## The Quarterly Review of Interest Rate Risk

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## Fourth Quarter Changes in Interest Rates

The U.S. Treasury yield curve steepened throughout the fourth quarter as yields increased across most maturities (Exhibit 1). The yield on the six-month bill remained unchanged at $0.19 \%$ while the yield on the 2 -year note increased 19 basis points (bps) to $0.61 \%$. Yields on the 10 -year note and 30 -year bond increased 77 bps and 65 bps to $3.30 \%$ and $4.34 \%$, respectively. Rising rates at the long end of the curve increased the spread between the yield on the 10-year note and 2-year note to 269 bps at year-end, 58 bps higher compared to the third quarter.

Exhibit 1


The Federal Reserve made no changes to its target Federal Funds rate of 0-0.25\% in the fourth quarter. The FOMC announced after its November meeting, however, that it would purchase $\$ 600$ billion of Treasury securities to help advance the economic recovery. This new purchase program - known as Quantitative Easing II (QE2) - is scheduled to be completed by the second quarter of 2011 and is in addition to the existing policy of reinvesting payments from its agency MBS and agency debt portfolios into Treasury securities. As of March 31, 2011, the Federal Reserve had purchased Treasury securities totaling $\$ 488$ billion, or roughly $81 \%$ of the total amount expected to be purchased. Although many have speculated that encouraging employment and economic data seen in the first quarter of 2011 would influence the FOMC to suspend purchases short of the initial $\$ 600$ billion target, statements from the FOMC's January and March meetings indicated that QE2 will continue as expected.

LIBOR/Swap rates moved higher across most maturities in the fourth quarter. The three-month LIBOR rate increased 1 bp to $0.30 \%$ while the six-month LIBOR rate remained unchanged at $0.46 \%$. The 2 -year and 10 -year swap rates increased 20 and 82 bps to $0.81 \%$ and $3.41 \%$, respectively.

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Exhibit 2

| 30-YEAR CONVENTIONAL December-10 |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Coupon (\%) | WAC <br> (\%) | WAM (Months) | Price | 10yr Avg CPR <br> (\%) | 1yr Avg CPR <br> (\%) | Yield <br> (\%) | WAL (Years) | $\begin{aligned} & \text { Z-Spread } \\ & \text { (BP) } \end{aligned}$ | OAS <br> (BP) | Option $\operatorname{Cost}(\mathrm{BP})$ | Effective Duration | Effective Convexity |
| 4.50 | 4.96 | 336 | 102.19 | 13 | 24 | 4.10 | 7.50 | 93 | 29 | 64 | 4.02 | -109 |
| 5.00 | 5.52 | 304 | 105.44 | 13 | 26 | 3.84 | 6.38 | 94 | 28 | 65 | 3.17 | -111 |
| 5.50 | 6.01 | 292 | 106.06 | 14 | 25 | 3.91 | 5.82 | 117 | 56 | 61 | 3.06 | -102 |
| 6.00 | 6.53 | 297 | 108.53 | 16 | 28 | 3.86 | 5.18 | 127 | 63 | 64 | 2.48 | -87 |
| 6.50 | 7.01 | 286 | 110.84 | 18 | 30 | 3.49 | 4.54 | 104 | 43 | 61 | 1.86 | -66 |
| 7.00 | 7.58 | 272 | 112.91 | 20 | 32 | 3.03 | 3.93 | 70 | 17 | 53 | 1.37 | -48 |
| 30-YEAR CONVENTIONAL September-10 |  |  |  |  |  |  |  |  |  |  |  |  |
| Coupon (\%) | WAC <br> (\%) | WAM (Months) | Price | 10yr Avg CPR <br> (\%) | 1yr Avg CPR <br> (\%) | Yield <br> (\%) | WAL (Years) | Z-Spread (BP) | OAS <br> (BP) | Option $\operatorname{Cost}(\mathrm{BP})$ | Effective Duration | Effective Convexity |
| 4.50 | 4.97 | 338 | 104.19 | 13 | 21 | 3.71 | 7.40 | 134 | 67 | 67 | 3.40 | -58 |
| 5.00 | 5.52 | 306 | 105.34 | 14 | 25 | 3.83 | 6.13 | 167 | 104 | 63 | 2.92 | -67 |
| 5.50 | 6.01 | 295 | 106.34 | 15 | 24 | 4.03 | 5.58 | 201 | 143 | 58 | 2.87 | -87 |
| 6.00 | 6.53 | 301 | 107.47 | 20 | 36 | 3.65 | 4.14 | 190 | 120 | 70 | 1.49 | -19 |
| 6.50 | 7.01 | 290 | 109.19 | 19 | 30 | 3.81 | 4.30 | 206 | 150 | 56 | 1.80 | -53 |
| 7.00 | 7.58 | 276 | 111.09 | 21 | 32 | 3.39 | 3.72 | 175 | 127 | 48 | 1.34 | -34 |

Consistent with changes in broader interest rates, mortgage rates moved higher in the fourth quarter. The FNMA 60-day commitment rate for a 30 -year mortgage increased 75 bps to $4.57 \%$ in December from $3.82 \%$ in September. Notwithstanding higher mortgage rates, changes in mortgage security prices over the same period were mixed across the coupon stack (Exhibit 2).

