

**CAPITAL REQUIREMENTS
FOR
HOME MORTGAGES**

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Washington, DC*

INTRODUCTION•

Recent market innovations, such as the Federal Home Loan Bank of Chicago's Mortgage Partnership Finance® plan, have raised some interesting questions about the appropriate capital treatment of home mortgages. See, for example, the last issue of *Mortgage Market Trends*. This issue begins an occasional series in which we will examine some of these regulatory capital questions about home mortgages from an economic perspective. The views expressed here are only those of the authors and should not be construed in any way as representing those of the Office of Thrift Supervision.

Current OTS risk-based capital standards require that single family residential mortgages with loan-to-value (LTV) ratios greater than 80 percent be placed in the 100 percent risk-weight category and, as a result, carry an 8 percent capital requirement. Mortgages at or below an 80 percent LTV (including mortgages with LTV ratios above 80 percent with mortgage insurance that brings the credit exposure below 80 percent) are risk-weighted at 50 percent and thus carry a 4 percent capital requirement. Other banking regulators require "prudently underwritten" mortgages with "appropriate LTV ratios" to qualify for the reduced risk weighting. Certain types of mortgage-backed securities with AA or AAA ratings are risk-weighted at 20 percent and thus carry a 1.6 percent capital requirement.

Previous issues of *Mortgage Market Trends* have shown that low (below 60 percent) LTV home mortgages rarely become seriously delinquent (ninety days past due or in foreclosure). For example, Table 1 shows by LTV category the percent of conventional (non-government-backed) mortgages tracked by the Mortgage Information Corporation that are currently seriously delinquent. Low LTV mortgages have a seriously delinquent rate of only 0.17 percent. Conversely, very high LTV (more than 95 percent) mortgages become seriously delinquent at a rate more than ten times that of low LTV mortgages (1.71 percent versus 0.17 percent).

Table 1: Conventional Home Mortgage Delinquency Rates (Source: MIC, 9/98)

LTV	Percent Seriously Delinquent
20-60	0.17
61-70	0.35
71-75	0.52
76-80	0.43
81-90	0.85
91-95	1.09
96-105	1.71

Delinquency rates only tell part of the story, however. Of equal concern to regulators are the consequences of a default, the losses a thrift incurs. Current thrift industry data indicate that average losses on all 1-4 family mortgages held in portfolio run about 18 basis points (0.18 percent) per year in this most favorable economic environment. Is a 400 basis points (4 percent) capital requirement too much or too little for the typical qualifying mortgage portfolio held by thrifts? Given that most thrifts find it beneficial to be "well capitalized," the 400 basis point capital requirement actually becomes **500** basis points for qualifying mortgages.¹

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¹ To be classified as well-capitalized, savings associations must maintain 10 percent risk-based capital. Qualifying mortgages are risk-weighted at 50 percent. Thus, a savings association that wants to maintain its well-capitalized classification will tend to hold 500 basis points of capital for its qualifying mortgages rather than the minimum 400 basis points.

To answer these questions, we need a framework in which to evaluate capital adequacy. Before we start that, though, let's look at current mortgage market conditions.

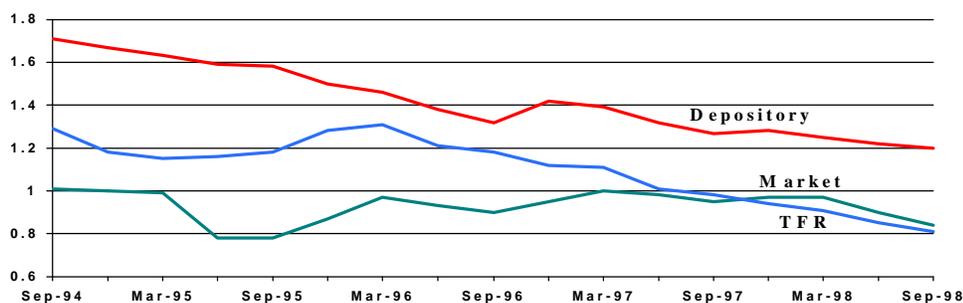
CURRENT MORTGAGE MARKET CONDITIONS

National Delinquency Rates Remain Low

Figure 1 plots the percentage of seriously delinquent (90 days past-due or in foreclosure) residential mortgages, using both the Mortgage Information Corporation (MIC) and Thrift Financial Report (TFR) data. The MIC data comprise almost 24 million mortgages. Since the first issue of the *Mortgage Market Trends*, we have divided the MIC data into two groups: the market, which includes all MIC participants (Freddie Mac, Fannie Mae, and eighteen other large banks, thrifts, and private mortgage lenders), and a subgroup, depository institutions, which includes only the FDIC-insured MIC participants (a mix of S&Ls and commercial banks). As the trend line in Figure 1 shows, the national delinquency rate improved again in the last quarter. Both the MIC depository and OTS-regulated (TFR) thrift delinquency rates improved as well.

Figure 1 also shows that depositories, as a group, have had a higher delinquency rate than the national average for the entire period. The gap between the depository and the market delinquency rates has remained fairly constant since June 1997. The thrift industry, though, has improved its performance so much over the last few quarters that its delinquency rate has dropped **below** the MIC national rate (which is dominated by the GSEs' portfolio of conforming mortgages) for the last four consecutive quarters.

