An Actuarial Review for Fiscal Year 1991 of the Federal Housing Administration's Mutual Mortgage Insurance Fund

Final Report

December 31, 1992

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January 15, 1993

The Honorable Arthur J. Hill
Assistant Secretary for Housing --
Federal Housing Commissioner
Department of Housing and Urban Development
Washington, DC 20410

Dear Mr. Commissioner:

We are pleased to present this report on our review of the soundness of FHA's Mutual Mortgage Insurance Fund. This report presents an independent evaluation of the Fund's economic net worth through the end of fiscal year 1991, as required by the Cranston-Gonzalez National Affordable Housing Act (NAHA). The report presents our view of the actuarial position of the Fund, based on information supplied by the Department of Housing and Urban Development regarding the characteristics and the historical performance of the existing MMI Fund loan portfolio.

Our report finds that the economic value of the Fund has improved by $2.0 billion since FY 1990 and is currently -$669 million. The capital ratio, which expresses economic value as a percentage of insurance-in-force is -0.20 percent, increasing from the estimate of -0.88 percent in our FY 90 review. Both the economic value and capital ratio are stated as of the end of fiscal year 1991 -- before the NAHA changes to premiums were fully implemented.

The Fund is not expected to meet the FY 1992 capital ratio target established by the NAHA. However, it is expected to meet the FY 2000 target if the U.S. economy recovers as predicted by our baseline forecast. In the event of a prolonged downturn, the Fund may be unable to reach the FY 2000 target.

The MMI reforms adopted in the NAHA are projected to increase substantially the value of future business and contribute capital to the Fund. The value of this business, however, will not significantly affect the Fund's value until FY 1992. At that time -- given current levels of MMI activity and expected economic trends -- each new year of business will add about $1.1 billion to the value of the Fund over and above expected economic values without the NAHA reforms.

Our analysis depends to some degree on the quality of data provided to us by FHA and the forecasts of economic conditions available from various organizations. The analysis was conducted using economic models that are by their nature subject to some degree of error and may not exactly predict future behavior. These limitations are addressed in the technical appendices.

This report was prepared with the assistance of Mr. Samuel Gutterman, FSA, an actuary employed by Price Waterhouse. If you have any questions about this report, please call Dr. Fredric Laughlin or Dr. LaVaughn Henry at (202) 296-0800.

Very truly yours,

Price Waterhouse

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Executive Summary

The Cranston-Gonzalez National Affordable Housing Act (NAHA) requires an independent actuarial analysis of the economic net worth and soundness of the FHA's Mutual Mortgage Insurance Fund. This report presents our findings with respect to this required analysis.

The purpose of our report was to estimate:

- The economic value of the MMI Fund, defined as the sum of existing capital plus the net present value of current books of business; and

- The current capital ratio, defined as the economic value divided by the total insurance in force.

Under our base case scenario the economic value of the MMI Fund as of the end of FY 1991 is -$669.4 million, resulting in a current capital ratio of -0.20%.

Impact of Recent Books of Business

MMI's historical books of business can be divided into three distinct periods on the basis of differences in the economic environment and internal management practices. The FY 1975 to FY 1981 period, our baseline for estimation, was a period of significant inflation and consequently, low claims rates. The 1982 to 1986 period saw increases in seller financing and a relaxation of underwriting standards, with rising claims rates as a result. The post-1986 period appears to be characterized by stricter underwriting standards.

Our economic models estimate baseline claim curves for each book of business which are driven by general household mobility and underwriting standards. These curves are augmented by additional claims due to economic shocks (e.g., changes in inflation and unemployment). Based on the evidence currently available on the stricter underwriting

standards of the 1987 and later books, we estimate an improvement of 36% over that of the 1975-1981 period. However, in light of lower inflation rates, higher loan-to-value ratios, continued rolling regional recessions, and weaker economic prospects, ultimate claims rates are likely to fall between the other two periods' experience.

The economic value of the FHA Mutual Mortgage Insurance Fund depends heavily on the performance of the post-1986 books. As of the end of FY 1991, they accounted for 70% of the Fund's insurance-in-force. However, since our historical data on these recent books is limited (covering five years or less), we believe it would be imprudent to draw definitive conclusions about the long-term performance of these books of business. Their baseline claim curves may or may not continue to show the same improvement over 1975-1981 in later policy years as mobility becomes a stronger influence than underwriting. To account for this uncertainty regarding the future performance of these endorsements, we ran sensitivity tests on alternate performance assumptions to bracket our base case. These assumptions are:

- **Superior Termination Performance**

  For policy years four and later, baseline claim rates are projected at 64% of the 1975-81 baseline rates.[1]

- **Base Case**

  For policy years four and later, baseline claim rates are projected at 82% of the 1975-81 baseline rates. This scenario assumes that these books perform with half the improvement estimated in the upper bound case.

- **Prior Termination Performance**

  For policy years four and later, baseline claim rates are projected at 100% of the 1975-81 baseline rates. This scenario assumes that these books perform with no improvement over the 1975-81 baseline experience.

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1 This number was determined by using econometric estimation as explained in Appendix A.

We have estimated the following values for the MMI Fund as of the end of FY 1991 for these cases.

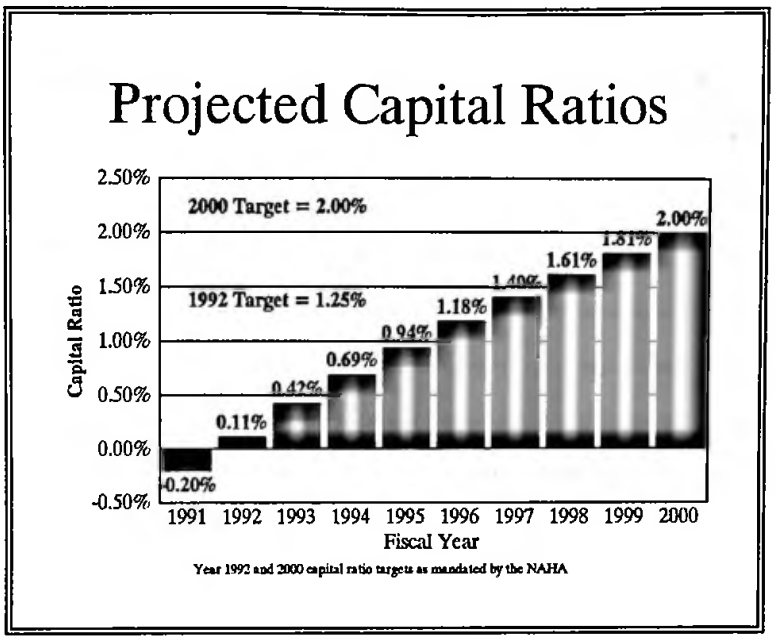
Exhibit 1

Summary of MMI Fund Performance By Termination Scenario

	Improvement Scenario	Base Case Scenario	Prior Experience Scenario
Economic Value FY 1991	$324.7 Million	-$669.4 Million	-$1,880.3 Million
Current Capital Ratio, FY 1991	0.10%	-0.20%	-0.57%
Projected Capital Ratio, FY 1992	0.44%	0.11%	-0.30%
Projected Capital Ratio, FY 2000	2.55%	2.00%	1.32%

Capital ratio figures in Exhibit 1 can be compared to the NAHA-mandated capital ratio targets of 1.25 percent for October 1, 1992 and 2.00 percent for October 1, 2000. Exhibit 2 depicts capital ratio forecasts for all years between the current fiscal year and FY 2000 for the base case economic forecasts under the assumption that Fund management practices, underwriting standards, NAHA provisions, and mortgagor profiles remain unchanged.

Exhibit 2



In making the capital ratio projections above, we assumed that future books of business remained at the FY 1991 level of $43 billion, interest rates remained stable after 1993, and unemployment rates gradually fell until 1995. More adverse economics would increase claims and reduce future capital ratios. (The sensitivity of the MMI Fund economic value to alternative macroeconomic scenarios is reported in Appendix C.)

Summary of the Causes of Change in Economic Value

The base case estimate of FY 1991 economic value reported above represents an improvement of $2.0 billion over the FY 1990 estimate. Exhibit 3 below summarizes the reasons for the increase in economic value from last year. The improvement in capital resources was due primarily to increases in mortgage holdings and net receivables. Lower than expected claims incidence for historical books of business, as well as the roll-off of underperforming past business and replacement by relatively better FY 1991 business account for the majority of the improvement in projected terminations. Refinements to the econometric model are detailed in Appendix A. (An extended discussion of the causes of these changes can be found in Section II-D.)

Exhibit 3

Changes in MMI Fund Economic Value Between FY 1990 and FY 1991 ($ in Millions)

Explanation	Change in Value	Economic Value
FY 1990		-$2,674.7 Million
Improvement in the Profile of Projected Terminations	1,340.9	
Improvement in Capital Resources	464.2	
Refinements to the Econometric Model	364.1	
Correction in the Treatment of 1975-83 Premium Structure	247.7	
Improvements in the Quality of the Data Extract	48.8	
Updating of Economic Forecasts	-460.4	
FY 1991		-$669.4 Million

Impacts of Recent Policy Changes

The NAHA mandated a transition to a risk-based premium structure. Because only one quarter of the FY 1991 originations were affected by the NAHA regulations, the policy had only a modest impact in that year. In October 1992, the Housing and Community Development Act of 1992 became effective, repealing NAHA restrictions on financing of closing costs put into effect one year earlier, and increasing loan size limits. The new premium rules, however, were unchanged. Although the historical data are unaffected by these changes, they and the NAHA premium structures were incorporated into our forecasts of the economic values of future books of business. The NAHA changes markedly improved the forecasts of economic value.

The recent liberalization of closing cost financing rules is projected to have a small negative effect on Fund value. Although the dollar impact is not expected to be large, any erosion of economic value will make it more difficult for the Fund to reach the FY 2000 capital ratio target. Data limitations precluded attempts to directly model the impact of the second change -- an increase in the loan size limit to $151,725.

If NAHA-mandated risk premiums were rescinded with the 3.8% upfront premium restored, the FY 1992 book and subsequent books would experience a decline of $1.1 billion in net present value per book, relative to the base case estimate. By FY 2000, the total economic value of the Fund is estimated to be $10.9 billion lower than projected in the base case. This would result in a capital ratio of -0.21%. The NAHA risk premium structure is necessary for the Fund to achieve its FY 2000 capital ratio target. While the current structure may not be sufficient to achieve the target if terminations experience deteriorates significantly, it does provide a high level of protection to Fund solvency under the base case and continued termination improvement scenarios.

I. Introduction

The Cranston-Gonzalez National Affordable Housing Act (NAHA), enacted in 1990, mandates that the Federal Housing Administration's (FHA's) Mutual Mortgage Insurance (MMI) Fund must attain a capital ratio of 1.25 percent by October 1, 1992, with a target of 2.0 percent for October 1, 2000. The capital ratio was defined by the Act as the ratio of the Fund's capital or economic net worth[2] to its unamortized insurance-in-force.[3]

In addition to codifying the actuarial standard, the NAHA established the requirement that the Department of Housing and Urban Development (HUD) undergo an annual independent actuarial review of the MMI Fund. The purpose of the review is to assess the actuarial soundness of the Fund and to report on FHA compliance with respect to the new capital standards set forth in the NAHA. Price Waterhouse has conducted this required review for fiscal year (FY) 1991. This report represents our evaluation of the actuarial soundness of the Fund as of the end of FY 1991 with an assessment of the Fund's current and forecasted capital ratios, based on information supplied by HUD regarding the historical performance of the existing MMI Fund loan portfolio.

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[2] The economic net worth is defined in the National Affordable Housing Act of 1990 as the "current cash available to the Fund, plus the net present value of all future cash inflows and outflows expected to result from the outstanding mortgages in the Fund."

[3] The term "unamortized insurance-in-force" is defined in the legislation as "the remaining obligation on outstanding mortgages" - - a definition generally understood to apply to amortized insurance-in-force. This seeming contradiction has led to some confusion regarding which is the appropriate measure to be used for this actuarial review. Price Waterhouse has chosen to continue using the unamortized insurance measure. This is consistent with the FY 1989 report, in which the recommended capital ratio requirements were calculated using unamortized insurance-in-force. In addition, the data on the unamortized insurance-in-force is considered more reliable than what is available on the amortized value of MMI Fund insurance-in-force.

II. Summary of Findings

This is the third independent actuarial review of the MMI Fund. The first reviewed FY 1989 and was reported in June 1990. The second reviewed FY 1990 and was presented in March 1992. This section discusses the findings of both the current review and the review of FY 1990. It also presents a comparison of the estimates for FY 1991 made in the FY 1990 review with actual FY 1991 experience, in order to assess the reasonableness of the model estimates. The reasons for discrepancies between estimated and actual results were considered both in refining the economic and financial cash flow models, and in the analysis of the FY 1991 review.

A. The FY 1991 Actuarial Review

The FY 1991 Actuarial Review assesses the actuarial soundness of the MMI Fund as of the end of FY 1991. It was conducted using econometric and financial cash flow models to estimate loan termination rates, project future cash flows of the existing Fund portfolio, and determine the sufficiency of current capital resources to meet estimated cash requirements.

The econometric and cash flow models used in the 1991 analysis are similar to those applied in the FY 1990 Review, but are based on the Fund's experience through September 1991 and an updated set of economic assumptions and forecasts to estimate the cash flows of the Fund. Technical adjustments have also been made to the econometric model which have enhanced the stability of the parameter estimates and improved forecasting accuracy.

The estimated economic value and capital ratio as of the end of FY 1991 for the FHA Mutual Mortgage Insurance Fund are presented in Exhibit II-I, along with last year's results.

Exhibit II-I

Estimates of MMI Fund Economic Value
End of FY 1991 and End of FY 1990
(Numbers in Millions)

	FY 1991 Review	FY 1990 Review[1]
Capital Resources		
Cash	$ 114	$ 18
Investments	6,558	6,554
Properties	988	1,068
Mortgages	1,733	1,424
Net Receivables and Payables	(449)	(585)
Total Capital Resources (From Audited Financial Statements)	$8,943	$8,478
PV of Future Cash Flows		
Pre-1975 Business	$ 67	$ 85
1975-1988 Business	(3,864)	(6,290)
1989 Business	(1,675)	(2,425)
1990 Business	(2,226)	(2,523)
1991 Business	(1,915)	
Total PV Future Cash Flows	**($9,612)**	**($11,153)**
Economic Value	**($669)**	**($2,674)**
Insurance Originated[2]		
1975-1989 Origination	$347,397	$347,397
1990 Origination	47,057	47,057
1991 Origination	42,681	
Total Originations	$437,135	$394,454
Unamortized IIF at End of Year	$327,811	$304,216
Capital Ratio	**-0.20%**	**-0.88%**

1 Cash Flows are valued to End of FY 1990.
2 As reported by the A-43 database.

Our major findings are:

- As of the end of FY 1991, the MMI Fund had an estimated economic value of **-$669.4 million** and an unamortized insurance-in-force portfolio of **$327.8 billion**. The capital ratio, which expresses economic value as a percentage of insurance-in-force, is **-0.20** percent, up from last year's estimate of -0.88 percent.

- The change in economic value from the FY 1990 review is largely attributable to:
  1. Fewer projected terminations from historical books of business;
  2. Addition of new capital resources;
  3. Refinement of the econometric model and data processing procedures;
  4. Changes in economic forecasts.

- The FY 1991 book of business will result in an additional drain of **$355 million** of the Fund's capital resources. Most of the FY 1991 mortgage insurance was written prior to the adoption of the new premium pricing and underwriting policies. The new policies (both NAHA and the 1992 changes) had only a slight impact on the FY 1991 book of business, but will affect future books of business and therefore are incorporated in the estimates for the post-FY 1991 data.

- We estimate that the FY 1992 book of business will add **$1.1 billion** to the Fund's economic value. Because insurance written in FY 1992 will be affected by NAHA reforms, it is expected that this business will generate a cash surplus, and will contribute to building capital resources. However, some of this growth in value will be dampened by the effects of the October 1992 rollbacks.