## Thrift Industry Balance Sheet Composition

Thrift industry holdings of long-term, fixed-rate, single family mortgage assets remained unchanged in the fourth quarter. As shown in Exhibit 3, the average ratio of 30-year, fixed-rate, single family mortgage loans and securities to total assets held within the thrift industry was unchanged in the fourth quarter at $13.6 \%$, down from $13.8 \%$ compared to the prior year. Conversely, institutions with greater than $\$ 1$ billion in total assets or less than $\$ 100$ million in total assets increased their long-term mortgage asset holdings compared to the prior year. Institutions of all asset sizes increased their holdings of cash and cash equivalents from the prior year.

Institutions throughout the thrift industry continue to rely on non-maturity deposits as a major funding source and have increased non-maturity deposit balances on a quarterly and yearly basis. As noted in Exhibit 3, the average ratio of nonmaturity deposits to total assets for the industry increased to $35.7 \%$ in the fourth quarter from $33.8 \%$ in the third quarter and $31.0 \%$ in the prior year. Additionally, with an average ratio of $43.5 \%$ of total assets, institutions with total assets above $\$ 1$ billion are particularly reliant on non-maturity deposit funding.

Balances of longer-term fixed-rate, fixed-maturity (FRFM) deposits have also increased on a quarterly and yearly basis. The average ratio of FRFM deposits maturing in over 12 months to total assets increased to $13.9 \%$ in the fourth quarter from $13.5 \%$ in the third quarter and $11.5 \%$ in the prior year. Short-term FRFM deposits, however, remain a primary funding source for the industry and institutions with less than $\$ 1$ billion in particular. The average ratio of FRFM deposits maturing in 12 months or less to total assets was $31.6 \%$ in the fourth quarter for institutions under $\$ 100$ million in total assets compared to $19.3 \%$ for institutions over $\$ 1$ billion in total assets.

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## Exhibit 3

Thrift Industry Balance Sheet Composition*

|  | Thrift Industry |  |  | TA > \$1b |  | TA \$100m - \$1b |  | TA<\$100m |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Dec-10 | Sep-10 | Dec-09 | Dec-10 | Dec-09 | Dec-10 | Dec-09 | Dec-10 | Dec-09 |
| 30 yr FR SF Loans and Securities | 13.6\% | 13.6\% | 13.8\% | 11.9\% | 10.9\% | 12.7\% | 13.4\% | 16.2\% | 15.9\% |
| Adjustable Rate SF Loans and Securities | 12.3\% | 12.2\% | 13.3\% | 11.6\% | 12.5\% | 12.8\% | 13.7\% | 11.7\% | 12.9\% |
| Cash, Deposits and Inv. Securities** | 14.2\% | 14.1\% | 12.2\% | 9.8\% | 9.4\% | 13.3\% | 10.9\% | 18.2\% | 15.9\% |
| Non-Mortgage Loans | 7.1\% | 7.2\% | 6.8\% | 12.5\% | 11.1\% | 6.8\% | 6.8\% | 5.1\% | 4.7\% |
| FRFM Deposits Maturing < 12 mo . | 27.5\% | 27.9\% | 29.3\% | 19.1\% | 20.4\% | 27.5\% | 30.0\% | 31.6\% | 32.2\% |
| FRFM Deposits Maturing > 12 mo . | 13.9\% | 13.5\% | 11.5\% | 10.2\% | 8.6\% | 14.4\% | 12.1\% | 15.0\% | 11.8\% |
| Non Maturity Deposits | 35.7\% | 33.8\% | 31.0\% | 43.5\% | 37.0\% | 36.6\% | 32.3\% | 29.8\% | 25.6\% |
| Transaction Accounts | 8.4\% | 7.9\% | 7.5\% | 7.7\% | 6.8\% | 9.4\% | 8.3\% | 6.9\% | 6.3\% |
| MMDA | 11.5\% | 11.0\% | 9.7\% | 19.3\% | 16.2\% | 11.4\% | 10.0\% | 7.7\% | 6.0\% |
| Passbook | 11.0\% | 10.6\% | 9.8\% | 11.6\% | 10.0\% | 10.6\% | 9.4\% | 11.6\% | 10.3\% |
| Non interest bearing | 4.7\% | 4.3\% | 4.1\% | 4.9\% | 4.0\% | 5.2\% | 4.7\% | 3.6\% | 2.9\% |
| FRFM Borrowings Maturing < 36 mo . | 3.4\% | 3.5\% | 4.8\% | 5.0\% | 7.0\% | 3.5\% | 4.7\% | 2.3\% | 3.8\% |
| FRFM Borrowings Maturing $>36 \mathrm{mo}$. | 1.5\% | 1.5\% | 1.5\% | 2.1\% | 1.9\% | 1.6\% | 1.6\% | 1.1\% | 1.0\% |
| Structured Borrowings | 2.4\% | 2.7\% | 3.0\% | 4.1\% | 5.4\% | 2.6\% | 3.3\% | 1.1\% | 1.4\% |