Figure 1: Percentage of Seriously Delinquent Mortgages

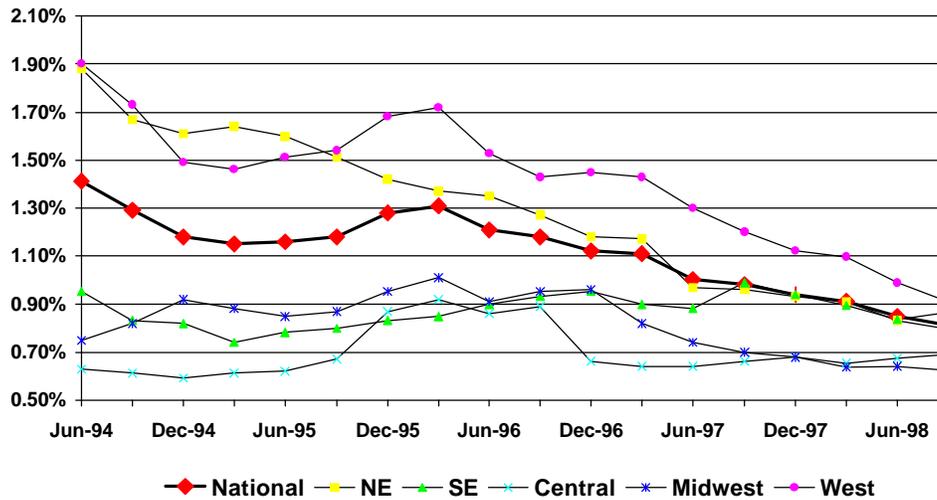


Source: MIC and TFR.

The *Market* contains the combined data of the depository and non-depository participants in MIC's Loan Performance System. *Depositories* comprise both bank and thrift MIC participants. The thrift MIC participants are very large institutions located primarily on the East and West coasts. *TFR* represents all OTS-regulated institutions except one that specializes in defaulted mortgages.

Figure 2 shows the regional detail behind the improvement of the overall thrift delinquency rate. The West region experienced the greatest improvement, with the Northeast and Southeast regions also registering significant declines. The Central and Midwest regions maintained the lowest delinquency rates among the regions. For the first time since we have been tracking these data, all regions reported a seriously delinquent rate below 1%.

Figure 2: OTS Regional Delinquency Rates



Serious Delinquencies Vary by Location and Product Type

In September 1998, according to the MIC data, the states with the highest rates of seriously delinquent loans (by dollar value) were Hawaii (1.7%), Maryland (1.6%), District of Columbia (1.5%), New York (1.4%), New Jersey (1.4%). The national average was 0.84%. California, which has previously drawn national attention because of its poor performance, had a rate of 0.93%, a rate better than, for example, Connecticut (0.96%).

In individual markets, Riverside, CA, again leads the nation with a seriously delinquent rate of 2.36%, followed by Scranton, PA (2.03%), and Memphis, TN (1.80%). Among major markets, Miami was fifth with a rate of 1.67% and New York was tenth with a rate of 1.48%.

Table 2 shows the percentage of mortgages that are seriously delinquent for different product types (conventional and government-backed, fixed rate and adjustable) based on whether the mortgages were made for purchase or for refinancing. These data show that fixed rate mortgages outperform adjustable rate mortgages; 15 year fixed rate mortgages outperform 30-year mortgages. Refinanced mortgages perform much better than home purchase mortgages in all cases except one, COFI ARMs, where the refinanced mortgages have a slightly higher delinquency rate than COFI ARM home purchase loans. Delinquency rates on government-backed loans substantially exceed those on conventional loans. For home purchase mortgages, government-backed loans have a seriously delinquent rate five times higher than that for 30-year conventional loans (3.36 vs. 0.60); for refinancing loans, the rate is six times higher (1.91 vs. 0.32).

Table 2: Percent Seriously Delinquent, as of 9/98

	Home Purchase	Refinancing
Conv: Fixed Rate	0.55	0.24
15-Yr Fixed	0.27	0.09
30-Yr Fixed	0.60	0.32
Conv: Adj Rate	1.02	0.85
T-Bill	0.94	0.74
COFI	1.12	1.17
Government	3.36	1.91
FHA	3.64	1.75
VA	2.86	2.13
All Loans	0.99	0.39

Source: MIC, based on \$ amounts

Mortgage Origination Market Shares

In the past, we have relied on HUD's *Survey of Mortgage Lending Activity (SMLA)* for origination and market share data. However, the fourth quarter 1997 data are the most recent available, the same as reported in the last issue. Table 3 presents the volume of home mortgages originated by OTS regulated thrifts since 1990. Note the level of activity in 1992 and 1993, the boom refi years. Prior to June 1996, OTS reported thrift origination data on an unconsolidated basis. Now OTS reports the data on a consolidated basis so that the data reflect not only the thrift's own activity but that of any mortgage subsidiary that it might own. Thus the data are not directly comparable. But even so, 1998 has turned out to be a banner year. OTS-regulated thrifts originated more than \$275 billion worth of home mortgages in 1998, more than they originated in all of 1993, the best year in their history. As default rates tend to be quite low in the first two or three years of a mortgage's life, this infusion of recently underwritten loans augurs well for default rates in the next couple of years, especially because of the high proportion of refinancing mortgages.