- The capital ratio is projected to be **0.11** percent in October 1992 and **2.00** percent by October 2000, meaning that the MMI Fund is not expected to meet the FY 1992 NAHA capital ratio target of 1.25 percent, but is projected to meet the FY 2000 target of 2.00 percent.

- As of the end of fiscal year 1991, post-1986 books of business accounted for approximately 70% of the Fund's insurance-in-force. Currently, their termination performance has been superior to that of previous books. Because of their relative size and behavioral differences, the economic value of the Fund depends heavily on the ultimate claims performance of these books. However, due to the relatively small amount of historical information with regard to these books, it is difficult to predict their ultimate termination experience. It is possible that they may revert to the termination experience of previous books of business, thereby impairing the rate of improvement in economic value.

To account for this uncertainty in outcomes we ran sensitivity tests on alternate termination performance assumptions to bracket our base case. These assumptions are:

- **Superior Termination Performance**
  - For policy years four and later, baseline claim rates are projected at 64% of 1975-81 baseline rates.[4]
  - Estimated Economic Value of Fund: $324.7 million
- **Base Case**
  - For policy years four and later, baseline claim rates are projected at 82% of the 1975-81 baseline rates. This scenario assumes that these books perform with half the improvement estimated in the upper bound case.
  - Estimated Economic Value of Fund: -$669.4 million

[4] This number was determined by using econometric estimation as explained in Appendix A.

- **Prior Termination Performance**

  - For policy years four and later, baseline claim rates are projected at 100% of the 1975-81 baseline rates. This scenario assumes that these books perform with no improvement over the 1975-81 baseline experience.

  - Estimated Economic Value of Fund: -$1,880.3 million

B. The FY 1990 Actuarial Review

In March 1992 we released our evaluation of the actuarial soundness of the MMI Fund for FY 1990. That report was the second independent actuarial study of the Fund conducted by Price Waterhouse and extended the econometric and cash flow models developed for our FY 1989 report. The objective of our modelling efforts was to evaluate historical experience with loan terminations due to defaults and prepayments, and to forecast future revenues and costs on the basis of the historical data, economic relationships, policy parameters and forecasts of future macroeconomic conditions. The resulting cash flow figures were then combined with current capital figures furnished by the audit to produce current economic values and projected capital ratios.

The FY 1990 econometric model used MMI Fund historical data from FY 1975 to FY 1990 to assess the current financial position of the Fund and to estimate the future performance of existing books of business. The FY 1990 model assigned costs to current default claims and prepayments, and projected the incidence and costs of future defaults and prepayments for existing books of business. Incidence projections depended in part on the forecasted values of U.S. unemployment, interest rates, and house prices used in the model. Combining these numbers with Fund capital and expected revenues yielded an economic value for the Fund's books. That figure was also the foundation for projections of Fund capital ratios and performance relative to the FY 1992 and FY 2000 legislative targets.

The major findings of the FY 1990 analysis were:

- The Fund's estimated economic value as of the end of FY 1990 was **-$2,674 million.** The Fund had an unamortized insurance-in-force portfolio of **$302.8 billion**. The capital ratio, which expresses economic value as a percentage of insurance-in-force, was **-0.88** percent.

- The addition of a **$46 billion** book of business written during FY 1990 was expected to deplete Fund capital by **$834 million** on a net present value basis.

- Because most of the insurance expected to be in force at the end of FY 1991 had been written prior to the adoption of the new premium pricing and underwriting policies, a net outflow of **$335 million** was expected in FY 1991, contributing to an expected drop in the capital ratio at the end of FY 1991 to **-0.95** percent. In contrast, the FY 1992 book of business will be written under the NAHA risk-based premium structure and was expected to contribute **$1.2 billion** to the Fund's economic value.

- The MMI Fund was not expected to meet either the FY 1992 or the FY 2000 capital ratio mandates under NAHA. Capital ratios as of the end of FY 1992 and FY 2000 were forecasted to be -0.60 percent and 1.12 percent respectively. The Fund was judged to be unable to withstand adverse economic conditions unless capital resources were replenished.

These are the findings of the 1990 Review. The latest performance of the fund, as determined by the 1991 Review, is more favorable.

C. Structural Change in Performance of Selected Books of Business

As we discussed in the FY 1990 actuarial review, an analysis of the actual claims for historical books of business revealed a distinct shift in the termination behavior of the portfolio. Books of business endorsed between 1982 and 1986 exhibited a significantly higher propensity to claim than did books for earlier years. Likewise, endorsements since 1987 have exhibited a reduced claim rate relative to the 1982-86 period.

During our completion of the FY 1991 review, we investigated several possible causes for these shifts:

- **Possible Causes of the 1982-86 Structural Shift**
  - Significant changes in the economic behavior of mortgagors
    - Reduced savings rates
    - Build-up in consumer debt levels
    - Increased variation in regional unemployment levels and labor force composition
  - Existence of seller concessions

- **Possible Causes of the Post-1986 Structural Shift**
  - Implementation of New Underwriting Standards
  - Large refinancings in 1987
  - Enactment of the 1986 Tax Act
  - Debarment of non-performing mortgagees

While we are continuing to investigate the determinants of the 1982-86 structural shift, we believe that the implementation of new underwriting standards account for the majority of the improvement in post-1986 termination experience.

D. Decomposition of the Change in Economic Value Since the End of FY 1990

Exhibit II-2

Estimates of Economic Value		
FY 1990	FY 1991	CHANGE
($2,674.7 M)	($669 M)	$2,005 M

Exhibit III-3

	Cause	Effect on Economic Value
1.	Improvement in the Projected Termination Profile of Historical Books of Business	1,340.9 M
2.	Addition of Capital Resources	464.2 M
3.	Refinements to the Econometric Model	364.1 M
4.	Correction in the Treatment of Upfront Premiums	247.7 M
5.	Improvement in the Reporting of the Data Extract	48.8 M
6.	Change in Economic Forecasts	(460.4 M)
	TOTAL CHANGE IN ECONOMIC VALUE	**$2,005 M**

1. Improvement in the Projected Termination Profile of Historical Books of Business

Since the production of the 1990 estimates, fewer projected terminations are expected to occur across all books of business. The economic value of the MMI Fund is largely dependent on the claims experience of books of business endorsed since 1987. These books represent approximately 70 percent of the current insurance-in-force. To date, their claim rates have been 64 percent of the rate of previous books. The 1987 book represents 20 percent of the insurance-in-force as of the end of FY 1991. To date, after five policy years, 4.12 percent of the book has resulted in claims, compared to 9.83 percent of the 1982-86 books at a similar point in their maturity. Naturally, the economic values estimated for the 1987 and later books depend on the predictions we make regarding their future performance. The table above was developed for the base case, where we assumed that the performance of these books would gradually come to reflect that of their predecessors more closely. Under this scenario, future claims rates for the recent books are projected at 82 percent of levels for prior books, assuming similar economic conditions and mortgagor characteristics.

2. Addition of Capital Resources

The following balance sheet items account for the difference in capital resources between the end of FY 1990 and 1991. Explanations for the causes of each of these changes can be found in Price Waterhouse's FY 1991 Annual Management Report prepared for the FHA.

Exhibit II-4

Decomposition of Changes in Capital Resources ($ in Millions)			
CAPITAL RESOURCES	FY 1990	FY 1991	CHANGE
Cash	$18	$114	$96
Investments	6,554	6,558	4
Properties	1,068	988	-80
Mortgages	1,424	1,733	309
Net Receivables and Payables	(585)	(449)	136
Total Capital Resources	$8,478	$8,943	$464

3. Refinements to the Econometric Model

We made refinements to the econometric model to enhance its consistency and stability. These refinements are summarized below. (Detailed explanations of each can be found in Appendix A.)

- Estimation of actual claim and prepayment rates versus deviations from the historical mean
- Controlling for negative equity observations
- Modification of the specification of the claim termination model
- Modification of the method used in the statistical weighting procedure

- Estimation of all loan-to-value categories versus a selected subset

- Standardization between FHA's and Price Waterhouse's categorizations of LTVs.

4. Correction in the Treatment of Upfront Premiums

The 1990 Actuarial Review applied upfront premiums to business endorsed between 1975 and 1983. This was inconsistent with the actual policy at that time which was to assess a 0.5 percent annual premium on outstanding loan balances to these books.

5. Improvement in the Reporting of the Data Extract

FHA's efforts to improve the accuracy of their reporting and data recording procedures have resulted in significantly less variation between different data extracts. The difference in historical observation between the 1990 and 1991 data extract was less than $1.1 billion, or 0.3 percent of the amount of total endorsements.

6. Change in Economic Forecasts

The continuation of the economic recession throughout FY 1991 resulted in a reduction in economic value. Because of this, the outlook for a strong recovery has also been revised downward since the end of FY 1990.

III. Current Year Performance - The Effect of FY 1991 Activity on the Fund

The operations of the MMI Fund are intended to generate sufficient premium and investment income to provide for the expected losses associated with claim termination, and other costs of operation, over the life of the insured loans. The Fund's performance, and therefore the capacity of the premiums to meet all obligations, is sensitive to fluctuations in economic conditions, the underlying risk of the existing mortgage pool, and the additional risk resulting from new books of business.

The FY 1991 Review of the MMI Fund updates the FY 1990 Review by incorporating the additional insurance written in FY 1991, and the current actual and expected economic conditions affecting the housing sector and loan performance. The integration of these factors is important, because changes in the value of the Fund are largely attributable to:

- Change in projected termination profile of the 1987-91 business
- Changes in Economic Conditions
- Addition of Capital Resources

A. Economic Conditions Through FY 1991

The financial position of the Fund is particularly sensitive to fluctuations in the housing and mortgage market sectors of the economy. This is because claim termination behavior, the dominant source of financial risk affecting the Fund, is closely related to movements in various housing market indicators. Economic analysis of loan foreclosure and subsequent claim termination indicates that the level of net equity in properties is a critical consideration in estimating claim termination behavior. The level of actual and perceived equity in properties will vary according to rates of house price appreciation. The previous and current forecasts of the critical economic conditions affecting loan performance are presented in Exhibit III-I.

In contrast to the consensus method we used in the 1990 study to construct forecasts of the economic variables, we now use DRI as our sole source of economic projections. The change ensures internal consistency in the construction of all the forecasted variables in the model. DRI's forecasts are also updated on a monthly basis. This allows us to capture the most recent movements in the economy.

Exhibit III-I

Previous and Current Forecasts of Economic Data

	CQHP		Mortgage Interest Rate		FHLMC Mortgage Commitment Rate		Unemployment	
	1990	1991	1990	1991	1990	1991	1990	1991
1989	3.76	3.76	10.07	10.0	10.47	10.47	5.30	5.30
1990	1.49	1.49	9.71	9.71	10.10	10.10	5.50	5.50
1991	0.82	0.82	9.27	9.20	9.57	9.50	6.80	6.80
1992	2.25	1.60	8.50	8.17	8.20	8.47	6.80	7.50
1993	3.50	3.50	9.00	7.91	9.30	8.21	6.50	7.30
1994	4.50	3.90	9.00	8.40	9.30	8.70	6.00	6.60
1995	4.96	3.40	9.00	8.41	9.30	8.71	5.50	6.20
1996	4.96	3.20	9.00	8.41	9.30	8.71	5.50	6.20

Shaded areas are actual figures taken from U.S. Census Bureau figures (CQHP, Mortgage Interest and Unemployment Rates) and FHLMC reports (Freddie Mac 30-Year Fixed Rate Mortgage Commitment Rates). The change in the actual 1989 Mortgage Interest Rate is a result of changing from using the FHA ceiling rate to the actual average on new loans in that year. All others are forecasted values.

The current set of economic projections reflects the widely held belief that expansion out of the current recession will not be rapid. This is shown by a reduction, relative to the 1990 projections, in the anticipated increase in the rate of house price appreciation, a continued lower level of interest rates, and a reduction in the rate of decline in the unemployment rate.

B. Characteristics of the FY 1991 Book of Business

In FY 1991, FHA insured $42.7 billion in single family mortgages, increasing the unamortized insurance-in-force to $327.8 billion. In contrast to the FY 1990 book of business, loans originated after July 1,1991 follow the new pricing and underwriting guidelines of NAHA. The FY 1991 book is also different from previous books in that FHA insurance for investors has been eliminated from the program in an administrative change unrelated to NAHA. These loans have generally been of higher risk than loans with similar loan-to-value ratios and have imposed significant losses on FHA. Their elimination is estimated to have a positive effect on the overall risk profile of future books of business.

Although the FY 1991 book of business was 10 percent smaller than the FY 1990 book, it continued the trend of relatively large volumes observed over the last six years. This is shown in Exhibit III-2.

Prior econometric studies of mortgagor termination behavior have shown that the borrower's equity position is a major determinant of default behavior. The larger the equity position, the lower the incentive to default on the loan. The loan-to-value (LTV) ratio[5] is a measure of this relationship between the size of a loan and the value of the underlying property. Accordingly, the termination risk in a mortgage pool can be linked to the distribution of high LTV loans at origination. At any time during the life of a seasoned loan, default risk remains linked to the ratio of outstanding mortgage principal to the estimated market value of the property.

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[5] In 1991, FHA started defining LTV as the mortgage amount without the mortgage insurance premium over appraised value.

Exhibit III-2

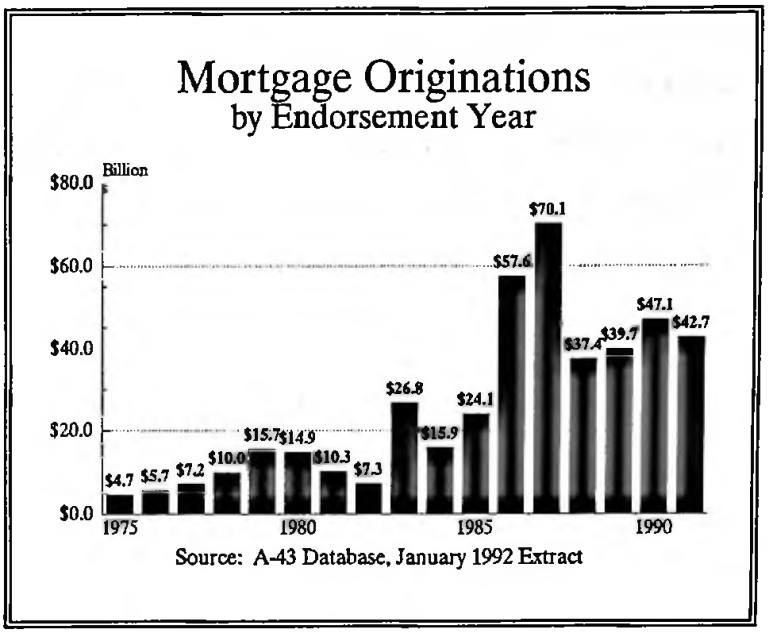
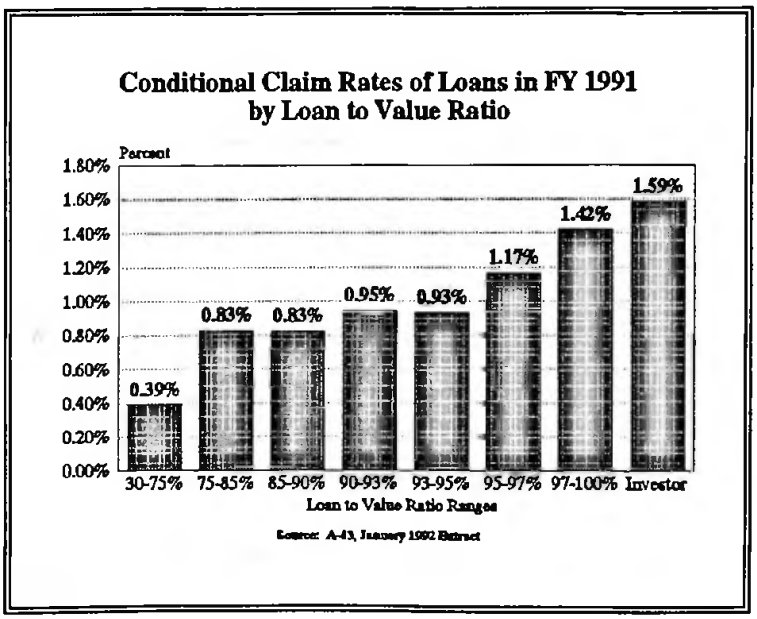


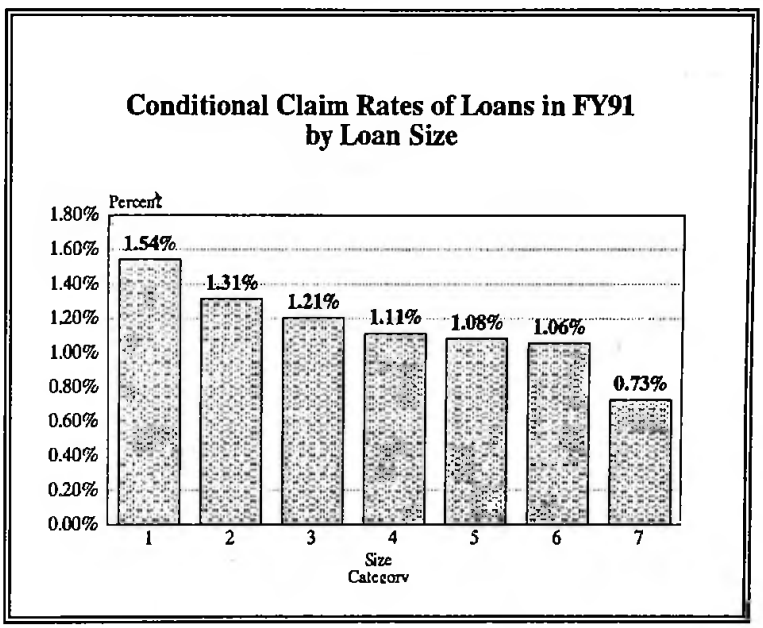
Exhibit III-3 displays claim rates by LTV ratio for all loans terminating in FY 1991. This graphic serves to illustrate the historical relationship between high LTVs and high aggregate claim rates.

