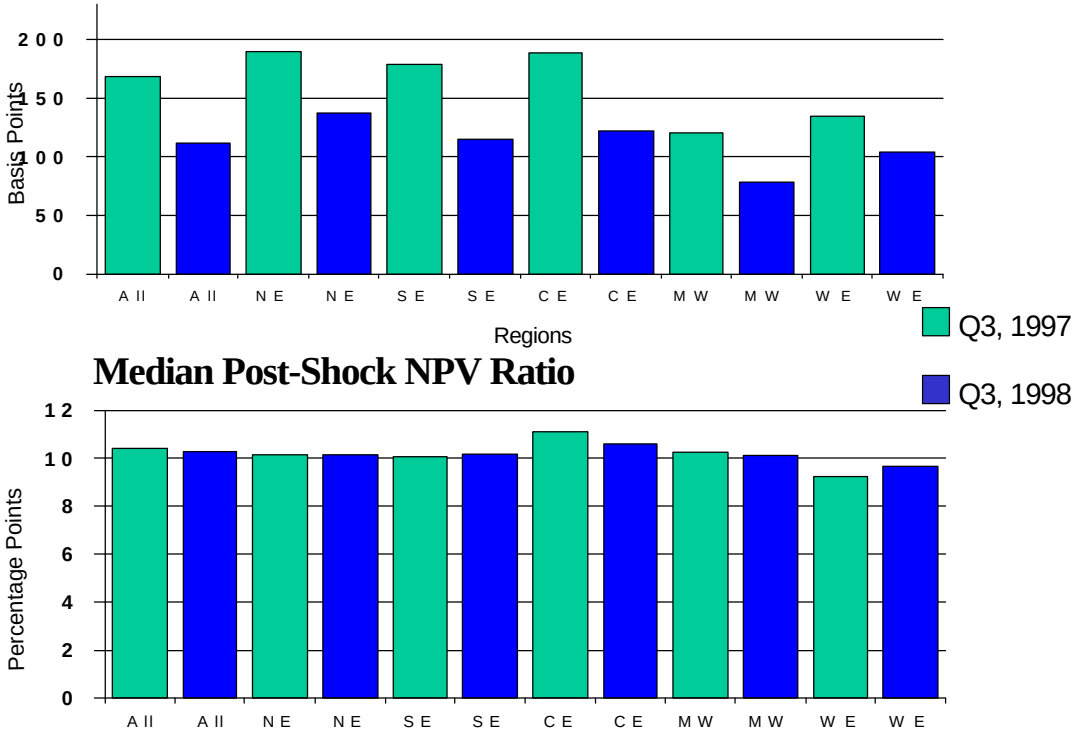


Chart 10
Mortgage-Related Interest Rate Indices

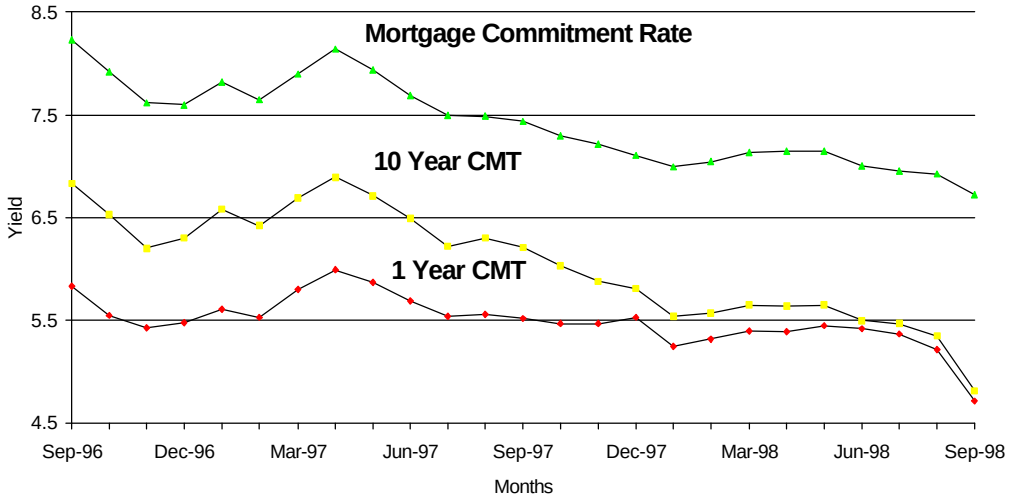


Table 1
Interest Rate Risk Measures
(Industry Aggregate Data)