Table 3: Thrift Home Mortgage Originations (Source: TFR)

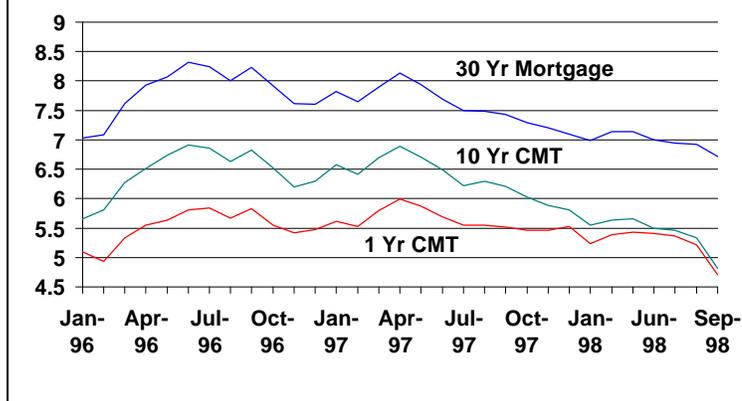
Year	\$Billions
1990	120
1991	121
1992	182
1993	189
1994	133
1995	106
1996	136
1997	150
1998	276

Interest Rate Changes

The demand for mortgages that has driven the record setting origination activity has come primarily from two sources – falling interest rates and new home purchases.

Figure 3 depicts the movement of key interest rates since January 1996. The 1 year constant maturity Treasury rate (1 Yr CMT) is frequently used as an index for adjustable rate mortgages. The 10 year constant maturity Treasury rate (10 Yr CMT) serves as an overall risk-free reference rate for longer-term contracts. The

Figure 3: 30 Year FHLMC commitment rate, 1 and 10 year constant maturity Treasury rates



The FHLMC 30 day commitment rate for 30 year fixed rate conforming mortgages provides a commonly used mortgage rate benchmark. During the last quarter (July through September) shown in **Figure 3**, both domestic and worldwide events prompted a flight to safety that drove down Treasury rates. Mortgage rates also fell but not as sharply. Thus the spread between Treasury rates and mortgage rates widened in the third quarter, even as mortgage rates declined.

Originations by Product and LTV

The Federal Housing Finance Board conducts its *Mortgage Interest Rate Survey (MIRS)* monthly among mortgage lenders on the interest rates and terms of their recently closed conventional (non-government-backed) mortgages. Table 4 reports the survey results for the months ending each quarter over the last eighteen months.

Table 4 shows that, for all three lender groups, effective mortgage interest rates (which include the amortization of initial fees and charges over a ten-year period) have declined sharply since the end of June 1997. For S&Ls, the current average is 6.72%, for commercial banks, 7.01%, and for mortgage companies, 7.11%. The average effective interest rate was substantially lower for S&Ls than that for the commercial banks and mortgage companies in every quarter surveyed.

The flat yield curve over the last year continues to affect ARM originations. S&Ls have traditionally originated a higher proportion of ARMs than either commercial banks or mortgage banks, and this pattern persists. While more than half of S&L's originations are typically ARMs, the percentage had fallen to just 35% in September. At commercial banks and mortgage companies, the decline in ARM originations has been even more dramatic. Only 7% of the commercial banks' and 4% of the mortgage companies' originations were ARMs during the third quarter of 1998.

The distribution of originations by loan-to-value ratios can also create differences in the effective interest rates between S&Ls and commercial banks and mortgage companies. Over the last year and a half, S&Ls have originated a much smaller percentage of their loans in the highest LTV category (greater than 90% LTV ratio) than the other two originators. This difference between commercial banks and S&Ls should eventually be reflected in the respective charge-off rates, as high LTV loans are riskier than low LTV loans. Because of their higher credit risk, higher LTV-ratio loans (without mortgage insurance) should carry higher rates and/or more fees and charges than lower LTV-ratio loans.

Table 4: Mortgage Rates and Terms
(Conventional Home Purchase Mortgages)

	Effective Rate	Percent of Loans by LTV Class				% Arms
		< 70%	70-80	80-90	>90	
S&Ls						
Mar-97	7.34	21	47	16	16	46
Jun-97	7.33	22	45	16	17	56
Sep-97	7.12	21	49	15	15	53
Dec-97	7.05	25	48	13	14	45
Mar-98	6.96	24	46	14	16	36
Jun-98	6.90	25	47	13	15	39
Sep-98	6.72	26	47	12	15	35
Commercial Banks						
Mar-97	7.77	20	39	19	22	31
Jun-97	7.86	21	38	18	22	21
Sep-97	7.59	22	37	17	24	16
Dec-97	7.46	18	32	16	35	9
Mar-98	7.22	15	34	16	36	9
Jun-98	7.21	15	31	14	40	9
Sep-98	7.01	17	34	17	33	7
Mortgage Companies						
Mar-97	7.92	19	34	17	30	14
Jun-97	8.03	18	36	17	28	16
Sep-97	7.77	19	36	18	27	13
Dec-97	7.51	19	36	17	27	8
Mar-98	7.28	20	37	17	27	6
Jun-98	7.29	19	37	16	28	7
Sep-98	7.11	19	36	16	28	4

Source: Mortgage Interest Rate Survey, Federal Housing Finance Board

CAPITAL REQUIREMENTS AND MORTGAGES

Regulatory capital serves many purposes. It acts primarily as a buffer against *unexpected* losses. It protects depositors, debt holders, and the FDIC insurance fund, among other claimants on the thrift, from unanticipated declines in the value of the thrift. (*Expected* losses should already be accounted for in loan loss reserves.) Regulatory capital also acts as a brake on excessive risk-taking because the owners of the thrift (equity holders) absorb losses first. It can also lower the cost of financial distress, such as the protective actions taken by others before insolvency occurs, as seen in panic withdrawals during a run on a bank.

Unexpected declines in the value of a thrift can occur for many reasons. Unexpected increases in interest rates can lower the value of assets relative to liabilities. A downturn in economic conditions can cause borrowers to default. A mispriced product line can perform poorly. A bad management decision can create excessive costs.