Exhibit III-3



In October of 1992 Congress raised the loan ceiling on insured loans, increasing the opportunity for potential homeowners in high house price markets to obtain FHA insurance. As shown in Exhibit III-4, there is a significant inverse relationship between loan size and default risk in existing categories of FHA loans. Because we have no evidence for loan sizes above the current FHA limits, we cannot project from these results to the claims experience of larger loans.

Exhibit III-4



There is also a relationship between loan size and the loss rate on claims. The loss rate is defined as the percentage of a claim amount that is not recovered through the sale of the property associated with the claim.[6]

6 We emphasize that part of this decline in loss rates across loan sizes is because there are significant claim costs which are fixed rather than variable with the loan or home value. These include costs associated with foreclosure attorneys and property management.

Exhibit III-5 shows the distribution of loans by selected loan size categories, across both origination and termination years. Size increases with the category number, as indicated by the key below which specifies the upper limit of each category for each fiscal year. As shown in Exhibit III-6, this historical analysis was conducted for loan amounts under the FHA limit. There has not been experience from which conclusions may be drawn about the claims and losses for higher loan amounts.

Exhibit III-5

Distribution of Loan Originations by Mortgage Size
(Percentage of Dollar Volume)

	Size Category							
Year	1	2	3	4	5	6	7	8
75	6.70%	8.27%	10.46%	14.82%	16.27%	28.89%	13.82%	0.77%
76	8.73%	8.92%	12.62%	17.35%	15.76%	26.67%	9.26%	0.70%
77	8.17%	8.56%	14.93%	17.79%	18.52%	24.63%	6.60%	0.80%
78	7.38%	9.69%	13.37%	16.64%	15.57%	21.35%	15.45%	0.55%
79	8.58%	9.99%	13.53%	15.64%	14.21%	22.84%	14.86%	0.35%
80	8.40%	9.26%	12.63%	14.44%	14.94%	29.85%	9.46%	1.01%
81	10.23%	8.91%	12.09%	13.77%	14.01%	25.07%	14.75%	1.16%
82	10.74%	8.77%	12.52%	12.18%	13.37%	26.46%	14.15%	1.81%
83	6.38%	7.27%	10.74%	12.64%	14.54%	28.57%	17.54%	2.31%
84	8.42%	8.10%	10.51%	12.93%	14.22%	26.29%	16.42%	3.11%
85	6.51%	6.45%	9.00%	11.78%	13.51%	27.06%	21.89%	3.80%
86	5.33%	6.63%	10.27%	13.16%	15.52%	28.55%	17.47%	3.08%
87	6.87%	8.44%	12.46%	14.82%	17.12%	26.43%	11.26%	2.60%
88	10.93%	11.15%	13.21%	15.17%	15.10%	23.24%	9.81%	1.40%
89	11.35%	11.38%	13.29%	15.08%	13.77%	22.33%	11.44%	1.35%
90	10.19%	10.34%	12.85%	14.50%	13.14%	21.10%	17.27%	0.60%
91	9.35%	9.94%	12.22%	14.02%	12.87%	20.26%	20.64%	0.78%
Total	8.37%	9.03%	12.06%	14.27%	14.78%	24.78%	14.90%	1.81%

Source: A-43 Database, January 1992 Extract

Exhibit III-6

Endorsement Year	CQHP Increase (%)	Loan Size Categories (Upper Limits $)						
		1	2	3	4	5	6	7
1975	n/a	16085	19302	22519	25736	28953	35388	45000
1976	8.43	17442	20930	24419	27907	31395	38372	45000
1977	9.44	19089	22907	26725	30543	34360	41996	45000
1978	13.87	21738	26085	30433	34780	39128	47823	60000
1979	15.01	25000	30000	35000	40000	45000	55000	67500
1980	11.37	27842	33411	38979	44548	50116	61253	67500
1981	9.86	30588	36705	42823	48941	55058	67293	90000
1982	5.70	32332	38798	45265	51731	58198	71130	90000
1983	1.70	32881	39457	46034	52610	59186	72339	90000
1984	4.03	35505	42606	49707	56808	63909	78112	93420
1985	3.59	36779	44135	51491	58847	66203	80914	93420
1986	4.77	38535	46241	53948	61655	69362	84776	93420
1987	5.93	40820	48985	57149	65313	73477	89805	93420
1988	3.60	42290	50748	59206	67664	76122	93038	105098
1989	3.76	43882	52658	61435	70211	78988	96540	105098
1990	1.49	44535	53442	62349	71256	80163	97977	129620
1991	0.82	44900	53880	62860	71841	80821	98781	129620

Note: values in shaded cells are not FHA limits since they include upfront premiums.

C. Financial Position at End of FY 1991

In addition to estimates of future cash flows based on forecasts of loan performance, the calculation of economic value also requires knowledge of the resources available to the Fund. In our measurement of the cash flows of the Fund, the current cash balances for each book of business are compared to the ending cash balance at loan maturity, as estimated by the cash flow model. The difference between these, in present value terms, is the amount of

resources that will be required to meet the Fund's obligations for that book of business. The sum of these amounts for all books of business is compared to the amount of capital resources as recorded in the audited financial statements to determine whether the Fund has sufficient resources to meet its obligations relative to its current insurance-in-force.

1. Capital Resources

Capital resources are the net assets of the Fund which could, if necessary, be converted into cash to meet the Fund's obligations. These resources consist of cash, investments, properties and mortgages, and the net of miscellaneous receivables and payables. The sum of these amounts produces a measure of the resources the Fund has available to pay its obligations. These values, shown in Exhibit III-7, are taken from the annual audited financial statements of the Fund. The funds that make up the capital resources are from four sources: 1) the residual surplus from insurance, generally endorsed prior to 1961, which has matured by FY 1991, 2) conveyed property and other assets awaiting disposition, 3) any prior capital provided by the government, and 4) the current net reserve of premium income from the existing insurance-in-force.

Since assets are revalued to market value when booked, shifts between the capital resource accounts have relatively little impact on our analysis. We treat them all as equivalent to cash when comparing capital resources to expected cash flows.

Exhibit III-7

MMI Fund Capital Resources
End of Fiscal Year Value in FY 1988 Through FY 1991
(Dollars in Millions)

Capital Resources	FY 1988 Audit	FY 1989 Audit	FY 1990 Audit	FY 1991 Audit
Cash	$32.9	$39.9	$17.9	$114.2
Investments	6,194.0	6,067.1	6,553.9	6,557.5
Properties	1,489.1	1,399.3	1,067.8	987.5
Mortgages	1,037.5	1,162.5	1,423.9	1,732.8
Net Receivables and Payables	(404.1)	(540.6)	(585.1)	(449.3)
Total Capital Resources	$8,349.4	$8,128.2	$8,478.4	$8,942.6

Source: Audited Financial Statements for FY 1988-1991

2. Cash Balances on Existing Books of Business

According to our financial cash flow model, the insurance endorsed between FY 1975 and FY 1991 has cash balances of $3.1 billion for all mortgage products insured by MMI. These cash balances are calculated by using historical claim, loss, prepayment and interest rates, along with assumptions regarding premiums, premium refunds, and administrative costs, to simulate the cash flows associated with each of these books of business through the end of FY 1991. These cash flows are assumed to either build or deplete the initial balances of each book of business, which arise through payment of the upfront premiums. Exhibit III-8 shows the cash balances of each book of business from 1975 through 1991 for the overall MMI Fund as well as for the individual loan types.

Exhibit III-8

Annual and Final Cash Balances by Loan Type (in Thousands of Dollars)

	Total MMI: 1991		Fixed Rate 30-Year Mortgages		Fixed Rate 15-Year Mortgages		Adjustable Rate Mortgages		Graduated Payment Mortgages	
Endorse-ment Year	Cash Reserve EOY 1991	Final Cash Balance 1991 Dollars	Cash Reserves EOY 1991	Final Cash Balance 1991 Dollars	Cash Reserves EOY 1991	Final Cash Balance 1991 Dollars	Cash Reserves EOY 1991	Final Cash Balance 1991 Dollars	Cash Reserves EOY 1991	Final Cash Balance 1991 Dollars
1975	$313,501	$335,771	$316,013	$338,283	-$2,512	-$2,512				
1976	351,444	382,203	352,191	382,950	-747	-747				
1977	536,442	583,910	535,122	582,517	468	481			$852	$912
1978	623,229	692,428	528,172	587,092	-609	-572			95,666	105,908
1979	482,568	593,881	297,649	365,530	-1,510	-1,401			186,429	229,752
1980	-296,083	-232,581	-130,522	-92,398	-8,984	-8,761			-156,577	-131,422
1981	-961,844	-945,392	-653,874	-641,460	-11,200	-10,974			-296,770	-292,958
1982	-728,269	-730,272	-478,460	-480,934	-13,100	-12,854			-236,709	-236,484
1983	-1,069,581	-1,015,699	-740,735	-704,898	-2,753	-636			-326,093	-310,165
1984	-1,080,835	-1,146,233	-840,318	-900,293	-28,885	-32,841	-$94	-$103	-211,538	-212,996
1985	-1,234,517	-1,337,843	-1,107,560	-1,199,466	-25,022	-33,135	-2,437	2,558	-99,498	-102,684
1986	-158,888	-1,292,792	-189,514	-1,251,915	56,438	4,646	-8,259	14,667	-17,553	-30,856
1987	1,270,330	-485,655	1,162,593	-490,320	89,000	24,443	9,513	11,787	9,224	-7,991
1988	723,010	-495,368	673,389	-456,002	23,573	-3,008	20,204	30,833	5,844	-5,525
1989	1,117,808	-556,664	1,074,488	-535,786	22,877	-5,494	12,619	9,459	7,824	-5,925
1990	1,670,014	-555,781	1,605,763	-538,704	33,592	-6,248	13,916	3,949	16,743	-6,880
1991	1,560,008	-354,820	1,436,730	-330,890	37,957	-4,206	68,054	14,660	17,267	-5,064
Total	$3,118,337	-$6,560,907	$3,841,127	-$5,366,694	168,583	-$93,819	$113,516	-$88,016	-$1,004,889	-$1,012,378

Approximately 91 percent of the MMI Fund's insurance-in-force consists of 30-year FRMs. The cash balances on these loans are positive for the pre-1980 books of business. Since these loans have had time to build considerable equity, they are less likely to default, and annual premiums are expected to be greater than future claims. Cash balances for these books of business can be expected to remain positive. During FY 1991, the balances on

these books of business increased as more premium and interest income was earned than was disbursed to cover claims.

The estimated cash balances of business endorsed in FY 1980 through FY 1986 are negative, meaning that the Fund has been forced to use cash from sources other than the premiums on these books of business and associated interest to pay claims on failed loans from these books of business. The balances for loans originating after FY 1986 are positive, largely because the loans have paid large upfront premiums but losses to date have not yet depleted these resources.

It should be noted that the basic pattern of current cash balances and expected final balances observed in the 30-year FRMs is repeated in the books of business for the other mortgage types: 15-year FRMs, Adjustable Rate Mortgages (ARMs), and Graduated Payment Mortgages (GPMs) (although the GPMs are expected to experience only a small net loss in cash balances). In our assessment of the relative performance of the mortgage types, we concluded that there is no significant difference between the performance of ARMs and GPMs and that of the 30-year FRMs. We found, however, that 15-year FRMs tend to experience fewer claims. This difference in performance is reflected in the model.

IV. Future Performance of the Insured Loan Portfolio

Our review of actuarial soundness for the MMI Fund requires an assessment of the adequacy of the current capital resources to meet the expected future obligations of the existing insurance-in-force. Further, because there is uncertainty about the future economic climate and therefore the exposure to risk of claim termination, it is necessary to assess the adequacy of current surplus capital resources to meet adverse contingencies beyond forecasted obligations. This surplus of capital resources is the economic value of the Fund.

A. Application of Economic Models for Loan Termination

Since the bulk of the risk of the Fund consists of the payment of claims and recovery of losses through the sale of foreclosed property, claims estimates are a central feature of the analysis of economic value. These estimates are used to produce cash flow projections, which are then discounted to determine the present value of the expected cash flows. An analysis of prepayment propensities is also central in that the level of prepayments directly affects the cash balance position of the insurance fund. Additionally, the estimation of prepayment rates influences the estimation of claims rates since they reduce the outstanding loan pool against which claims can be placed.

Claim estimates are produced by econometric models which are based on the hypothesis that default behavior can be explained primarily by a borrower's equity position, which varies depending on house price appreciation rates, and by changes in interest rates relative to rates at loan origination. To control for the possibility that house-price appreciation rates may vary greatly across the various regions of the country, a regional price dispersion measure is also included in the model.

Prepayment estimates are hypothesized to be a product of household mobility and movements in interest rates. A borrower's equity position also influences the prepayment decision.

The models were developed by applying regression analysis to the available data and estimating relationships for specific categories of loan size, LTV and loan origination years. The forecasts based on these models depend on assumptions about future house-price appreciation rates, interest rates, unemployment rates and house-price dispersion measures. Our results are therefore sensitive to changes in these assumptions. The forecast assumptions for each of the variables in the model were presented in Exhibit III-1.

1. Claim Rate Estimates

The results of the claims rates model simulation are presented in Exhibit IV-1. This exhibit shows claim rates for the first ten policy years and the ultimate claim rate for each of the books of business from FY 1975 through FY 1991. (Comparable estimates classified by Loan-to-Value Category are provided in Appendix D.)