Change in Interest Rates (Basis Points)	Percentage Change in NPV			Ratio of NPV to Assets		
	Sep-97	Jun-98	Sep-98	Sep-97	Jun-98	Sep-98
+300	-30.3	-27.3	-22.9	7.5	7.7	7.7
+200	-18.1	-15.5	-12.2	8.7	8.8	8.6
+100	-7.6	-6.1	-4.4	9.6	9.6	9.2
Base Case	0.0	0.0	0.0	10.3	10.1	9.6
-100	3.8	3.0	1.7	10.6	10.3	9.6
-200	5.6	4.6	5.3	10.7	10.4	9.9
-300	8.3	8.5	11.0	10.8	10.7	10.3

Table 2
Change in Assets Composition, 1998

Assets Category	June Percent	Sept Percent	Change in Percent
Mortgage Loans & Securities			
Fixed-Rate Single-Family			
First-Mortgage Loans & MBS:			
30-Yr Mortgage Loans	10.3%	11.0%	0.7
30-Yr Mortgage Securities	2.4%	2.6%	0.2
15-Year Mortgages & MBS	7.8%	7.7%	-0.1
Balloon Mortgages & MBS	3.2%	3.1%	-0.1
Adjustable-Rate Single Family			
First-Mortgage Loans & MBS:			
Current Market Index ARMs:			
6 Mo or Less Reset Freq	1.9%	1.7%	-0.2
7 Mo to 2 Yrs Reset Freq	9.9%	9.7%	-0.2
2+ to 5 Yrs Reset Freq	5.4%	5.0%	-0.4
Lagging Market Index ARMs:			
1 Mo Reset Freq	13.5%	13.0%	-0.5
2 Mo to 5 Yrs Reset Freq	5.3%	5.3%	0.0

Table 3
Change in Assets Effective Duration, 1998

Assets Category	June Duration	Sept Duration	Change in Duration
Mortgage Loans & Securities			
Fixed-Rate Single-Family			
First-Mortgage Loans & MBS:			
30-Yr Mortgage Loans	3.5	2.8	-0.7
30-Yr Mortgage Securities	3.5	2.9	-0.6
15-Year Mortgages & MBS	2.8	2.2	-0.6
Balloon Mortgages & MBS	2.2	1.6	-0.6
Adjustable-Rate Single Family			
First-Mortgage Loans & MBS:			
Current Market Index ARMs:			
6 Mo or Less Reset Freq	0.4	0.5	0.1
7 Mo to 2 Yrs Reset Freq	0.9	0.7	-0.2
2+ to 5 Yrs Reset Freq	2.4	1.8	-0.6
Lagging Market Index ARMs:			
1 Mo Reset Freq	0.8	0.8	0.0
2 Mo to 5 Yrs Reset Freq	1.5	1.3	-0.2

Table 4
Change in Liabilities Composition, 1998

Liabilities Category	June Percent	Sept Percent	Change in Percent
Deposits			
Fixed-Rate, Fixed-Maturity:			
Maturing in 12 Mo or Less	33.7%	32.9%	-0.8
Maturing in 13 Mo or More	9.5%	8.9%	-0.6
Variable-Rate, Fixed-Maturity	0.6%	0.5%	-0.1
Non-Maturity:			
Transaction Accts	4.4%	4.4%	0.0
MMDAs	9.7%	10.2%	0.5
Passbook Accts	8.6%	8.5%	-0.1
Non-Interest-Bearing Accts	3.8%	3.6%	-0.2
Deposits	70.2%	68.9%	-1.3

Table 5
Change in Liabilities Effective Duration, 1998

Liabilities Category	June Duration	Sept Duration	Change in Duration
Deposits			
Fixed-Rate, Fixed-Maturity:			
Maturing in 12 Mo or Less	0.4	0.5	0.1
Maturing in 13 Mo or More	2.1	2.2	0.1
Variable-Rate, Fixed-Maturity	0.1	0.1	0.0
Non-Maturity:			
Transaction Accts	2.9	2.8	-0.1
MMDAs	1.2	0.9	-0.3
Passbook Accts	2.3	1.3	-1.0
Non-Interest-Bearing Accts	2.0	2.0	0.0
Deposits	1.2	1.1	-0.1

GLOSSARY

Pre-Shock NPV Ratio	Equity-to-assets expressed in present value terms (i.e., base case NPV divided by present value of assets).
Post-Shock NPV Ratio	Equity-to-assets ratio expressed in present value terms following an adverse 200 basis point interest rate shock. Also referred to as the exposure ratio.
Sensitivity Measure	Difference between Pre-shock and Post-shock NPV Ratios (expressed in basis points).
Estimated Change in NPV	The percentage change in base case NPV caused by an interest rate shock.

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End Notes:

[1] Duration is a measure of the price sensitivity of a financial instrument for small changes in yield. The higher the duration of an instrument, the greater is its price sensitivity. For example, an asset with a duration of 1.6 will appreciate in value by about 1.6 percent for a one percentage point (100 basis points) decline in yield. The reverse would hold if yields rose by one percent.