Creditors are interested in the overall risk of loss on their claim. To address this, practitioners have created an elaborate taxonomy of risk, which includes interest rate risk, liquidity risk, credit risk, exchange rate risk, transactional risk, and operational risk, among others. However, these risks are often analyzed separately, although approaches like value-at-risk that look at overall risk are gaining acceptance. While interest rate risk is appropriately measured by OTS at the institution level with all the interactions between various assets and liabilities taken into account, credit risk is usually (and inappropriately) measured asset by asset, ignoring correlations among assets and liabilities. But that is the approach all the banking regulators take in calculating risk-based capital.

If unexpected losses are large enough, the thrift can become insolvent – its assets are no longer sufficient to cover its liabilities. In the private sector, bond holders, through covenants, impose restrictions on a firm's activities and can gain control of the assets of the firm if it can't meet its obligations. Similar to bond covenants, banking regulators impose restrictions on the types of assets and liabilities insured depositories can have, and by how much the value of those assets has to exceed the value of liabilities (capital requirements). They do so to promote the safety and soundness of the banking system by limiting the probability of failure. Because of deposit insurance, the FDIC is also keenly interested in the relationship between the value of an insured depository's assets and its liabilities.

Interestingly, capital itself is really an accounting fiction. It is the tasteless, odorless, can't-be-spent numerical difference between the value of assets and the value of liabilities. There is no cash drawer marked capital from which to pay off creditors. Rather, the thrift uses its assets, such as cash and securities, to pay off its creditors. The capital account is on the liability side of the balance sheet, not on the asset side, and it reflects the residual difference between assets and liabilities. Higher capital requirements lower the risk of insolvency by increasing the relative amount of assets available to cover liabilities.

Measuring Capital

Not all capital is the same. For example, some assets are pledged as collateral to specific claimants and wouldn't be available to cover other liabilities in case of financial distress. Some assets may not fetch their full value if they have to be

liquidated quickly. Some assets are not worth what their accounting book values say they are.

Regulatory capital requirements are based on accounting book values. In the past, some bank and thrift failures have been triggered because of massive write-downs of asset book values that were no longer warranted by their underlying economic value. Although regulatory capital requirements are based on accounting values, banking regulators are beginning to use market data as a signal of potential problems.

The economic value of equity capital (the difference between assets and liabilities) depends on the current market values of the assets and liabilities. The values of some assets and liabilities are easier to observe and monitor than others. For example, Treasury bonds that actively trade can be valued easily and carry essentially no credit or liquidity risk. But their values can change dramatically with even small changes in interest rates.

Other assets, such as a commercial mortgage on a partially vacant office building, are more difficult to value. From an economist's point of view, the accuracy (in the sense of measuring the current underlying value) of accounting data is directly proportional to the "transparency" of the assets or liabilities involved, where transparency is the ease with which market values can be verified. Assets that trade frequently in deep secondary markets are transparent. If assets on a thrift's books are very much like those that trade freely in the market, they can be valued more easily. Conforming home mortgages are bought and sold frequently. Thus, the assets of a thrift holding a portfolio of conforming mortgages is more transparent than one that holds a portfolio of commercial construction loans.

Transparency provides some assurance that the value of the assets on the books won't disappear on closer scrutiny. The book values of assets whose market values are easy to verify are less likely to be overstated because accounting rules require that they be marked down when their market values indicate that they have become permanently impaired.

Active trading over time in a particular asset can also provide insights into the sensitivity of that asset to changes in credit conditions, interest rates, etc. This makes assessing the risk of those assets easier.

A strict reliance on market value accounting is no panacea, though, as it has its own problems. Not all assets are traded in deep secondary markets in arms-length transactions. Thinly traded or infrequently traded assets can provide misleading price information. Cherry picking loans out of portfolios to sell could inflate the reported value of the remaining loans on the books, etc.

Measuring Risk

The risk of an asset (credit risk, interest rate risk, liquidity risk, etc.) has to do with how quickly it can lose value, how frequently such changes occur (the frequency of loss), and the depth of the losses if they occur (severity). For example, a collateral-backed loan, like a mortgage, presents less risk than an unsecured loan because the collateral stands to lower the severity of loss should a default occurs.

Risk-based capital requirements focus on credit risk. Consider two types of \$100 loans, A and B. The principal on type A loans is paid off in full 95 times out of a hundred. The other five times, however, the borrower defaults and pays back nothing. As a result, type A loans have an expected loss of \$5. Type B loans *always* default, but the lender always receives \$95 back

on the loan. Type B loans also have an expected loss of \$5. Type B loans are not risky (like loans to your brother-in-law), because you always know the outcome. Type A loans are risky, because the loans could unexpectedly turn out to be worthless. Expected losses alone tell you little about the risk of an asset. Information on the frequency and severity of loss is much more important in gauging risk than expected losses.

As long as a default on one loan isn't related to the default on another loan, a lender can lower the risk (but not the expected loss) by building a portfolio of loans. Loan pools of similar types of loans have less risk than single loans because some bad outcomes are offset by some good outcomes so that the overall variability is smaller. Mortgage loan pools gain from diversification. However, adding very risky loans to a portfolio of safe loans will raise the overall risk, not lower it, despite the diversification gained by adding the risky loans.