The results indicate that projected claim rates for books of business originated between the years of 1980-1986 will continue to remain high, with marked improvement in books originated after 1986. In general, since the production of the 1990 estimates, fewer projected terminations are expected to occur across all books of business. This improvement can be explained by a combination of factors, which include the following:

- Better 1991 claims experience than was projected in the 1990 report
- Enhanced data base reliability
- Refinements in forecasting accuracy

Exhibit IV-1

Historical and Forecasted Conditional Claim Rates
Annual Rates for First Ten Policy Years and 30 Year Cumulative Rate

Policy Year	Endorsement Year																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.06	0.11	0.05	0.03	0.03	0.03	0.10	0.15	0.02	0.04	0.03	0.01	0.01	0.01	0.02	0.01	0.00
2	0.79	0.95	0.52	0.43	0.49	0.80	1.59	2.34	0.56	1.19	0.98	0.50	0.40	0.46	0.39	0.34	0.47
3	1.15	0.99	0.64	0.61	0.94	1.41	3.57	4.53	1.72	3.13	3.51	1.88	1.14	1.26	1.21	1.59	1.73
4	0.88	0.75	0.45	0.55	0.82	1.73	3.30	5.28	2.32	5.01	6.10	2.34	1.38	1.66	2.33	2.13	2.11
5	0.59	0.45	0.35	0.43	0.91	1.53	3.38	5.63	3.36	6.75	5.51	2.18	1.39	2.35	2.34	2.31	1.76
6	0.37	0.32	0.27	0.50	0.81	1.54	3.21	6.38	4.70	5.90	4.22	1.99	1.83	2.09	2.13	1.92	1.53
7	0.27	0.27	0.29	0.41	0.81	1.51	3.87	6.11	4.07	4.15	3.54	2.16	1.76	1.81	1.82	1.74	1.43
8	0.20	0.28	0.24	0.43	0.84	1.83	4.32	4.13	2.90	3.17	1.94	1.79	1.25	1.29	1.40	1.40	1.15
9	0.25	0.24	0.25	0.42	0.96	2.26	3.17	2.69	2.41	2.09	1.80	1.46	0.97	1.08	1.23	1.23	1.01
10	0.20	0.19	0.25	0.47	1.19	1.91	2.51	1.99	1.66	2.10	1.56	1.10	0.82	0.97	1.11	1.10	0.84
Cum.	5.48	5.65	5.14	7.26	11.36	15.55	20.83	19.55	15.49	18.83	17.01	15.51	12.01	13.18	13.64	13.47	12.13

= Actual Claim Rates = Forecasted Claim Rates

Exhibit IV-2

Comparison of 1990 and 1991 Cumulative Claim Rates for the 1991 Termination Year						
	Endorsement Year					
	1986	1987	1988	1989	1990	1991
1991 Actual	7.90%	4.12%	3.35%	1.58%	.34%	.01%
1990 Estimate	8.29%	4.36%	3.65%	1.98%	.44%	.01%
Difference	-0.39	-0.24	-0.30	-0.40	-0.10	0.00

2. Prepayment Rate Estimates

We have specified and estimated a model for prepayment termination because prepayments affect cash flows in two important ways. First, borrowers whose mortgages originated after 1983 and terminate in prepayment are entitled to a partial refund of their upfront premium. This refund returns the portion of the premium which was not earned because it was allocable to the remaining years of the loan. It is paid from the capital resources of the Fund. Second, in order to calculate the insurance-in-force in subsequent policy years, it is necessary to produce estimates for both sources of loan termination, claims, and prepayments. Insurance-in-force at the end of a year is the insurance-in-force at the beginning of the year less the insurance which has terminated for any reason during the year plus new business written during the year.

Our model assumes that there is a baseline prepayment rate associated with general population mobility and employment-related relocation, since borrowers prepay when they sell their home. We also assume that prepayments occur in conjunction with refinancings that are contingent upon changes in the current mortgage rate relative to the original contract rate. Therefore, our prepayment model includes an index constructed to measure the ratio of market value to book value for the remaining mortgage liability. When interest rates fall

there will be an incentive to refinance the mortgage by first prepaying the FHA-insured loan. Conversely, during periods of rising interest rates, incentives are reversed: the likelihood of refinancing is reduced and relocation made less attractive.

Results from the prepayment rate model give strong evidence that the relative market to book value of the remaining mortgage liability is a good predictor of loan termination through prepayment. By applying the forecasted interest rate assumptions, we have estimated prepayment rates for each of the books of business from FY 1975 through FY 1991. In Exhibit IV-3, we present the first ten years of prepayment rates and the ultimate prepayment rates for each of the books of business.

Exhibit IV-3

Historical and Forecasted Conditional Prepayment Rates
Annual Rates for First 10 Policy Years and 30 Year Cumulative Rate

Policy Year	Endorsement Year																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.20	0.28	0.36	0.35	0.29	0.36	0.17	0.35	0.28	0.20	0.29	0.51	0.26	0.37	0.44	0.38	0.00
2	1.88	3.40	3.26	2.45	0.81	0.92	0.41	17.49	0.90	1.39	11.20	3.72	1.03	1.51	2.00	1.97	4.17
3	6.80	8.44	6.21	2.05	0.67	0.34	7.10	9.34	2.14	18.68	23.39	2.66	1.74	3.06	4.02	6.71	5.86
4	10.07	9.05	3.53	1.31	0.35	1.74	4.69	12.27	17.57	25.84	10.60	3.17	2.85	4.44	7.71	7.18	5.42
5	9.04	4.75	1.81	0.73	1.39	2.00	5.94	28.89	26.41	11.34	8.48	4.46	3.26	7.79	8.56	6.58	5.18
6	4.51	2.41	0.78	1.97	1.61	2.60	19.27	24.93	10.66	9.19	10.32	5.23	5.85	7.42	6.59	5.23	4.18
7	2.33	0.98	2.66	2.05	2.00	9.17	20.71	11.32	8.28	9.90	11.83	4.77	6.04	6.13	5.58	4.55	3.73
8	1.11	3.23	2.73	2.36	4.76	13.88	9.53	7.86	9.61	9.98	10.53	5.94	5.91	5.88	5.38	4.47	3.83
9	3.29	3.30	3.10	5.25	7.44	7.12	7.02	6.19	11.18	15.19	12.49	6.02	5.80	5.72	5.32	4.69	4.08
10	3.34	3.54	5.74	7.57	5.42	5.77	6.84	5.32	11.92	17.96	11.77	5.56	5.39	5.48	5.35	4.73	4.11
Cum. (30 yrs.):	72.92	71.71	68.41	67.27	68.72	74.60	76.91	79.41	80.62	78.88	79.03	67.82	69.51	70.48	70.52	68.62	66.70

= Actual Claim Rates = Forecasted Claim Rates

B. Forecasting Future Cash Flows for the Existing Loan Portfolio

Once the claim and prepayment rates were estimated by the econometric model, we estimated future cash flows using the cash flow model and discounted them to determine the present value of future cash flows. The cash flow model translates claim and prepayment rates, and other assumptions about discount rates, administrative costs, premium refunds, recovery rates, and timing into dollar values and calculates end-of-year cash balances and insurance-in-force. It then discounts the cash flows to the end of FY 1991 to determine the resources the Fund would need today in order to be able to meet its obligations for its existing business through the scheduled maturity of the FY 1991 book of business.

The estimated cash flows for existing business through FY 1991 are presented in Exhibit IV-4. We estimate the present value of future cash requirements resulting from books of business written through FY 1990 to be $6.2 billion. The addition of the FY 1991 business results in a net present value of future cash outflows of $354 million (the present value of future cash outflows, $1.94 billion, less the premium income of $1.56 billion).

Exhibit IV-4

Future Cash Flows of FY 1975-1991 Books of Business (Dollars in Millions)			
Endorsement Year	**Cash Balances End of FY 1991**	**Present Value of Future Cash Flows**	**Net Present Value 1991 Dollars**
1975	$314	$22	$335
1976	351	31	382
1977	536	47	584
1978	623	69	692
1979	483	111	594
1980	-296	63	-233
1981	-962	16	-945
1982	-728	-2	-730
1983	-1,070	53	-1,016
1984	-1,081	-65	-1,146
1985	-1,235	-103	-1,338
1986	-159	-1,134	-1,293
1987	1,270	-1,756	-486
1988	723	-1,218	-495
1989	1,118	-1,674	-557
1990	1,670	-2,226	-556
1991	1,560	-1,915	-355
Total	$3,118	-$9,679	-$6,561

C. Estimating the Economic Value of the MMI Fund

According to the statutory definition, the economic value (or economic net worth) of the Fund, is the "cash available to the Fund, plus the net present value of all future cash inflows and outflows expected to result from the outstanding mortgages in the Fund." In order to arrive at this value, we have used capital resources as stated on the MMI Fund balance sheet less the net present value of expected future cash flows of the existing loan portfolio as estimated from our financial model.

Capital resources are cash, investments, properties, mortgages, and receivables net of payables. The present value of expected future cash flows is calculated by a financial model which uses the most current information available to estimate cash flows, including the present value of the expected cash inflows (premiums, income from recoveries, and investment income) and outflows (claim payments, premium refunds and administration costs). The cash flows included in the calculation are those from the base policy year to the final scheduled year of maturity (which is thirty years from the most recent policy year).

Exhibit IV-5 below presents our estimate of the economic value of the MMI Fund as of the end of FY 1991.

Exhibit IV-5

Estimate of MMI Fund Economic Value
End of FY 1991
(Dollars in Millions)

	FY 1991 Review
Capital Resources	
Cash	$ 114
Investments	6,558
Properties	988
Mortgages	1,733
Net Receivables and Payables	-449
Total Capital Resources from Audited Financial Statement	**$8,943**
PV of Future Cash Flows	
Pre-1975 Business	$ 67
1975-1991 Business	$9,679
Total PV of Future Cash Flows	**$9,612**
Economic Value	**-$669**
Unamortized Insurance-in-Force at End of FY 1991	$327,811
Capital Ratio	**-0.20%**

V. Forecasting the Future Performance of the Fund

The National Affordable Housing Act requires that the MMI Fund achieve a capital ratio of 1.25 percent by October 1, 1992, and of 2.00 percent by October 1, 2000. The Fund's capital ratio is presently well below the first of these targets, but is expected to reach the second. NAHA specifically states that distributive shares cannot be paid if it is expected that either target will not be achieved. It also offers the option of changing premium structures on future books of business. Both of these alternatives involve building capital through the operations of the Fund.

We have assessed the impact of future business on the economic value of the Fund, contingent upon assumptions regarding economic variables, claim, prepayment, refund and loss rates, premiums, administrative costs, and the volume and distribution among LTVs and loan sizes of the future books of business. We have applied the same econometric model in the assessment of the performance of future books of business as we did in projecting future performance of existing business. In developing our projections, we have considered the implementation of the National Affordable Housing Act, particularly its provisions regarding premiums and refund rates. Additionally, we have also incorporated into our projections the change passed by Congress in October of 1992 that increased the percentage of financeable closing costs from 57.25 percent to 100 percent.[7]

To model the changes in premium structure and closing cost policy, we focused primarily on the effect of these changes on future LTV distributions. We began by recognizing that changes in the amount of money borrowed will change the borrower's risk by affecting the initial loan-to-value ratio. With upfront premiums and closing costs assumed to be financed,

[7] Due to data limitations, we have not attempted to directly model the effect of the second reform which raised loan size limits from $124,875 to $151,725.

and the implementation of equity caps, changes in these parameters may change the future distribution of LTVs from the current mix.

The upfront premium is not included in the determination of initial LTV because of its refundability feature. Changes in upfront premiums will not affect the future initial LTV distribution. Therefore, although NAHA mandates that upfront premiums will be gradually reduced in the future, this should not significantly affect future LTV distributions.[8]

Our model previously assumed that the reduction from 100 percent to 57.25 percent would occur at the beginning of fiscal year 1992. We have now incorporated the change from 57.25 percent back to 100 percent beginning in FY 1993. We do not anticipate that changing the 57.25 percent rule will shift the entire distribution of LTVs. It will only affect the distribution within the highest category. Borrowers with lower LTVs could reduce their downpayment to cover the non-financed closing costs under the 57.25 percent policy and with the reinstitution of full financing they could now make a higher downpayment to keep their loan sizes unchanged.

However, the distribution will shift toward lower LTV's because the NAHA legislation increased the downpayment requirements by establishing maximum allowable LTV ratios. Under the legislation, the mortgage obligation, including closing costs but excluding the mortgage insurance premium, cannot be greater than 98.75 percent of the appraised property value for homes valued below $50,000. The limit for homes above $50,000 is 97.75 percent.

The establishment of a maximum LTV should reduce the loss experience for future books of business since it will have the effect of requiring more equity. Borrowers are thus less likely

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8 NAHA mandates that an annual risk-based premium will also be assessed in accordance with initial LTV and year of loan initiation. Since this is assessed after the determination of the initial LTV, it too will have no effect on determining the original LTV distribution.

to default on the loan, since at any time in the life of the loan they have more invested in the property.

A. Implementation of the National Affordable Housing Act and Recent Congressional Revisions

Following the issuance of the FY 1989 Price Waterhouse Actuarial Review and the ensuing debate, Congress passed, as part of the Cranston-Gonzalez National Affordable Housing Act, various changes to the terms of the MMI Fund. The Act established the actuarial standard of 1.25 percent suggested in the FY 1989 study, as well as several of the policy changes recommended in the Price Waterhouse Actuarial Review. The revisions to the MMI Fund in the legislation focused on four major issues: 1) the development of an actuarial standard of financial soundness, 2) revisions to the minimum equity requirements, 3) changes in the pricing of insurance premiums, and 4) revisions to policies regarding distributive shares.

The implementation of the provisions of the National Affordable Housing Act regarding the MMI Fund will have a significant impact on the characteristics and performance of future books of business. The changes mandated by the Act were specifically designed to remedy the financial difficulties of the Fund. Each change is expected either to reduce the inherent risk of the additional books of business, or to adjust premiums to cover estimated risk. (The estimated effect of the NAHA reforms is presented in Appendix C.)

The NAHA legislation required that the Fund be operated on an actuarially sound basis by providing specific capital standards for the Fund and time frames in which these standards must be met. It also defined the actuarial standard as a ratio of the Fund's capital or economic net worth to its unamortized insurance-in-force.[9]

[9] The economic net worth is defined as the "current cash available to the Fund, plus the net present value of all future cash inflows and outflows expected to result from the outstanding mortgages in the Fund." Cranston-Gonzalez National Affordable Housing Act.

The Act also included several changes to both the structure and size of the premiums. Under the NAHA, premiums will be based on the risk of the loan, as defined by the initial LTV of the mortgage. Beginning in July of 1991, the phase-in of a new premium schedule, consisting of successively lower up-front premiums and implementation of annual premiums, was begun. The new premium schedule is presented in Exhibit V-1.

Exhibit V-1

National Affordable Housing Act Premium Schedule			
	Phase-in Years		
	1992	1993-94	1995-
Upfront Premium:	3.80%	3.00%	2.25%
Annual Premium for LTVs:			
< 90%	0.50% for 5 Years	0.50% for 7 Years	0.50% for 11 Years
≥ 90% - ≤ 95%	0.50% for 8 Years	0.50% for 12 Years	0.50% for 30 Years
> 95%	0.50% for 10 Years	0.50% for 30 Years	0.55% for 30 Years

It is hoped that risk-based premiums will increase the premiums on risky loans without affecting the less risky, more desirable business. The switch to a combination of upfront and annual premiums should reduce the initial financing requirement for borrowers who finance the upfront premium. Annual premiums are intended to offset the resulting lower upfront revenues in the early years, resulting in no net loss in cash flow. But since the premiums are amortized more quickly (for the lower LTV loans), the outcome should be an incrementally more favorable risk profile.

In October of 1992 Congress passed a modification to the NAHA which increased the percentage of closing costs which could be financed from 57.25 percent to 100 percent. It also raised the maximum loan size limit from $124,875 to $151,725.[10] The effect of the first change will be to increase borrower risk by allowing them to take out larger loans to finance a higher percentage of closing costs. Under this scenario, claims are likely to increase above previously predicted levels when only a fraction was financeable. We estimate that as a result of this change, projected economic value will decline by $31 million annually.

The second major modification to NAHA has been to permanently increase mortgage limits from $124,875 to $151,725. While we have not attempted to model directly the effect of this change, we found that claim and loss rates decrease with loan size *within* the sample. This raises the possibility that the same effect might occur for higher loan sizes, although there is no direct evidence one way or the other at this time.[11] We will model this effect in the future as data becomes available.