*Reflects quarterly CMR data; Expressed as the average ratio of xoxx $/$ Total Assets (TA).
${ }^{* *}$ Cash, Deposits and Investment Securities less Mortgage Derivatives and Structured Securities

## Net Interest Margin Trends

A sustained level of low interest rates and a persistently steep yield curve have enabled institutions to increase their net interest margins and yield cost spreads on a consistent basis over the past several quarters. The median net interest margin for the industry increased to $3.13 \%$ in December from $3.11 \%$ in September and $3.08 \%$ in the previous year (Exhibit 4). Median net interest margin for institutions with total assets below $\$ 100$ million or above $\$ 1$ billion increased to $3.26 \%$ and $3.12 \%$, respectively, in the fourth quarter from $3.21 \%$ and $3.01 \%$ in the third quarter. Conversely, median net interest margin for institutions with total assets between $\$ 100$ million and $\$ 1$ billion decreased to $3.08 \%$ in the fourth quarter from $3.10 \%$ in the third quarter.

## Exhibit 4

Yield-cost spreads have also grown consistently over recent quarters (Exhibit 5). On the liability side of the balance sheet, institutions have been able to take advantage of low short-term rates to significantly reduce their funding costs. The industry's median cost of interest bearing liabilities has decreased to $1.61 \%$ in the fourth quarter from $2.16 \%$ a year ago (decline of 55 bps ) and $3.91 \%$ in the fourth quarter of 2007 (decline of 230 bps ). Similarly, asset yields have also fallen over the same time periods. However, declines have come at a slower rate than experienced for funding


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costs. The industry's median yield on interest earning assets decreased to $4.95 \%$ in the fourth quarter from $5.31 \%$ a year ago (decline of 36 bps ) and $6.35 \%$ in the fourth quarter of 2007 (decline of 140 bps ).
Taken together, institutions have been able to improve core profitability over recent quarters by absorbing falling asset yields with larger reductions in funding costs. However, the ability to increase yield cost spread using this approach will become increasingly difficult in future quarters as funding costs approach their absolute low. The benefit of low rates to liability

Exhibit 5
 funding costs will continue to diminish while the risk of profit deterioration as a result of falling assets yields and yield cost spread compression will increase. Furthermore, core profitability will face additional pressure if there is insufficient loan demand in a rising rate environment. Institutions should consider how their asset/liability mix and future funding, purchase and origination decisions will be affected by a rising rate and/or yield curve flattening environment.

## Fourth Quarter NPV Model Results and the Thrift Industry IRR Profile

Pre-shock and post-shock NPV capital ratios increased in the fourth quarter (Exhibit 6). The median pre-shock NPV capital ratio increased to $13.70 \%$ in December from $13.31 \%$ in September. Similarly, the median post-shock NPV capital ratio increased to $12.41 \%$ in fourth quarter from $12.10 \%$ in the third quarter.

Rising interest rates contributed to longer asset durations and higher sensitivity measures. The industry's median effective duration of total assets increased to 1.53 in December from 1.30 in September while the industry's median effective duration of total liabilities increased to 1.33 in December from 1.30 in September. Taken together, these changes produced a positive duration gap for the first time since March 2010. Consequently, the industry's median

Exhibit 6


Exhibit 7


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sensitivity measure increased to 94 bps in the fourth quarter from 83 bps in the third quarter (Exhibit 7). Contributing to higher total asset durations were 30 -year, single family, fixed-rate mortgage loans and securities. The median effective duration of 30 -year loans and securities increased to 2.85 in the fourth quarter from 2.47 in the third quarter.

The number of institutions with a "Significant" or "High" level of interest rate risk as defined by Thrift Bulletin 13a increased to 15 in December from six in September (Exhibit 8). The number of institutions with a sensitivity measure above 200 bps also increased to 164 in the fourth quarter from 132 in the third quarter.