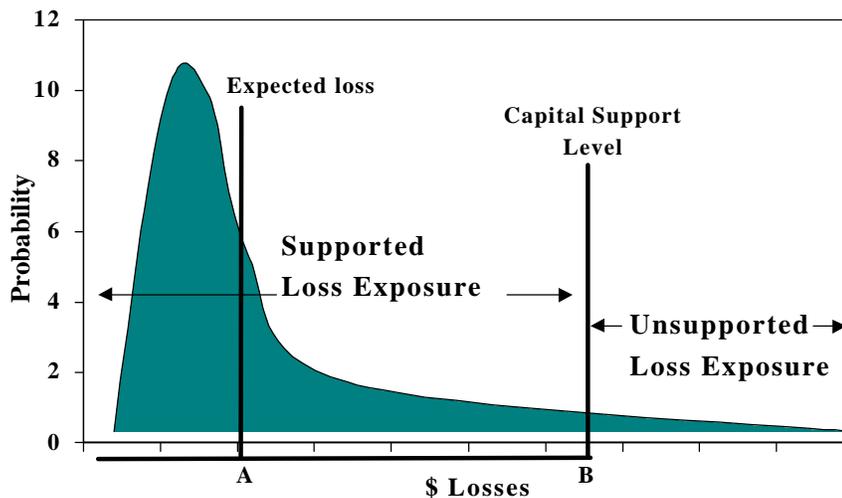
How then do you gauge the risk of home mortgage pools? Fortunately, we have historical data on the performance of home mortgage pools. Moody's, for example, has rated over \$500 billion of nonconforming one-to-four family residential mortgage backed securities. The Office of Finance Housing Enterprise Oversight (OFHEO) is developing capital guidelines for the millions of conforming mortgages held by or guaranteed by Freddie Mac and Fannie Mae.

Both OFHEO and Moody's use historical data to determine how mortgage pools have performed. Moody's looks specifically at how performance is affected by underlying factors such as LTV, regional concentration, borrower credit profile, servicer/originator performance, and interest rate levels². From these analyses, analysts can sketch a loss profile for a specific pool of residential mortgages. This profile relates a specific level of dollar (\$) losses with the likelihood that such specific losses might occur, creating a loss density function for a specific loan pool (see **Figure 4**). In other words, given the various characteristics (LTV, location, servicer, credit score, etc.) of the mortgages in a given loan pool, rating services such as Moody's forecast the level dollar losses such a pool would experience (graphed along the x axis) and assesses the probability such an event might occur (graphed along the y axis).

For a given loss profile of a mortgage pool, an investor can limit exposure to potential losses by requiring that any losses up to a point be absorbed by a third party. These loss-absorption structures have a variety of names, such as spread accounts, guarantees, and recourse agreements, but their common function is to limit potential losses to the investor by creating a capital support level.

Expected and *unexpected* losses play totally different roles. To calculate the *expected* loss on a loan pool, you take a weighted average of all the possible losses, where the weights are the probability that each loss would occur. The dollar amount "A" in Figure 4 represents the expected loss on this particular pool. A capital support level equal to the expected losses would still leave the investor exposed to substantial risk of loss.

² See "Moody's Approach to Rating Residential Mortgage Pass-Through Securities," Moody's Investor Service Special Report, November 8, 1996.

Figure 4: Loss Density Function

The dollar amount B represents a capital level that would cover most losses, both expected and unexpected. The investor would still be exposed to some unlikely (low probability of occurrence) but large pool losses. If large losses did occur, though, the capital support structure would absorb \$B dollars of those losses before the investor lost any money.

By varying the amount of capital support (\$B), a seller can vary the investor's exposure to loss. For example, with a very high level of capital support, a mortgage pool could achieve a 'AAA' rating. A lower \$B level might garner a 'BBB' rating. Etc.

Loan pools have widely varying loss density profiles. A pool constructed from very high LTV loans would have a much different profile from that of a low LTV loan pool. A geographically concentrated pool would have a more disperse loss profile (less spiked, but a fatter tail – a higher probability of larger losses because of a lack of diversification.) By varying capital support levels appropriately, one could equalize the risk of different loan pools.

By extension, this analysis could be applied to banks and thrifts. For example, capital requirements could be set such that risk faced by the FDIC of a bank or thrift failure is equivalent to that of an investor in an investment grade bond. The amount of capital required of each institution would vary by the risk profile of that institution.

The Probability of Insolvency

At the bank or thrift level, how much regulatory capital is enough? To answer that question, you need to ask another question: How often are regulators willing to have a bank or thrift fail? They can set capital requirements so high that a thrift engaged in mortgage business would almost never fail. Why not set it that high? Capital is costly for thrifts to hold. Too high capital requirements would drive thrifts out of business and consumers would end up paying more for a mortgage than they should.

Private insurance companies set fees and the deductible (capital requirement) on the basis of expected insurance claims. A higher deductible lowers their expected payouts. A higher capital requirement for thrifts would lower the probability of insolvency. As Alice Rivlin said

in a speech in December 1996, "The question should not be how high is the bank's capital ratio, but how low is its failure probability." And a zero probability of failure is not an economically sound solution. But setting an appropriate capital level requires an understanding of the potential loss profile of each thrift or bank based on its specific assets and liabilities.

It should be noted that thrifts and banks have private incentives for holding capital. Additional capital lowers the cost of issuing debt. Capital also acts as a signal to both depositors and borrowers who invest time and money in the relationship with the institution that it will be around for a while. Currently, most thrifts hold more capital than is required by regulation, which may mean that overall regulatory capital requirements might not be binding. However, current regulatory capital requirements may misprice the risk of individual assets and by doing so provide an incentive to either avoid or take on more of that type of asset than is warranted by the underlying economics.

CONCLUSION

In future issues, we will look in more detail at the loss distributions of different types of assets, especially mortgage related assets. At this point we know that LTV plays a critical role in determining the shape of the loss function for home mortgages. We also know that the size of the mortgage loan pool and its geographical diversification also play key roles. Smaller pools with less geographical distribution will have a more disperse loss distribution, which means a higher level of "unsupported losses" for any given level of capital. Other research has shown that the credit quality of the borrower and his/her willingness to pay back the mortgage plays a larger role in determining losses than previously thought.