While both market conditions and market receptiveness to changes in FHA policy, particularly regarding cash required at closing, may improve over time, we assume for the purposes of this analysis that volume will remain at the lower 1991 level (estimated at approximately $43 billion for the next several years, increasing with inflation).

In a final measure to stem the outflow of capital, the NAHA legislation states that the decision whether to pay distributive shares will be based on the actuarial soundness of the entire MMI Fund (as defined in the legislation), and not solely on the performance of the loans endorsed during a particular year of business, as was done in the past. This

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[10] The new loan limit is still subject to the 95 percent of area median rule, thus continuing to make the FHA population consist of below median priced homes.

[11] A decrease in loss and claim rates has been demonstrated as loan size increases only within the size range allowed by the current ceiling.

amendment should insure that distributive share payments are not made if the Fund has not achieved the capital standards established by this legislation.

B. New Business Loan Performance

Future books of business are expected to perform much better than recent books. The primary reason for improvement is the new premium structure, enhancing MMI revenues. Secondary reasons include anticipated improvements in the economy relative to recent and current economic conditions, and changes in the characteristics of the future books of business. Because of improvements in economic conditions (incorporated into our model through house price appreciation rates, interest rates and unemployment rates) future business is expected to experience fewer claims in the critical first three-to-seven policy years than have been experienced by recent business.

Lower LTV loans tend to have lower default rates, and this relationship is a central determinant of claim estimates in our economic model. As a result, with the same economic forecasts, books of business with a lower average LTV will be expected to have lower claim rates in the future. Exhibit V-2 on the following page is a summary of the premiums, closing costs, and expected performance of future books of business.

Exhibit V-2

Future Business Premiums, Closing Costs and Loan Performance

	Phase-in I 1992	Phase-in II 1993	Phase-In II 1994	Phase-In III 1995	Phase-In III 1996
Up-Front Premium	3.80%	3.00%	3.00%	2.25%	2.25%
% Financed	100.00%	100.00%	100.00%	100.00%	100.00%
Annual Premium by LTV	0.50%	0.50%	0.50%	0.50%	0.50%
LTV's < 90%	5 Years	7 Years	7 Years	11 Years	11 Years
LTV's 90-95%	8 Years	12 Years	12 Years	30 Years	30 Years
LTV's > 95%	10 Years	30 Years	30 Years	0.55% - 30 Yrs	0.55% - 30 Yrs
Financed Portion of Closing Costs	57.25%	100.00%	100.00%	100.00%	100.00%
Originations (30-year mortgages)	$38,733,001	$38,733,001	$38,733,001	$38,733,001	$38,733,001
Present Value of One Year of Business (Millions of 1991 dollars, 30-year mortgages)	$987	$1,012	$920	$946	$946
Ultimate Claim Rate (30-year mortgages) (Rates are in Dollar Terms)	8.42%	8.29%	9.37%	9.27%	9.27%
Present Value of One Year of Business (Millions of 1991 dollars, all mortgages)	$1,073	$1,100	$1,000	$1,029	$1,029

C. Future Economic Value and Capital Ratios of the Fund Through the Year 2000

The overall performance of the Fund in the near term will be dominated by the pre-FY 1992 originations, which precede the implementation of NAHA provisions and are expected to lose money. However, the joint effect of premium revenue increase, lower expected claim rates, and an improving economy translate into lower future cash requirements for new business. The combined impact enables future books of business to increase the value of the Fund. However, the capital does not build rapidly enough to reach the target capital ratio of 1.25 percent by FY 1992, but it does achieve the FY 2000 target of 2.00 percent.

Exhibit V-3

Future Economic Value and Capital Ratios Through FY 2000
(in Millions of Dollars)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY, Unamortized)	$327,811	$342,240	$354,976	$370,701	$389,187	$409,537	$430,537	$451,536	$471,976	$492,497
Economic Value (BOY)		-669	380	1,493	2,545	3,663	4,819	6,017	7,256	8,538
Interest on Previous Business		-23	13	52	89	128	169	211	254	299
Addition of New Business		1,073	1,100	1,100	1,029	1,029	1,029	,1029	1,029	1,029
Economic Value (EOY)	-669	380	1,493	2,545	3,663	4,819	6,017	7,256	8,538	9,866
Capital Ratio	-0.20%	0.11%	0.42%	0.69%	0.94%	1.18%	1.40%	1.61%	1.81%	2.00%

Assumptions:

Real Interest = 3.50%

Suspension of Distributive Shares as of the Beginning of FY 1992

Constant Demand with Suspension of Investor Demand and LTV Redistribution

VI. Conclusion -- Compliance with the National Affordable Housing Act

According to our estimates, as of the end of FY 1991 the MMI Fund had an economic value of -$669 million and insurance-in-force of $328 billion, resulting in a capital ratio of -0.20 percent. It is our conclusion that during FY 1991 the Fund moved toward the capital ratios required by statute for FY 1992 and FY 2000. While we expect that changes mandated by the National Affordable Housing Act will enable future books of business to build capital for the Fund, we do not expect the Fund to meet the 1992 target of 1.25 percent. We do, however, expect that the Fund will meet the FY 2000 target of 2.00. It should be noted that our sensitivity analysis (See Appendix C) indicates that had the NAHA reforms not been implemented, the Fund would not build capital in the future, and would be even more vulnerable to adverse economic conditions.

The recent recession has had a serious negative impact on the financial condition of the MMI Fund. As the economy begins to move out of the recession, and the rate of house price appreciation improves, the performance of future books of business is expected to be superior to that of current and historical books. This improvement will begin to offset the negative values associated with recent books of business. This result assumes that there will be no adverse changes in the risk profile of future insurance.

Appendix A: Econometric Analysis of Loan Performance

This appendix presents our analysis of claim and prepayment terminations behavior for 30-year fixed-rate loans originated between 1975 and 1991. The objective of our modelling efforts has been to evaluate historical experience with loan claims and prepayments, and to forecast future defaults and costs to the Fund on the basis of the historical data, economic relationships, government policy parameters, and forecasts of future economic conditions. The claims estimates and costs are then used to generate cash flow figures for the Fund which, combined with current capital figures furnished by our audit, produce estimates of current Fund economic value and capital ratios. The forecasts of claims and prepayments under alternative economic scenarios are then incorporated into the financial cash flow analysis and an estimate of economic value is then calculated for the MMI Fund.

I. Method to Estimate Conditional Claim Rates

Economic models of claim and prepayments behavior for FHA-insured loans are formulated and estimated to determine the sensitivity of loan performance to economic and policy factors. The models were estimated using data through FY 1991 for loans that originated in the period FY 1975 through FY 1989. The econometric model forecasted future default claims and prepayment rates on the basis of expectations for macroeconomic variables such as unemployment rates, interest rates, and housing price appreciation, distributions of client populations across loan-to-value (LTV) groups, housing price dispersion indexes, and policy variables. The forecasts were then used to estimate Fund cash flows and economic values for the FHA books of business for FY 1975 through 1991.

A. Econometric Model

The economic models used in the current report are substantially similar in underpinnings and structure to those used in the FY 1990 actuarial review. They are developed from the theory of consumer choice to identify expected mortgage borrower's behavior under an objective of maximizing the expected wealth at a moment in time. Three choices are available to borrowers in the course of meeting their mortgage obligations:

1) continue paying the mortgage;
2) prepay through refinancing or sale; and
3) default on mortgage.

The borrowers choose the option that maximizes the discounted value of expected wealth over time. We initially focus on the loan default option. The prepayment options are considered in the next section. As explained below, the analysis uses claims rates rather than delinquencies and default rates, which may include non-claim cases because the focus here is on estimating the impact on MMI Fund value.

Using this wealth-maximizing approach, borrowers' decisions to default will be determined largely by their perception of how much equity they have in their home and whether or not they relocate. Specifically, when real estate markets experience significant and sustained declines, homeowners may be able to minimize their decline in wealth by walking away from the property. This choice will be exercised when the resale value of the home falls sufficiently below the market value of the remaining mortgage balance to outweigh the economic and non-economic costs of default. Similarly, when a household moves, a resale value net of selling costs that is less than the value of the mortgage may be sufficient to trigger default. Thus events such as divorce and unemployment that can cause households to move are likely to be associated with higher default rates.

A model to explain conditional claim rate, $CCR_{i,j,t}$, for FHA insured mortgages originated in year j that have been foreclosed in policy year t can be expressed as follows.

$$CCR_{i,j,t} = f\{EM_{i,j,t-1},\ U_{t-1},\ \sigma(RCQHP_{j,t-1}),\ D_1 \ldots D_n\} \quad (1)$$

where:

$EM_{i,j,t-1}$	-	the net equity, assuming the household is not forced to make a sell decision, as a percentage of the current market value in the property, adjusted for loan size i,
$U_{j,t-1}$	-	the unemployment rate lagged one policy year,
$\sigma(RCQHP_{j,t-1})$	-	a house price dispersion index defined as the standard error of the regional percentage changes in constant quality house price index since the mortgage was originated divided by one plus the percentage change in the national constant quality house price index since mortgage origination,
$D_1 \ldots D_n$	-	a zero-one indicator variable for each of n policy years taking on a value of one in the respective policy year and zero otherwise. Note that $D_n = 1$ for t=13...17.

The conditional claim rate model employs information about economic conditions and specific loan characteristics to explain borrower default behavior. The conditional claim rate is applied rather than a default rate because the focus of the analysis is on the direct impact that claim settlement has on the cash flows of the Fund. Therefore, only those mortgages that have moved from default to claim settlement are of interest. Default rates do not provide the essential information regarding financial impact on the Fund, since some mortgage defaults will be resolved and will not generate a claim filing on the part of the lender/servicer.

B. Measures of Net Equity

In general, increases in the perceived net equity of a homeowner's property will lower the expected default incidence. Higher house price appreciation will increase homeowner equity, as will decreases in the market value of the mortgage liability. The mortgage can be viewed as an obligation to make periodic principal and interest payments with the expectation that prepayment of the remaining mortgage balance will occur before maturity. The present valuation of this stream of payments is obtained using the current mortgage interest rate in the market as the discount rate[12]. When the current mortgage market interest rate falls below (rises above) the original FHA loan contract rate, the market value of the mortgage rises above (falls below) the remaining balance.

Another component of the homeowner's perceived equity is the asset value of the upfront premium. The upfront premium has an asset value to the borrower, since portions of the paid-in premium that are unearned will be refunded if and when the loan is prepaid. The asset value of the premium refund depreciates quickly in accordance with the refund policy whereby the FHA recognizes as "earned revenue" the upfront premium cash receipts; after seven years the refund value diminishes to less than one percent of the original loan balance.

The measure of net equity used in this study is identical to that in our FY 1990 Review. The reader is referred to that report for details.

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12 In our analysis we use the Freddie Mac surveyed commitment rate on conforming loans as the prevailing market contract rate. This rate is generally above the FHA contract rates and thus represents an opportunity cost of mortgage financing.

C. Variability in Regional House Price Appreciation

The analysis of loan default focuses on explaining default behavior for groups of borrowers based on characteristics deemed to be important to determining the probability of loan default. In doing so, a national measure of the average rate of change in house prices has been employed in computing the equity index. While house prices have increased consistently when measured on a national aggregate basis, when viewed in terms of the four census regions, more variability in house price movements occurs. Further disaggregation into twelve regions shows even more pronounced fluctuations in house price movements. Low or negative price movements in selected regions are likely to make a greater contribution to the likelihood of default and claim filing. Aggregate indicators will not capture adequately the impact of weak house price appreciation in localized areas on overall rates of claim termination.

Even when average property values are rising so that widespread borrower default is not likely, there may be some borrowers who are at risk because their regional or individual housing market is experiencing falling house prices. It is the borrowers in the tail of a distribution for national house price appreciation (persistent low or negative rates of house price appreciation) that are at greatest risk of default, and presumably, claims. Assuming that increased aggregate volatility in house price movements accompanies increases in properties with small or negative changes in their house value, the house price dispersion index should reflect concentrations of regional price weakness, hence increases in the local "at-risk" populations.

To capture the effects of the dispersion in house price appreciation across regions on aggregate default rates, an index has been constructed using the four regional constant quality house price indexes from the Bureau of the Census. First, for each of the regions and the nation in aggregate, the ratio of the constant quality house price index in year t to the value in the origination year is computed. Then, for each loan origination year and policy year,

the standard deviation of these regional ratios is computed and divided by the national ratio to provide a measure of relative dispersion in house price appreciation. Deflating the standard deviation in house price variation by a national ratio adjusts for the general overall trend in house prices.

D. Additional Economic Indicators Used in the Analysis

The economic data used in the developing the equity index and estimating the structural model are reported in Exhibit A-1. The FHA contract rate is taken directly from the A-43 database and represents the average rate each year on FHA originated loans. The opportunity cost of mortgage financing used to compute the mortgage value is represented by the Freddie Mac surveyed commitment rates on conforming loans. This rate is always above the FHA contract rate.

Exhibit A-1

Historical Values of Economic Variables Used in the Analysis Referenced on a Fiscal Year Basis

Year	Constant Quality House Prices	FHA Contract Interest Rate	Freddie Mac Commitment Rate	Unemployment Rate
1975	43.8	8.63	9.20	8.1
1976	47.0	8.50	8.94	7.8
1977	51.5	8.25	8.82	7.3
1978	58.8	9.02	9.34	6.0
1979	67.6	9.96	10.61	5.8
1980	74.6	12.23	13.23	6.8
1981	80.6	15.10	15.76	7.4
1982	82.6	14.71	17.02	9.1
1983	84.6	12.38	13.37	10.1
1984	88.3	13.18	13.82	7.8
1985	90.1	11.85	12.91	7.3
1986	94.4	9.64	10.70	7.0
1987	100.0	9.87	9.90	6.4
1988	103.6	10.22	10.45	5.6
1989	107.5	10.16	10.47	5.3
1990	109.1	9.71	10.10	5.5
1991	110.0	9.20	9.57	6.8

E. Model Estimation

The econometric model and estimation techniques used in this review are substantially similar to those used in the FY 1990 Review. The incorporation of an additional year of data, increasing claims and prepayment rates data to seventeen policy years has not changed the fundamental relationships among the dependent variables and the explanatory variables. Our analysis of the model and its performance confirmed that the model is both technically sound and appropriate for the economic problem that it was designed to address. We have nonetheless re-examined the model and our estimation techniques and have made one technical correction and several refinements to the econometric method. These are described in the paragraphs below.

As in the FY 1990 review, the conditional claims rate profile over policy years for a given origination year can be modelled as a lognormal distribution. For estimation purposes, the general model is applied in semi-log form:

$$\ln CCR_{i,j,t} = \alpha + \sum_{k=1}^{12} \alpha_k PYD_{k,t} + \sum_{k=1}^{7} \beta_k (LSD_{k,i} EM_{i,j,t-1}) + \beta_8 D8286 + \sum_{k=1}^{4} \gamma_k DP87_{k,j,t} + \Gamma_1 U_{j,t-1} + \Gamma_2 RCQHP_{j,t-1} + e_{i,j,t} \quad (2)$$

Where indexes i=loan size, j=origination year, t=policy year, k = a count index.

The first set of indicator variables (PYD) take the value 1 when policy year (t) is equal to k, and are zero otherwise. The second set of indicators (LSD) take the value 1 when loan size class equals the counter index: i=k, and are zero otherwise. D8286 takes the value 1 when the origination year is between 1982 and 1986, inclusive. This indicator models the effects of structural shifts during that period. The DP87 indicators are used to model the improved claims experience of the post-1986 books of business. These indicator variables take the value 1 when the policy year equals the counter (t = k) and j > 1986, otherwise they are

zero. The Gammas multiply the lagged values of the economic variables: the unemployment rate ($U_{j,t-1}$) and the house price dispersion index ($RCQHP_{j,t-1}$).