As discussed in previous editions of this Review, the OTS NPV model assumes all loans and securities to be prime, agency conforming exposures and therefore pre-shock NPV ratios may be overstated and sensitivity measures may be understated for those institutions that hold a large amount of non-prime exposures. In order to illustrate the potential for the OTS NPV model to overstate pre-shock capital, sensitivity measures can be applied to equity capital in the place of pre-shock capital to receive a new post-shock NPV capital ratio and applicable TB-13a rating. Using this method, the number of institutions rated "Significant" or "High" increases to 40 from 15 (Exhibit 9).

## Exhibit 8

|  | Post-Shock NPV Ratio and <br> Sensitivity Measure Matrix <br> December 2010 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Under <br> 100bp | 101- <br> 200bp | 201- <br> 400bp | Over <br> 400bp | Total |
| Over <br> $\mathbf{1 0 \%}$ | 294 | 125 | 103 | 15 | $\mathbf{5 3 7}$ |
| $\mathbf{6 \%}$ to <br> $\mathbf{1 0 \%}$ | 50 | 47 | 32 | 7 | $\mathbf{1 3 6}$ |
| $\mathbf{4 \%}$ to <br> $\mathbf{6 \%}$ | 4 | 2 | 3 | 1 | $\mathbf{1 0}$ |
| Below <br> $\mathbf{4 \%}$ | 2 | 1 | 3 | 0 | $\mathbf{6}$ |
| Total | $\mathbf{3 5 0}$ | $\mathbf{1 7 5}$ | $\mathbf{1 4 1}$ | $\mathbf{2 3}$ | $\mathbf{6 8 9}$ |


| Post-Shock NPV Ratio and <br> Sensitivity Measure Matrix <br> September 2010 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Under <br> 100bp | 101- <br> 200bp | 201- <br> 400bp | Over <br> 400bp | Total |
| Over <br> $\mathbf{1 0 \%}$ | 311 | 119 | 91 | 10 | 531 |
| $\mathbf{6 \%}$ to <br> $\mathbf{1 0 \%}$ | 82 | 41 | 26 | 1 | $\mathbf{1 5 0}$ |
| $\mathbf{4 \%}$ to <br> $\mathbf{6 \%}$ | 7 | 4 | 1 | 2 | $\mathbf{1 4}$ |
| Below <br> $\mathbf{4 \%}$ | 3 | 1 | 1 | 0 | $\mathbf{5}$ |
| Total | $\mathbf{4 0 3}$ | $\mathbf{1 6 5}$ | $\mathbf{1 1 9}$ | $\mathbf{1 3}$ | $\mathbf{7 0 0}$ |



| Interest Rate Risk Measures <br> Industry Aggregates <br> Last Two Quarters |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | NPV as \% of PV of <br> Assets | \% Change <br> in NPV | \% Change <br> in NPV |  |
| $+\mathbf{+ 3 0 0}$ | $12.17 \%$ | $12.28 \%$ | $-13 \%$ | $-8 \%$ |
| $+\mathbf{2 0 0}$ | $12.90 \%$ | $12.89 \%$ | $-6 \%$ | $-2 \%$ |
| $\boldsymbol{+ 1 0 0}$ | $13.36 \%$ | $13.12 \%$ | $-1 \%$ | $1 \%$ |
| Base | $13.41 \%$ | $12.86 \%$ | $0 \%$ | $0 \%$ |
| $-\mathbf{1 0 0}$ | $13.40 \%$ | $12.56 \%$ | $1 \%$ | $-2 \%$ |

Exhibit 9

| Post-Shock NPV Ratio and Sensitivity Measure Matrix Equity Capital - December 2010 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \text { Under } \\ & \text { 100bp } \end{aligned}$ | $\begin{gathered} 101- \\ 200 \mathrm{bp} \end{gathered}$ | $\begin{gathered} 201- \\ 400 \mathrm{bp} \end{gathered}$ | $\begin{aligned} & \text { Over } \\ & \text { 400bp } \end{aligned}$ | Total |
| Over 10\% | 174 | 68 | 51 | 8 | 301 |
| $\begin{gathered} \hline 6 \% \text { to } \\ 10 \% \\ \hline \end{gathered}$ | 155 | 96 | 65 | 10 | 326 |
| 4\% to 6\% | 15 | 11 | 18 | 4 | 48 |
| Below 4\% | 6 | 0 | 7 | 1 | 14 |
| Total | 350 | 175 | 141 | 23 | 689 |
| Minimal |  | erate | Signif |  | High |

## The Quarterly Review of Interest Rate Risk

## Appendix A - All Thrifts







## The Quarterly Review of Interest Rate Risk

## Appendix B - Northeast Region



## The Quarterly Review of Interest Rate Risk

## Appendix C - Southeast Region







## The Quarterly Review of Interest Rate Risk

## Appendix D - Central Region






## The Quarterly Review of Interest Rate Risk

Appendix F - Western Region