Do home mortgages make a good asset base for capital calculations? In other words, do they provide a firm foundation for the capital = assets - liabilities equation? Home mortgages are more transparent than most loans. But swings in interest rates and prepayments, as well as changes in underlying credit quality can affect their economic value. However, evidence from the 1980s suggests that traditional home-mortgage-lending thrifts, even when they failed, kept more of their value than non-traditional failed thrifts. Is a 4% capital requirement (8% capital requirement * 50% risk bucket for qualifying mortgages) too high for home mortgages?

To be continued...

Mortgage Market Trends

Volume 3 Issue 1

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Data Appendix

National and Regional Trends in Mortgage Delinquency Rates

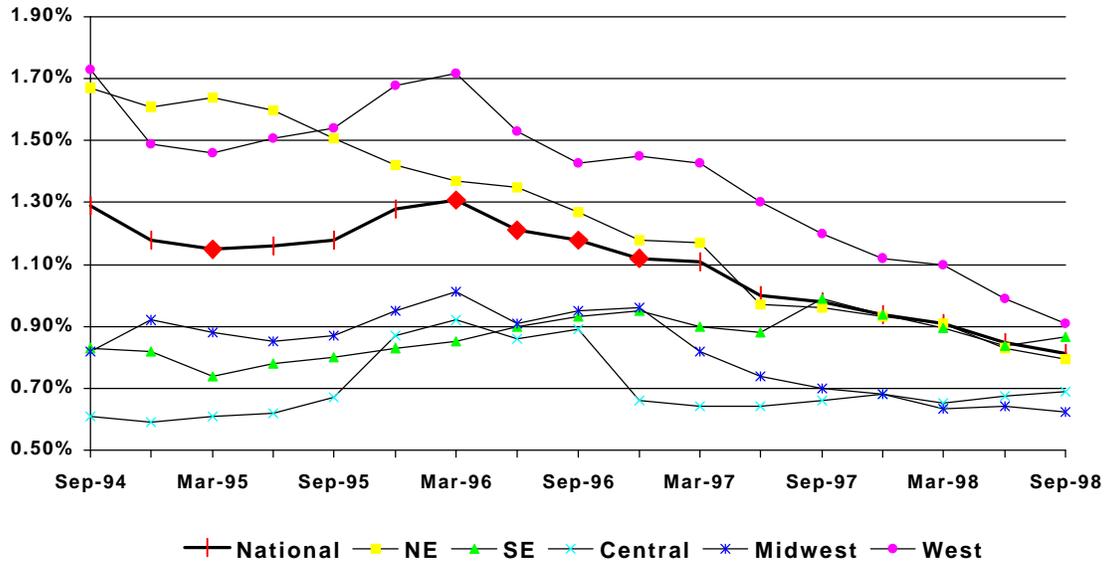
As of September 30, 1998

Regional and State Analysis

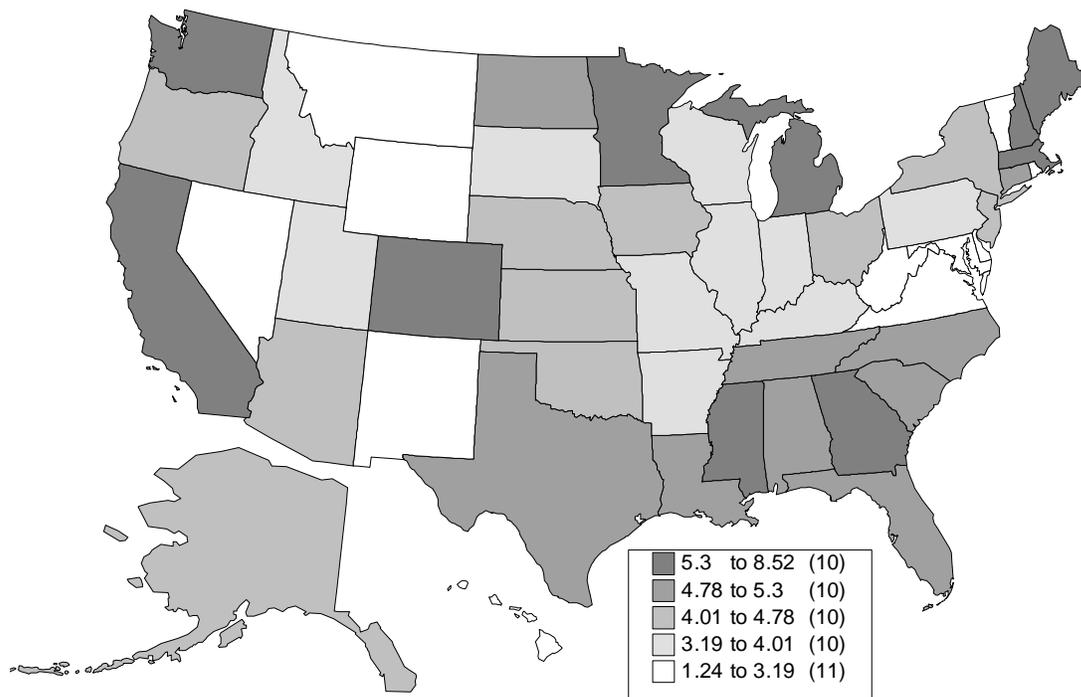
Seriously Delinquent & Home Price Appreciation Rates as of 9/30/98
(Based on \$)