Estimation of both loan to value categories and equity for household observations depends in part on the treatment of closing costs and upfront insurance premiums in the calculations. In moving from the FY 1990 review to this one we made a technical correction to the way the upfront premiums were introduced into our calculations. For the period, 1975 to 1983, the premium was removed from our calculations to make our analysis consistent with FHA policy which did not levy an upfront premium for these years. The FY 1990 economic value had been reported in the previous review as -$2,674 million. The corrected value is -$2,426 million; an improvement of $248 million. The increase was caused by a $182 million improvement in the estimated value of the 1975 through 1988 books, and a $66 million dollar increase in the estimated value of the 1989 and 1990 books. Capital resources were unchanged by the correction.

The FY 1991 review also incorporated several refinements to the econometric techniques used to estimate both the conditional claim rates model and the conditional prepayments rates model. These refinements were directed toward improving the stability and consistency of the model. A more stable model is one where swings in results that cannot be explained by well understood and accepted economic processes or economic data are reduced. That is, a more stable model manifests fewer unexplainable changes in output values and coefficient signs as data change. A more stable model is therefore able to measure changes in economic value more reliably and precisely as data are updated. Improving the consistency of a model refers to the development of estimation techniques that produce coefficient values that reflect the "true" values of the coefficients with increasing precision with each additional year of data. We believe that the refinements to the model outlined below have improved both model stability and consistency.

Most of the features of the FY 1991 econometric model are unchanged from the previous year: Time series data on conditional claim rates for up to seventeen policy years, t, are combined with cross-sections of data defined by seven loan size amounts, i, and fifteen loan origination year categories, j. A separate regression is run for each of the defined LTV category cross-sections. Indicator variables, $PYD_{k,t}$, are included, taking a value of one when policy year $t = k$ and zero otherwise. The market equity index, $EM_{i,j,t-1}$, is lagged one policy year and separate coefficient estimates are made for each of the seven loan size cross-sections to measure the interaction effect of loan size and market equity on claim termination. This is accomplished by multiplying the equity index by each of seven zero-one indicator variables, $LSD_{k,i}$, equaling one in loan size category $i=k$ and zero otherwise.

The changes from the FY 1990 econometric model are:

- Consistent use of DRI forecast series for macroeconomic variables including unemployment rates, constant quality house price index, and mortgage interest rates under the three economic scenarios. This replaces the consensus forecasts used previously.

- Independent variables enter regressions in actual quantities rather than deviations from means, and an intercept is added to each regression. The final-policy-years-indicator variable is then eliminated to avoid perfect collinearity with the intercept. As a result, policy indicators report values relative to the rate for years thirteen and beyond, which is embedded in the intercept term.

- A constant has been added to all market equity values to rescale observations to be uniformly above zero. Since relative magnitudes of equity are unchanged, this adjustment does not affect the economic interpretation of the regressions.

- The generalized least squares (GLS) procedure to correct for heteroscedasticity has been modified through the use of actual conditional rates in the adjustment factor implemented through a single stage adjustment process, rather than using the predicted rates in a two stage procedure. Heteroscedasticity adjustment corrects for differing standard errors of the regression across values of the conditional rates and improves estimation efficiency without altering the expected values of the regression coefficients themselves.

Efficient estimates of the coefficients can be obtained using a generalized least squares (GLS) estimator with weights taken as:

$$w_{i,j,t} = \sqrt{\frac{n_{i,j,t}\, p_{i,j,t}}{(1-p_{i,j,t})}} \qquad (3)$$

where $p_{i,j,t}$ is the conditional probability of loan claims or prepayments and $n_{i,j,t}$ is the number of surviving loans to policy year, t, for each of the loan origination years, j, and specific loan size category, i.

- Regressions were estimated for all nine loan-to-value (LTV) categories in the data, rather than using imputations to estimate the claims rates for the lowest category from the regression results of the adjacent category.

- All tables of data and results that refer to LTV categories now refer to true economic LTV rather than to the FHA's definition of LTV. True LTV is the ratio of loan amount divided by appraised value of the property. Until February 1991, FHA's definition of LTV was loan amount divided by appraised value plus closing costs. Since February 1991, the FHA definition has been loan value over appraised value, consistent with the true economic LTV. FHA's LTV for endorsements prior to February 1991 could be translated easily into true LTV by multiplying by 1.023 -- because closing costs average 2.3 percent of appraised value. After that date, no adjustment was necessary. Our actuarial reviews have always used true economic LTV in calculations, adjusted for upfront premium payments net of refunds, where applicable. Our change is largely for purposes of consistent presentation, so that data are displayed according to the true LTV values actually used in the calculations. With FHA's 1991 revision in LTV reporting, our change to true LTV reporting categories ensures that our data categories remain consistent and comparable over time.

- The book equity index was eliminated from the equation due to significant collinearity with market equity.

- Policy year indicators for policy years 1,2,3,4 were inserted for the 1987 and later books of business. These indicators are used to capture the improvement in the claims experience of these books relative to their immediate predecessors that has been evident so far in the data. The short data series and consequent small sample sizes available for these indicators suggest that the coefficients should be interpreted with caution.

II. Level of Aggregation in the Analysis

The conditional claim rate model employs data aggregated from the individual loan records to specified loan categories. The analysis is conducted by pooling the time series of loan performance over the 1975-91 policy years for stratified categories of loan size, LTV and loan origination years 1975-89. The time series of loan performance for each loan origination year extends from loan origination to the present (1991) comprising up to seventeen policy years.

In estimating the claim rate profile the loan data are aggregated across seven loan size categories and nine LTV categories. The loan size categories are established with reference to the 1979 nominal price of properties. The loan size categories in subsequent years will increase or decrease according to changes in the constant quality house price index. This will enable comparisons of loans over time as the nominal value of the loans change.

The LTV categories are defined so as to capture the expected acceleration in the conditional claim rate at the higher LTVs. A wider LTV category definition has been established for the lower LTVs from 30-75 percent, and 75-85 percent, while smaller demarcations have been set up for the LTVs between 85-100 percent. We found that the conditional claim rates accelerate when the original LTV moves above 90 percent. Separate models are estimated for each of the nine LTV categories. The pooling of data for each equation is shown in Exhibit A-2 below.

Exhibit A-2

Grouping of Data
Across Loan Size Category and Policy Year

Origination Year	(000) Number of Mortgages	(1) Policy Years	(2) Loan Size Categories	(3)=(1)*(2) Number of Observations
1975	182	17	7	119
1976	216	16	7	112
1977	250	15	7	105
1978	258	14	7	98
1979	266	13	7	91
1980	229	12	7	84
1981	162	11	7	77
1982	114	10	7	70
1983	405	9	7	63
1984	232	8	7	56
1985	340	7	7	49
1986	810	6	7	42
1987	1,001	5	7	35
1988	548	4	7	28
1989	594	3	7	21
Total Observations for Each Estimated Model				1050

A. Results for the Analysis on Conditional Claim Rates

The estimates of the coefficients in the claim rate model are presented in Exhibit A-3. The coefficients generally support prior expectations. Unemployment rates and house price dispersion in particular appear to exert significant influences on claim rates. Market equity is also very significant in the regressions. Increasing market equity strongly reduces claim rates for most LTV categories as one would expect.

Exhibit A-3

Regression Results for Conditional Claim Rate Model by LTV Category

(t-statistics are in parentheses)

Variable	0-30%	30-75%	75-85%	85-90%	90-93%	93-95%	95-97%	97-100%	Investor
Market Equity - Loan Size 1	-1.1339 (-6.4543)	-3.0297 (-14.0224)	-3.1082 (-15.6820)	-2.5134 (-15.9670)	-2.3629 (-15.7114)	-2.4391 (-16.5277)	-2.4408 (-19.4647)	-2.5985 (-23.6830)	-2.7109 (-14.5555)
Market Equity - Loan Size 2	-1.3098 (-7.1107)	-3.2641 (-14.7969)	-3.4294 (-16.5449)	-3.1874 (-18.3243)	-3.0890 (-18.3378)	-3.2566 (-19.2612)	-3.1149 (-21.3371)	-3.2454 (-25.8980)	-2.8039 (-14.3308)
Market Equity - Loan Size 3	-1.4302 (-7.6423)	-3.3796 (-15.2125)	-3.6950 (-18.1317)	-3.5094 (-20.5536)	-3.6681 (-22.9964)	-3.7419 (-23.2574)	-3.5730 (-25.0721)	-3.6521 (-29.3242)	-3.0553 (-15.7373)
Market Equity - Loan Size 4	-1.4600 (-7.7005)	-3.4345 (-15.4523)	-3.8513 (-18.9441)	-3.8066 (-22.1434)	-3.8296 (-23.9176)	-3.8894 (-25.6266)	-3.8737 (-27.7088)	-3.9511 (-29.9723)	-3.1927 (-16.4041)
Market Equity - Loan Size 5	-1.4416 (-7.4506)	-3.3963 (-14.9945)	-3.8823 (-19.0475)	-3.8412 (-22.0024)	-3.8523 (-24.2062)	-3.9933 (-25.8076)	-3.8896 (-26.6699)	-3.9994 (-26.8734)	-3.3105 (-16.5195)
Market Equity - Loan Size 6	-1.5190 (-7.9832)	-3.2044 (-14.4565)	-4.0101 (-20.2925)	-4.0436 (-25.3595)	-4.1818 (-28.7873)	-4.2083 (-30.9054)	-4.1469 (-30.5828)	-4.1751 (-29.4620)	-3.3964 (-17.8610)
Market Equity - Loan Size 7	-1.5064 (-7.2015)	-3.4740 (-14.8336)	-4.7950 (-21.1106)	-4.4496 (-22.9906)	-4.6704 (-25.7912)	-4.6277 (-25.3927)	-4.4052 (-22.4064)	-4.4679 (-20.3713)	-3.9739 (-16.4187)
Unemployment Rate	0.0233 (1.4818)	-0.0383 (2.3263)	0.0712 (5.0224)	0.0196 (1.5389)	0.0783 (6.8224)	0.0830 (7.1823)	0.1000 (9.8532)	0.1434 (15.3179)	0.0915 (6.9765)
House Price Dispersion	7.6385 (14.3372)	6.3354 (15.6158)	6.1165 (16.5044)	6.3586 (19.1966)	6.1767 (20.5275)	5.6206 (18.6931)	5.7403 (21.5303)	5.7943 (22.2772)	6.3450 (17.009)
Post-1986 Structural Shift Policy Year 1	-0.0219 (-0.1647)	-0.4638 (--3.5229)	-0.4810 (-4.7793)	-0.4652 (-3.7872)	-0.7418 (-6.8953)	-0.4453 (-4.5229)	-0.3711 (-4.7539)	-0.6075 (-7.7409)	-0.8468 (-7.2516)

Regression Results for Conditional Claim Rate Model by LTV Category

(t-statistics are in parentheses)

Variable	0-30%	30-75%	75-85%	85-90%	90-93%	93-95%	95-97%	97-100%	Investor
Post-1986 Structural Shift Policy Year 2	0.4825 (5.0407)	-0.2029 (-2.2144)	-0.2610 (-3.4638)	-0.3554 (-4.6021)	-0.2682 (-3.9555)	-0.2004 (-3.0922)	-0.0964 (-1.7965)	-0.2491 (-4.6695)	-0.3905 (-5.0466)
Post-1986 Structural Shift Policy Year 3	0.5430 (4.5673)	-0.3868 (-4.5233)	-0.3518 (-4.9525)	-0.3142 (-4.2415)	-0.2909 (-4.4822)	-0.2853 (-4.5135)	-0.1862 (-3.5043)	-0.2496 (-4.5465)	-0.4326 (-5.7984)
Post-1986 Structural Shift Policy Yr. 4+	0.4095 (2.4013)	–0.5625 (-6.1733)	-0.4821 (-6.6544)	-0.3173 (-3.9813)	-0.4223 (-5.9144)	-0.5017 (-6.8309)	-0.3262 (-5.5016)	-0.4126 (-6.1371)	-0.5339 (-6.5930)
1982-86 Structural Shift	0.6182 (15.8672)	0.0677 (1.3907)	0.1322 2.9398	0.3819 (9.7752)	0.3258 (9.2323)	0.3650 (10.3901)	0.4458 (14.3873)	0.3615 (12.4480)	0.2747 (6.5019)
Summary Statistics									
Adj. R-Squared	0.804	0.669	0.790	0.855	0.889	0.896	0.930	0.929	0.915
Root Mean Squared Error	0.587	0.663	0.550	0.503	0.447	0.445	0.381	0.378	0.507
F-Statistic	166.624	82.452	152.899	238.660	324.471	349.833	536.289	529.620	437.267

The loan-size-market-equity coefficients listed in Exhibit A-3 indicate that market equity generally exerts a stronger influence in reducing propensity to claim as loan size increases. For some LTV categories, however, the differences in the coefficients on the loan-size-equity variables are only weakly statistically significant. The negative coefficients on the loan-size-equity variables, across all loan sizes, indicate that increases in equity will reduce the probability of claim termination. Larger negative coefficients on the equity variable are associated with a lower likelihood of default per unit change in market equity. Comparing across LTV categories, we find that the magnitudes of the negative coefficients decline with rising LTV. Policies with higher LTVs at origination require a greater percentage equity increase for sale to dominate default as a wealth maximizing strategy. For these policies (high LTV in early policy years) a greater proportional increase in equity would be necessary to reduce propensity to claim by a given amount. This suggests that, on average, percentage increases in equity constitute less protection against default for higher LTV categories than for lower categories.

The right hand side of the regressions also includes policy indicator variables for the 1982 to 1986 period and for the period from 1987 to 1991. Preliminary regression results revealed a substantial under-prediction of claims on books of business from the mid-1980s and a pronounced over-prediction for the books of the late 1980s. These systematic departures from the standard model strongly suggest that factors other than those accounted for by the economic variables included in the model were at work. Indicator variables were used to capture these structural changes to the underlying economics and household behavior. Although indicators are deliberately agnostic regarding the precise nature of the structural changes, our preliminary findings suggest that the increased claims experience of books written between 1982 and 1986 was due to changes in the mortgage market during that period. The reduction in claims for the books of business written since 1987 appear to be related to changes in MMI fund underwriting practices and management.

Beginning in 1982 seller concessions became popular in the form of interest buy downs (IBD), seller paid mortgage origination points, and payment of other closing costs. These concessions inflated selling prices and increased loans by similar amounts. FHA's underwriting did not deduct these concessions from the value of the property, even though their future collateral value was limited or non-existent. This effectively raised the loan to value ratio, exposing FHA to additional default risk. FHA's policy was tightened beginning in 1987 by adjusting the sale value before determining the allowed mortgage. While recorded IBD's represent less than ten percent of the overall FHA business in this period, they have experienced substantially higher claims. It is also possible that the higher claims rates reflect extreme local declines in house prices in the Southwestern states during and immediately following that period[13].

To date, the claims experience of loans originating in 1987 and later has been markedly different from that of their predecessors, although it would be premature to draw definite conclusions on structural shifts on the basis of four years of evidence. Up to this point these loans have had a measurably smaller propensity to default after controlling for the level of equity and economic conditions. Four zero-one indicators for the first four policy years were included in the estimated model for the cross-section of loans originated since 1987. The strongly significant negative coefficients indicate a decline in average claim rates across all LTV categories for loans originated in this period. The reduction in claims for these books correlates with FHA actions to tighten underwriting standards and to eliminate problem lenders from its programs. Evidence from trial regressions appears to support this hypothesis although more testing would be necessary to establish a relationship definitively. Cash out refinancings motivated by tax code changes in the Tax Reform Act of 1986 and its modifications might also account for the diminished risk of these recent books of business. To the extent that loans on FHA books since 1987 are second mortgage consolidations or

13 The A-43 does allow us to tell which loans had excessive buyer prepaids.

refinancings motivated by lower interest rates, they are likely to be less vulnerable to default.

Unemployment rates lagged one year entered all of the claims regressions with the expected positive sign and was statistically significant in most cases. There are two avenues by which unemployment might affect default claims risk. From a liquidity standpoint, increasing unemployment increases the pool of potentially "at risk" homeowners who might at some point be unable to continue mortgage service -- leading to delinquencies, and possibly defaults or distress sales. From an equity perspective, high unemployment is likely to be correlated with a softening housing market, hence weaker or negative equity accumulation. Both of these factors are likely to lead to larger pools of at risk homeowners among the existing mortgage holders, and to higher claims rates.