	MIC SD		TFR SD	Home Price Appreciation	
	Market	Depositories	TFR	1-Year	5-Year
National	0.84	1.20	0.81	4.98	20.1
Northeast	1.10	1.64	0.79		
Connecticut	0.96	1.33	0.45	4.80	5.25
Delaware	0.82	1.40	0.41	2.81	6.60
Maine	0.71	1.31	0.82	5.47	11.40
Massachusetts	0.53	0.71	0.43	7.43	20.57
New Hampshire	0.41	0.61	0.56	6.75	14.84
New Jersey	1.43	2.28	1.20	4.30	7.37
New York	1.44	1.85	0.77	4.30	7.37
Pennsylvania	1.04	1.77	0.82	3.39	9.50
Rhode Island	0.75	0.98	1.84	2.55	3.38
Vermont	0.43	0.83	1.07	2.48	7.13
West Virginia	0.47	1.34	0.75	3.04	22.14
Southeast	1.00	1.45	0.87		
Alabama	0.61	1.44	1.19	5.20	24.41
DC	1.51	1.87	2.63	4.78	4.70
Florida	1.16	1.44	0.59	4.80	16.27
Georgia	0.77	1.24	0.78	6.03	26.09
Maryland	1.63	2.40	2.05	2.51	6.64
North Carolina	0.60	0.97	0.45	4.97	27.95
Puerto Rico	0.94	2.90			
South Carolina	0.75	1.13	0.45	5.08	22.80
Virginia	0.76	1.11	0.68	3.15	10.41
Central	0.57	1.19	0.69		
Illinois	0.82	1.31	0.80	3.19	20.43
Indiana	0.63	1.35	0.99	3.88	26.80
Kentucky	0.41	0.85	1.00	3.88	28.30
Michigan	0.23	0.54	0.74	5.96	40.85
Ohio	0.56	1.24	0.57	4.67	27.54
Tennessee	0.86	1.76	0.61	5.23	30.32
Wisconsin	0.27	0.64	0.26	3.76	32.88
Midwest	0.54	0.89	0.63		
Arkansas	0.73	1.21	0.55	3.78	23.35
Colorado	0.32	0.49	0.13	5.77	44.21
Iowa	0.21	0.27	0.34	4.12	28.53
Kansas	0.40	0.64	0.31	4.54	29.84
Louisiana	0.85	1.41	0.39	4.85	29.51
Minnesota	0.35	0.52	0.34	5.30	28.85
Mississippi	0.65	2.02	0.90	5.83	27.02
Missouri	0.42	0.78	0.43	3.23	24.46
Nebraska	0.20	0.29	0.72	4.03	32.17
New Mexico	0.69	0.99	0.89	2.98	27.72
North Dakota	0.35	0.42	0.22	4.90	25.54
Oklahoma	0.77	1.33	0.35	4.06	20.93
South Dakota	0.46	0.70	0.64	3.55	29.25
Texas	0.74	1.16	0.89	4.94	15.16
West	0.84	0.99	0.91		
Alaska	0.47	1.25	0.00	4.03	20.19
Arizona	0.53	0.69	0.50	4.55	29.67
California	0.93	1.07	0.98	8.52	6.93
Hawaii	1.66	2.60	1.77	1.24	-8.74
Idaho	0.61	0.70	0.28	3.26	26.37
Montana	0.61	1.13	0.50	2.57	33.62
Nevada	1.11	1.31	-	2.16	14.84
Oregon	0.33	0.35	0.31	4.01	46.41
Utah	0.62	0.87	0.66	3.93	59.49
Washington	0.54	0.54	0.26	6.96	26.49
Wyoming	0.39	0.62	0.42	3.15	32.11

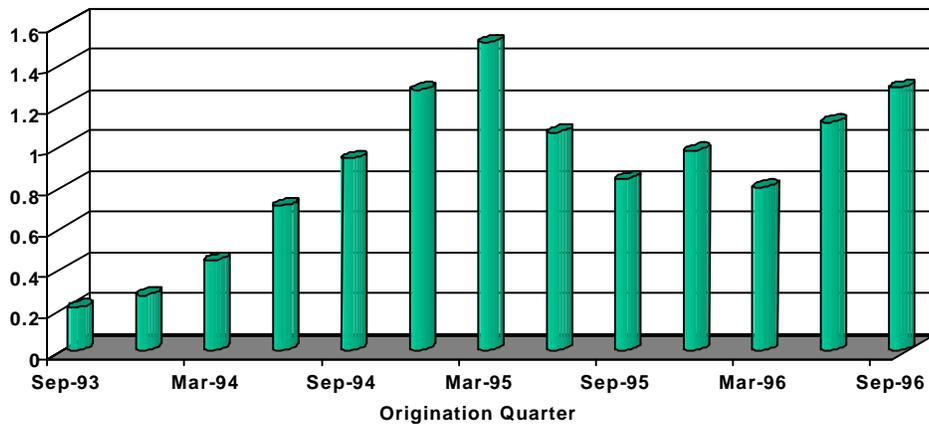
OTS Regions Seriously Delinquent Mortgages (%) Based on Thrift TFR Data by Location of Headquarters