House price dispersion lagged one year enters strongly with positive coefficients in every case. Price dispersion is used in an attempt to proxy for the relative importance of outliers in housing capital gains. Greater dispersion for a given average rate of growth in the house price index suggests that more housing might have suffered from slow or no equity gains, a phenomenon that is linked with a larger at risk pool of homeowners.

III. Method to Estimate Conditional Prepayment Rates

A model for conditional prepayment rates was developed to explain borrowers' decisions to prepay their mortgage. It is necessary to model prepayments for two reasons. First, prepayments generate cash outflows associated with the refund policy on the unearned portion of premiums beginning with 1984 originated loans. Second, in projecting future claims, it is necessary to estimate the pool of surviving loans, and therefore, all terminations must be accounted for to estimate the surviving loans in subsequent years.

A. Economic Model

An economic model for borrower prepayment behavior employs the same wealth-maximizing consumer choice underpinnings used in the claims rate model. In considering the four options for meeting their mortgage debt obligations, borrowers will consider the prepayment option when it maximizes their expected wealth or, when they move. As with the conditional claims model, our hypothesis here is that the conditional probability of prepaying a mortgage can be estimated from financial market conditions along with household mobility patterns. Aggregating across stratified groups of borrowers, we formulate a model to explain the conditional rate of prepayment.

The following basic model is used to explain prepayment behavior, or specifically, non-claim termination rates for FHA-insured loans:

$$CPR_{i,j,t} = f(MV1\$_{i,j,t} / BV1\$_{i,j,t}, MR1_{MOV_{j,t}}, MR1_{MIN_{j,t}}, MR0_{MIN_{j,t}}) \qquad (4)$$

where:

$CPR_{i,j,t}$ - is the conditional non-claim termination rate measured as the ratio of the number of non-claim terminations in a policy year to the number of loans surviving to that policy year t, for loans originated in year j and loan size i.

$(MV1\$/BV1\$)_{i,j,t}$ - the ratio of the market value of the remaining mortgage liability to the book valuation of the remaining mortgage liability,

$MR1_{MOVj,t}$ - the ratio of the average FHA contract rate during the last six years to the current new FHA contract rate, constrained to a minimum value of one,

$MR1_{MINj,t}$	-	the ratio of the minimum FHA contract rate since origination to the current new FHA contract rate, restricted to a minimum value of one,
$MR0_{MINj,t}$	-	the ratio of the minimum FHA contract rate since origination to the current new FHA contract rate, restricted to be less than one.

The decision to prepay the mortgage loan depends on the underlying mobility of borrowers, perception of loss (gain) at time of sale, and the path of interest rates since the loan was originated. To capture the underlying mobility effect, zero-one indicator variables are included for each of the first twelve policy years following loan origination. The years thirteen to seventeen quintennium form the default relative to which the mobility of the first twelve years is measured.

Four variables are used to capture the impacts of current interest rates relative to past levels. The first is the ratio of the current market value of the mortgage to the current book value. If the market value of the debt exceeds the book value, due to declines in interest rates, borrowers have an incentive to refinance (replace the current market value with debt equal in value to the current book value). The market value is computed as in the homeowner equity calculation, except here the market value of the mortgage is not constrained by the book value of the mortgage liability.

The specific time path of mortgage contract rates since origination may also matter. For example, if rates initially rise for a while, this will discourage the normal prepayment of a mortgage because borrowers will not want to give up what has become a below-market rate. Also, a subsequent decline in interest rates to below the original coupon rate may have a smaller impact on prepayment as equity builds and the outstanding mortgage principal declines.

Three additional interest rate variables are used to capture these effects: the ratio of the average contract rate over the previous six years to the current new issue rate, and two variables for the ratio of the lowest value coupon rates since the mortgage origination to the current new issue rate. To allow for different responses to rises and falls in rates, we estimate different coefficients for values of the latter variable above and below unity.

B. Data Disaggregation in the Analysis of Conditional Prepayment Rates

The analysis pools the time series of loan prepayment experience across seventeen policy years 1975-91 with specified cross-sections of loans including fifteen loan origination years 1975-89, seven loan size and nine LTV categories. The stratification of loans corresponds to that of the claim termination analysis.

C. Estimation and Results for the Conditional Prepayment Rate Model

The prepayment model applies the same underlying semi-log functional form used in the claim termination analysis:

$$\ln CPR_{i,j,t} = \alpha + \sum_{k=1}^{12} \alpha_i PYD_{k,t} + \sum_{k=1}^{7} \beta_k (LSD_{k,i} MVR_{i,j,t}) + \Gamma(X_{i,j,t}) + e_{i,j,t} \qquad (5)$$

Like the claims termination rate model, time series data for up to seventeen policy years, t, are combined with cross-sections of data defined by seven loan size categories, i, and fifteen loan origination year categories, j. Nine separate models are estimated, one for each of the defined LTV category cross-sections. Twelve zero-one indicator variables, $PYD_{k,j,t}$ are used to measure the baseline prepayment rates over all observed policy years. The thirteenth through seventeenth years act as the baseline for the policy year indicators. In addition, the estimated model is constructed to measure the interaction effects of loan size categories with

Exhibit A-4

Regression Results for Conditional Prepayment Rate Model by LTV Category

(t-statistics are in parentheses)

Variable	0-30%	30-75%	75-85%	85-90%	90-93%	93-95%	95-97%	97-100%	Investor
Market to Book Mortgage Value Loan Size 1	3.8345 (25.0119)	5.7648 (32.3840)	6.6424 (32.3358)	6.0294 (34.2688)	6.4506 (35.1130)	6.4625 (34.2983)	6.1209 (32.0000)	5.8002 (32.9598)	5.7415 (34.0458)
Market to Book Mortgage Value Loan Size 2	4.1653 (27.0329)	6.0007 (33.4998)	6.9047 (33.6454)	6.2225 (35.3829)	6.6760 (36.3073)	6.6884 (35.5534)	6.3469 (33.1926)	6.0231 (34.2301)	6.0132 (35.4602)
Market to Book Mortgage Value Loan Size 3	4.2406 (27.6743)	6.0636 (33.8443)	6.9370 (33.9227)	6.2126 (35.4405)	6.6427 (36.4060)	6.6730 (35.7284)	6.3684 (33.5310)	6.0666 (34.8164)	6.0676 (35.8365)
Market to Book Mortgage Value Loan Size 4	4.2975 (28.0143)	6.1448 (34.3016)	7.0026 (34.2551)	6.2387 (35.5912)	6.6723 (36.7035)	6.6843 (35.7966)	6.4158 (33.8483)	6.1304 (35.1621)	6.1162 (36.1021)
Market to Book Mortgage Value Loan Size 5	4.4064 (28.8246)	6.2005 (34.5405)	7.0602 (34.4818)	6.3037 (36.0206)	6.7080 (36.8971)	6.7326 (36.1038)	6.4949 (34.3181)	6.2298 (35.8308)	6.1742 (36.4410)
Market to Book Mortgage Value Loan Size 6	4.3842 (28.8573)	6.2064 (34.6586)	7.0843 (34.6685)	6.2359 (35.7241)	6.6623 (36.8025)	6.6847 (36.0690)	6.4934 (34.6341)	6.2553 (36.3945)	6.1776 (36.4113)
Market to Book Mortgage Value Loan Size 7	4.6753 (30.7063)	6.3588 (35.4421)	7.2746 (35.5472)	6.4639 (37.0704)	6.9110 (38.1346)	6.9597 (37.5879)	6.8283 (36.4167)	6.5934 (38.2107)	6.4067 (37.8183)

Regression Results for Conditional Prepayment Rate Model by LTV Category

(t-statistics are in parentheses)

Variable	0-30%	30-75%	75-85%	85-90%	90-93%	93-95%	95-97%	97-100%	Investor
Current New Issue Rate Over 6 yr. Mvg. Avg. (Max. Val. =1)	0.7961 (5.6545)	3.1449 (15.0178)	3.0801 (13.2773)	1.9531 (10.9498)	2.0657 (11.0958)	1.9428 (10.5746)	1.9243 (10.2137)	1.4172 (8.2903)	2.5067 (13.4428)
Current New Issue Rate Over Prior Minimum New Issue Rate (Max. Val. =1)	-0.3880 (-2.4768)	-0.6843 (-3.0671)	-0.7601 (-2.9898)	-0.2775 (-1.3652)	-0.7562 (-3.5162)	-1.1406 (-5.4807)	-0.7505 (-3.4296)	-0.5797 (-2.9408)	-1.0667 (-4.9292)
Current New Issue Rate Over Prior Minimum New Issue Rate (Min. Val. =1)	-2.4050 (-12.3735)	-6.4643 (-30.2880)	-7.4890 (-31.3458)	-5.8585 (-28.1872)	-6.0700 (-28.5429)	-5.6589 (-26.3878)	-5.8312 (-26.5820)	-5.1277 (-25.5785)	-5.7478 (-28.2677)
Summary Statistics									
Adj. R-Squared	0.966	0.976	0.967	0.968	0.960	0.953	0.943	0.943	0.964
Root Mean Squared Error	0.380	0.456	0.516	0.447	0.468	0.471	0.476	0.434	0.429
F-Statistic	1349.342	1961.867	1387.958	1463.624	1146.201	974.251	794.438	792.867	1287.249

IV. Forecasting FHA Loan Performance

The estimated econometric models for conditional claim rates and prepayment rates are used to simulate the history of loan performance and to develop projections of future loan performance under alternative economic scenarios. The historical simulation analysis can be used to evaluate how well the model predicts claims and prepayments across the loan categories and over the policy years. The forecast analysis develops conditional claim and prepayment rates and, in turn, projections of counts for claims and prepayments from 1991 forward for each of the defined loan categories and for each loan origination year from 1975 through 1991.[14]

A. Dynamic Simulation of Historical Claims and Prepayments

A dynamic simulation of the number of claims and prepayments was conducted across the historical period from 1975 through 1991 to evaluate the ability of the model to explain and forecast the conditional claim and prepayment rates . The simulation is dynamic in the sense that the number of claims and prepayments computed each policy year is a product of the loan survivor numbers from the previous period times the current year's predicted conditional claims rates and prepayment rates. Actual survivors data are used for the first policy year and estimated values are used thereafter. The predicted conditional probability rates multiplied by the estimated loan survivor rates at the beginning of the policy year yields a predicted number of claims and prepayments in that policy year. The survivor numbers less the sum of claim and non-claim terminations for each year yields a projection of the number of loans that survive to the beginning of the next policy year.[15] Claims and survivor forecasts are used in forecasting MMI Fund cash flows.

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[14] To forecast claims and prepayment rates beyond the twelfth policy year it is necessary to impute values for future policy years coefficients. A fifteen percent decay rate was applied to claim-rate policy year coefficients beyond the twelfth policy year, or the last year of actual claims experience when the historical record for a book is longer than twelve years. The fifteen percent rate was based on the average decline rate for historical books in out-years. No decay is applied to future policy year coefficients in the prepayments model because no general decline in coefficients is discernable.

[15] The forecasts beginning with 1991 policy year use actual counts of surviving loans to the start of that year and estimated surviving counts thereafter.

It would be useful to have a measure of the accuracy of the econometric models' predictions for the years beyond the sample period (i.e. "out-sample" predictive accuracy). By definition it is not possible to evaluate predictive accuracy for future periods. However, we can approximate that test by examining the models' accuracies within the estimation period (the "in-sample" predictive accuracy). Because the model was estimated on these years, generally we would expect the accuracy over the in-sample period to be greater than the out-sample accuracy of the model.

Predictive accuracy is determined by comparing the predicted numbers of claims and prepayments with the actual claims and prepayments across selected categories of loans. Exhibits A-5 through A-7 report the results for in sample accuracy tests classifying the data according to LTV category, loan size, termination year and loan origination year.

Exhibit A-5

Dynamic Simulation of Claims and Prepayments
For the Period 1975-91
Across Loan Size and LTV Categories
(Fixed Rate 30-Year Mortgages across all Origination and Termination Years)

Loan Size	LTV Category	Claims			Prepayment		
		Actual	Predicted	Predicted / Actual	Actual	Predicted	Predicted / Actual
	0-30%	60482	62454	103%	224973	218027	97%
	30-75%	6666	7995	120%	130844	122778	94%
	75-85%	18162	19247	106%	125858	119209	95%
	85-90%	16060	17272	108%	99675	96076	96%
	90-93%	25144	25472	101%	124101	119996	97%
	93-95%	24975	25618	103%	111902	109890	98%
	95-97%	66660	65907	99%	211593	210141	99%
	97-100%	144471	142395	99%	394944	389310	99%
	Investors	54849	53374	97%	171462	162597	95%
1		90064	83365	93%	179865	179220	100%
2		56981	55425	97%	165560	171855	104%
3		59566	59091	99%	212873	211622	99%
4		57221	57998	101%	235728	231950	98%
5		52014	53914	104%	231872	229046	99%
6		75272	78819	105%	373045	338574	91%
7		26351	31124	118%	196409	185756	95%
Totals		417469	419735	101%	1595352	1548023	97%

Exhibit A-6

Dynamic Simulation of Claims and Prepayments
For the Period 1975-91
Across Loan Termination Years
(Fixed Rate 30-Year Mortgages Only)

	Claims			Prepayment		
Term. Year	Actual	Predicted	Predicted / Actual	Actual	Predicted	Predicted / Actual
75	108	255	236%	368	2283	620%
76	1677	1919	114%	3989	7705	193%
77	4159	4694	113%	20133	14466	72%
78	4830	7462	154%	42641	25135	59%
79	4961	8822	178%	51801	32445	63%
80	5105	9028	177%	29808	38787	130%
81	7361	9971	135%	17833	47498	266%
82	10226	9485	93%	8910	34684	389%
83	16962	12106	71%	58194	61753	106%
84	18336	24206	132%	46098	70208	152%
85	25079	23627	94%	60180	79415	132%
86	33109	35186	106%	256180	184585	72%
87	46161	53399	116%	341518	242362	71%
88	61290	62573	102%	154061	190377	124%
89	62665	53007	85%	140097	170418	122%
90	58708	50398	86%	173649	163670	94%
91	56732	53597	94%	189892	182232	96%
Totals	417469	419735	101%	1595352	1548023	97%

In the aggregate the model simulation predicts total claims of 100 percent of the actuals, and prepayments of 97 percent of actuals. Looking across years, the model performs best in the post-1982 period. There is evidence of slight negative correlation between the residuals in predicted claims and predicted prepayments, which suggests that the zero-one indicator variables do not completely capture the structural shifts of the last decade. Both the claims and prepayments models perform well in predicting claims across LTV and loan size categories. The prepayment model is somewhat volatile in its predictive

accuracy, overpredicting 1987 originations by 54 percent while underpredicting 1987 claims by 29 percent. The model understates prepayments for the 1982 to 1986 originations, while overpredicting most other books.

B. Forecasting Conditional Claim and Prepayment Rates

The models are used to forecast conditional claim and prepayment rates over the thirty-year term life of the mortgage under alternative economic scenarios in order to assess the reasonableness of the results and to determine the sensitivity of the projections to changes in select components of the economic forecasts.

In Exhibits A-8 and A-9, the forecasts of conditional claim and prepayment rates on the 1986-91 books of business are summarized for each of the first eleven policy years (numbers above the step bar represent actual conditional claim rates for each origination year) and for the ultimate claim rate. (See Exhibit III-1 for forecasts of economic variables.)