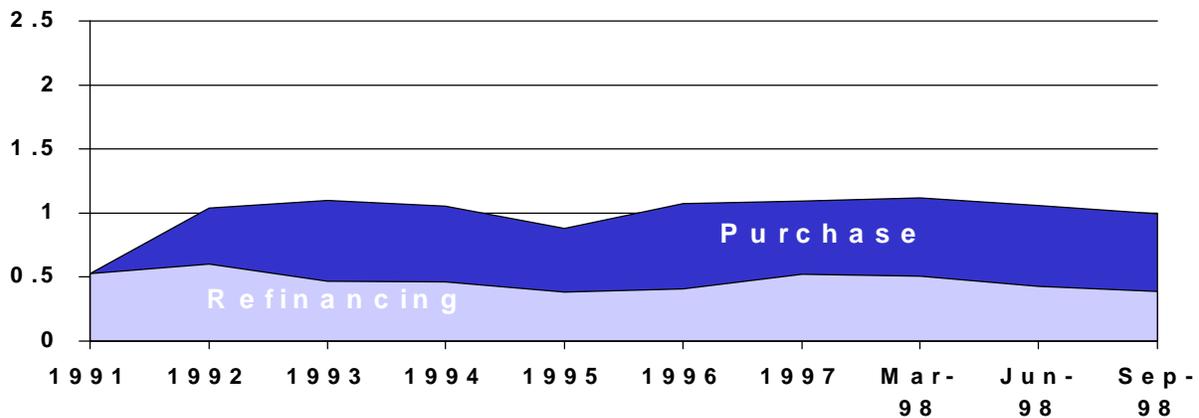
Percent Home Price Appreciation 1997Q3 to 1998Q3 (Source: OFHEO Resale Database)



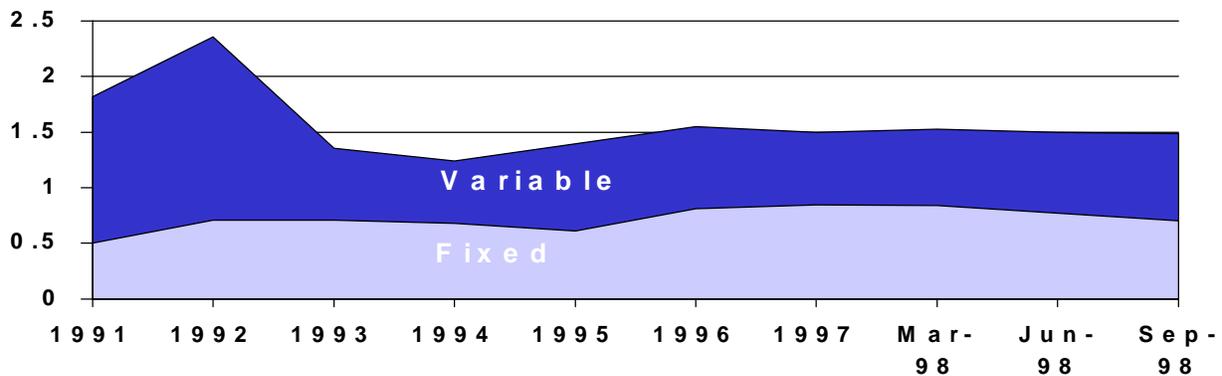
National Cohort Performance by Quarter of Origination
 Percent Seriously Delinquent after 24 Months, All Loans
 (Source: MIC)



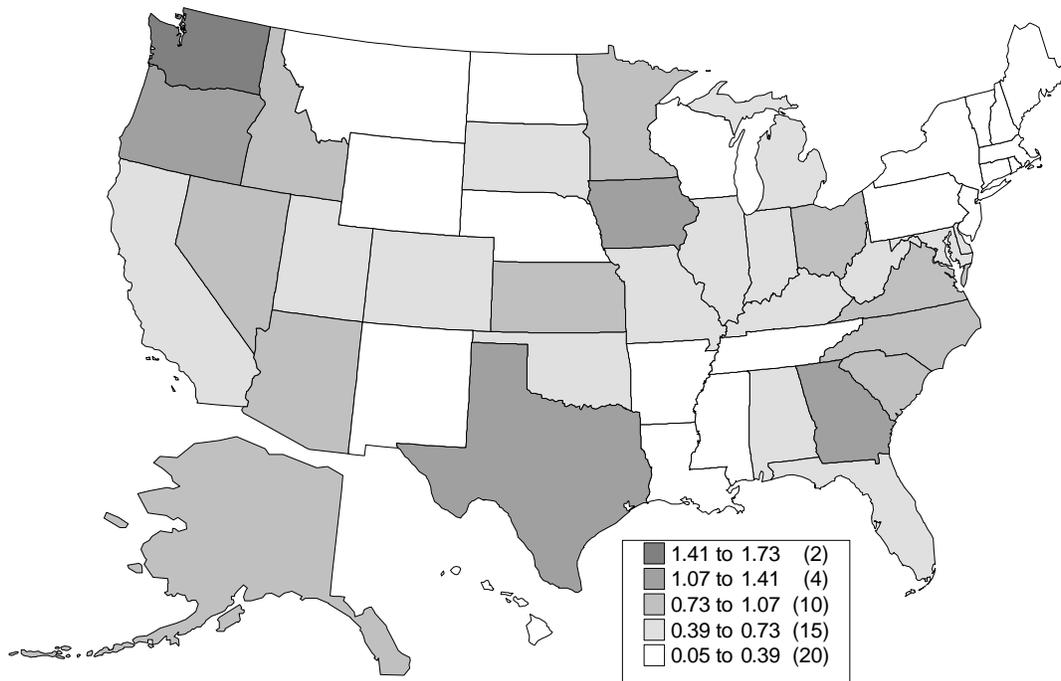
Home Purchase vs. Refinancing Mortgages
 (Source: MIC, Percent Seriously Delinquent, All Loans)



Fixed Vs. Variable Rate Mortgages
 (Source: MIC, Percent Seriously Delinquent, All Loans)



States with Higher Percentages of Very High LTV Mortgages (Source: MIC, 96% to 105% LTV Conventional Mortgages)



States with Higher Percentages of High LTV Mortgages (Source: MIC, 91% to 95% LTV Conventional Mortgages)