Exhibit A-8

Forecast of Conditional Claim Rates 1986-91
Assuming Baseline Economics

Policy Year	1986	1987	1988	1989	1990	1991
1	0.013	0.012	0.013	0.016	0.007	0.000
2	0.503	0.397	0.459	0.390	0.336	0.472
3	1.875	1.142	1.261	1.214	1.591	1.728
4	2.339	1.378	1.656	2.333	2.127	2.106
5	2.183	1.393	2.353	2.344	2.309	1.763
6	1.985	1.827	2.090	2.127	1.924	1.527
7	2.156	1.760	1.807	1.823	1.740	1.427
8	1.787	1.247	1.290	1.396	1.395	1.153
9	1.457	0.969	1.077	1.230	1.226	1.013
10	1.103	0.823	0.966	1.105	1.102	0.836
11	0.996	0.794	0.952	1.094	1.007	0.771
Ultimate	15.53	12.02	13.20	13.66	13.49	12.15

The results indicate that for baseline economic conditions the conditional claims rates are expected to decline somewhat from the high levels in the early- and mid-1980s. The moderately low ultimate claims rate forecast for loans originated in 1987 follows directly from the combined effect of favorable housing economic conditions in that year and the relatively low proportion of loans above 95 percent LTV. The marked upturn in predicted claims termination rates in 1988 and 1989 is attributable to the shift in loan distribution toward higher LTVs. The reversal in conditional claim rate projection for 1990 and 1991 is associated with the expanded loan ceiling. Not only are loans just below the new ceiling expected to have lower claims rates than the claims experience of the largest loans categories used in our estimation, holding LTV constant, but the downpayment formula forces these loans to have a marginally lower LTV.

The addition of one year of data provided an opportunity to refine our projections of ultimate claims rates for historical books of business. The MMI Fund's lower than expected claims experience in 1991 for all recent historical books led to a downward revision in expected ultimate claims rates for books written in the 1986 to 1991 period. Our FY 1990 report estimated ultimate claims rates for the 1986 through 1991 books of: 16.4 percent, 12.2 percent, 14.6 percent, 15.5 percent, 13.7 percent and 11.1 percent. The average reduction from FY 1990 estimates of expected ultimate claims rate is 1.46 percent for these books. Appendices D and E report conditional claims rates and ultimate claims rates estimates according to LTV categories.

The projections for conditional prepayment rates are summarized for the baseline economic forecasts in Exhibit A-9. These projections indicate that the ultimate prepayment rate for recent historical books of business is expected to be close to 70 percent. These projections are 11.2 percent higher on average than our projections in the FY 1990 report, reflecting the continued decline in interest rates and corresponding increases in the volume of prepayments due to refinancings.

Exhibit A-9

Forecast of Conditional Prepayment Rates 1986-91
Assuming Baseline Economics

Policy Year	1986	1987	1988	1989	1990	1991
1	0.507	0.257	0.374	0.444	0.375	0.003
2	3.722	1.025	1.513	2.003	1.974	4.171
3	2.663	1.743	3.058	4.017	6.711	5.861
4	3.165	2.849	4.435	7.707	7.182	5.422
5	4.461	3.260	7.788	8.564	6.578	5.183
6	5.225	5.847	7.418	6.586	5.234	4.183
7	4.765	6.044	6.128	5.580	4.554	3.729
8	5.937	5.913	5.878	5.375	4.467	3.832
9	6.015	5.800	5.717	5.323	4.693	4.083
10	5.556	5.389	5.475	5.350	4.728	4.113
11	5.480	5.408	5.733	5.600	4.953	4.301
Ultimate	67.82	69.51	70.48	70.52	68.62	66.70

V. Conclusions

Our econometric model of conditional claims rates and prepayments rates modelled these variables as functions of equity and interest rates, macroeconomic conditions and policy regimes. The analysis involved pooling of time series data for loan performance over policy years for loans categorized by loan size and loan origination years. Separate models were estimated for each of the nine LTV categories. The data suggests that there is considerable variation in loan performance across these categories. There is a pronounced acceleration of default experience when the LTV exceeds 90 percent and a sharper increase above 95 percent. Evaluating the impact of changing loan size indicates that higher valued loans yield a measurable reduction in default rates within the FHA loan ceiling. When equity is slow to build over time for homeowners, as measured through higher initial LTV, weak house price

appreciation and falling mortgage contract rates, then an increase in mortgage default can be expected.

There has been considerable variation in the claims and prepayments experience of the MMI Fund over the last decade and a half. The Fund enjoyed historically low claims rates and moderate prepayments rates on books of business written in the late 1970s. In contrast, there has been an enormous increase in claims experience for books from the early- to mid-1980's and conditional prepayments rates on those books appear to be higher as well. This change implies an erosion of net present value on these books for the Fund. Claim rates for books of the late-1980's appear to have reverted to more moderate risk profiles. The change is due to a combination of macroeconomic factors, behavioral changes among the client population and management changes within FHA itself.

Our econometric model successfully captures most of these variations over time and indeed, is very responsive to the recent declines in conditional claims rates and uptick in prepayments. What is not yet clear is whether these trends in rates will continue in the experience of the books already written as they mature and whether new books as they come into being will also reflect this change. The sensitivity analysis reported in Appendix C sheds some light on these issues by reporting the impact of changing macroeconomic forecasts on the future performance of these recent books.

On the whole, the model is econometrically stable and consistent. The coefficient values are consistent with economic expectations in almost all cases. The recent history of the U.S. housing market is in part a history of significant regional turbulence, in the Southwest, and more recently in California and New England. Because the intent of the model reported here is to capture broad national trends, it is less sensitive to the impacts of atypical regional experiences. However, the regional experiences of major markets, such as California today, are central to the analysis of the financial risks faced by the MMI Fund. In Appendix C we

report two sensitivity runs conducted to estimate the impact of a shallow and short term recession in California, and a deeper California recession on MMI Fund values.

Appendix B: Actuarial Analysis

I. Introduction

The purpose of the actuarial analysis is to assess the Fund's ability to withstand future losses from both its current portfolio of mortgages and future books of business. Specifically, we analyze the Fund's value under alternative economic and policy assumptions by projecting future loan performance and the corresponding financial performance of the Fund. This appendix focuses on how the projections of loan performance were used to analyze the financial viability of the Fund.

In evaluating the Fund's value, we examined the Fund as an investor would evaluate the market value of a company. An investor estimates a company's value as the present value of its current business plus the present value of new business expected to be undertaken. Assuming FHA continues to insure loans, its value depends on both its current portfolio of loans and future books of business. Although the method used to analyze the value of current and future business is very similar, we analyzed the two books separately to isolate the impact of future policy changes on the Fund's value. The general method for estimating future losses is described below. In the following sections, we describe the application of this method to the analysis of the current portfolio and future business.

II. Method

To analyze future changes in the Fund's equity, we developed a model to project future cash flows. This model uses projections of loan performance and information about the insurance-in-force to project the Fund's major cash flows. The discounted value of these cash flows equals the current value of changes in the Fund's equity.

Future cash flows are projected using the forecasts from the econometric models discussed in Appendix A. These models predict conditional claim and prepayment rates for each cross-sectional category of loan-to-value and loan size on an endorsement year / post-endorsement year basis.

Based on these predicted termination rates, the major components of cash flow are projected into the future. The cash flow components analyzed are:

- premiums, (cash inflow)
- net losses associated with claims, (cash outflow)
- refunded premiums, (cash outflow)
- administrative expenses, and (cash outflow)
- distributive shares. (cash outflow)

Each component was projected for each cross-section of loan-to-value and loan size and then aggregated to the endorsement year and fiscal year level. The following section discusses these cash flow components. First, we provide definitions of key terms used in the analysis.

- Insurance-in-force: the unamortized value of the surviving mortgages insured by FHA.
- Average Outstanding Balance (AOB): the principal balance outstanding divided by the original mortgage amount. The AOB is calculated based on the term of the mortgage, mortgage interest rate, and the type of the mortgage.
- Conditional Claim Rate: the number of claims divided by the number of surviving loans.
- Loss Ratio: the dollar loss incurred on claims divided by the claim amount.
- Conditional Prepayment Rate: the number of prepayments divided by the number of surviving loans.
- Refund Rate: the portion of the premium that is refunded when a loan is prepaid. The refund rate is typically defined as the dollar refund per $1000 of the mortgage value at origination (e.g., the refund in the first year is $3.43/$1000 of the original mortgage value).

A. Premium

The insurance premium is the primary revenue collected by the Fund. If the Fund's mortgages are priced to be premium sufficient, the insurance premiums collected and interest earned on them will cover all costs incurred in insuring the mortgages. During the period being analyzed, the insurance premium was structured in two ways. Through September 1, 1983 the mortgage premium was collected on a monthly basis as a percentage of the outstanding principal balance for the period. After September 1, 1983 the premium was collected at the time of origination. We assumed for this analysis that the annual premium policy was in effect through the end of fiscal year 1983.

In calculating the premiums collected on loans endorsed through 1983, we applied a premium of 0.5 percent of the mortgage's average outstanding balance for the year. Thus, the mortgage premium collected during year i equals the average outstanding balance of insurance-in-force (IIF) during year i times the annual premium.

$$Premium_i = IIF_i \times AOB_i \times 0.5\%$$

For loans endorsed after 1983 FHA collected an upfront premium rate of 3.8 percent of the mortgage origination value for 30-year mortgages and 2.4 percent for 15-year mortgages. Thus, the mortgage premium collected on loans endorsed after 1983 equals the origination mortgage amount times the appropriate insurance premium.

$$Premium_i = Origination\ Amount_i \times Mortgage\ Insurance\ Premium$$

For business initiated beginning in fiscal year 1992, the premium rate structure varies by endorsement year and loan-to-value ratio. The premium structure profile is provided in Exhibit B-1.

Exhibit B-1

Premium Schedule			
	Phase-in Years		
	1992	1993-94	1995+
Upfront Premium:	3.80%	3.00%	2.25%
Annual Premium for LTVs:			
< 90%	0.50% for 5 Years	0.50% for 7 Years	0.50% for 11 Years
≥ 90% - ≤ 95%	0.50% for 8 Years	0.50% for 12 Years	0.50% for 30 Years
> 95%	0.50% for 10 Years	0.50% for 30 Years	0.55% for 30 Years

Although FHA technically receives the upfront premium at the time of origination, the mortgagor is allowed to finance the premium and, therefore, the portion of the premium that is financed is included in the initial principal value of the mortgage. The original mortgage amount used above in calculating the premium excludes the financed premium. However, when a mortgage defaults, FHA must pay a claim that consists of the unamortized portion of both the mortgage and financed premium. Therefore, FHA effectively collects very little of the upfront premium on mortgages that default early in their lives.

B. Losses Associated with Claims

Losses due to claims comprise the largest expense to the fund in the early years of mortgages' lives. When a mortgage defaults, the lender files a claim with FHA. After FHA pays the claim, it receives the foreclosed property and must sell the property to recover its loss. These events result in two separate cash flows: 1) the cash outflow of the claim payment, and 2) the cash inflow of the net proceeds received in selling the claimed property.

Because there is typically a lag between the time of the claim payment and the receipt of proceeds from property disposition, we have analyzed these two cash flow components separately.

The claim payment consists primarily of the outstanding balance at the time of the default. In addition, FHA may pay for additional costs incurred by the bank on the defaulted mortgages. In order to account for these costs on a portfolio-wide basis, we use the following formula:

$$\textit{Claim payment}_i = IIF_i \times AOB_i \times \textit{Claim Rate}_i \times (1 + \textit{Bank Costs}) \times \textit{Additional Costs of Claims Settlement Adjustment Factor}$$

where the Bank Costs equal the average costs incurred by banks per dollar of outstanding balance, and "i" identifies the fiscal year.

In our analysis, we assumed that the primary cost associated with claims was the interest income lost by the bank between the time at which the mortgage defaults and the claim is paid. Based upon the results of the FHA's 1991 Financial Audit and previous experience, we found that the average lag between default and claim payment is 13.5 months. Thus, the additional bank costs were estimated as interest income lost on the outstanding balance of the mortgage for 13.5 months.

Net proceeds were estimated by multiplying the claim payment by one minus the loss ratio. However, because property sales typically lag claim payments by 7.8 months[16], we allocated the net proceeds cash flow to the appropriate fiscal year so that proceeds received in fiscal year i are calculated as follows.

16 This figure represents the average as estimated during the Fiscal Year 1988 Financial Audit of FHA.

$$Net\ Proceeds = (\frac{7.8}{12}) \times Claim\ Payments_{i-1} \times (1 - Loss\ Ratio) + (\frac{4.2}{12}) \times Claim\ Payments_{i} \times (1 - Loss\ Ratio)$$

For 30-year fixed rate mortgages, different loss ratios are used depending on the loan size category. The loss ratios are presented in Exhibit B-2.

Exhibit B-2

Loss Ratios by Size Category

Size	Loss Ratio
1	54.57%
2	46.28%
3	41.43%
4	38.25%
5	35.75%
6	33.43%
7	28.47%
8	47.47%

Source: Calculations based on the January 1992 A-43 Data Extract

C. Refunded Premiums

With the initiation of the upfront premium in FY 1984, FHA began refunding a portion of the premium when borrowers prepaid their mortgages. The upfront premiums are considered to be earned over the life of the loan, and upon prepayment, the unearned portion of the premium is returned to the borrower. Thus, the amount of the refund depends upon the time in the life of the mortgage at which it is prepaid.

$$Refund\ Dollars_i = IIF_i \times Prepayment\ Rate_i \times Refund\ Rate_i \times Adjustment\ Factor\ for\ Understatement\ of\ Refunds$$

The refund rates used in the analysis of the existing portfolio are those currently used by FHA.[17] In the analysis of new business, the refund rate is adjusted to reflect the fact that actual refunds appear to exceed the amount calculated based on historical prepayments. This adjustment is 24 percent of the calculated refund amount.

D. Administrative Expenses

In addition to estimating cash flows associated with loan performance, the model also projects administrative costs incurred in insuring mortgages. Administrative expenses are calculated based on the outstanding balance of the insurance-in-force over the period. The factor used in this analysis is 0.0942%.[18]

E. Distributive Shares

Distributive shares were designed to allow FHA to return a portion of the insurance premium to the insured borrower if the business for that endorsement year was more profitable than expected. Specifically, if the premium collected is more than sufficient to cover the costs of insuring the loans, a portion of the premium in excess of the costs can be returned to the borrower through a distributive shares payment. However, payment of distributive shares

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17 Herzog, Thomas, "Introducing the Single Premium Plan", Mortgage Banking, April 1984.

18 Middaugh, David, "Analysis of the Insurance Reserves as of September 30, 1988", Department of Housing and Urban Development.

has been suspended until the Fund reaches its targeted capital ratio, and this suspension is assumed to continue indefinitely.

Exhibit B-3

Distributive Shares Allocation FY 1991
by Endorsement Year
(Dollars per $1000 of Original Mortgage Amount)

Endorsement Year	30-Year Mortgages	15-Year Mortgages	30-Year Graduated Payment Mortgages
1970	77.72	0.00	0.00
1971	28.81	0.00	0.00
1972	70.15	0.00	0.00
1973	40.48	0.00	0.00
1974	62.18	0.00	0.00
1975	24.46	0.00	0.00
1976	35.68	0.00	0.00
1977	47.73	0.00	47.26
1978	34.39	20.69	33.96
1982	0.00	17.94	0.00
1983	0.00	20.10	0.00

* Mortgages that were endorsed prior to 1970 and whose term is greater than 20 years receive the entire premium paid.

** Source: "The Calculation of Distributive Shares under the Mutual Mortgage Insurance Fund," Herzog and Middaugh, May 1988.

III. Analysis of the Current Portfolio of Mortgages

In analyzing the economic value of the Fund, we first examined those loans that FHA currently has in its portfolio. The Fund's current equity less the future value of losses expected to be generated by this business represents the Fund's value assuming FHA stops insuring new business. This value relative to the current insurance-in-force provides a measure of the Fund's financial strength.

The current portfolio of loans consists of various terms and types of mortgages. To analyze the current portfolio, we grouped the loans into four major categories: (1) 30-year fixed rate mortgages; (2) 15-year fixed rate mortgages; (3) graduated payment mortgages; and (4) adjustable rate mortgages. Insurance-in-force as of the end of 1991 is presented in Exhibit B-4.

In analyzing the financial performance of these loans, we used methodology which focused on 30-year FRMs, as described in the previous section. However, slight modifications were made in analyzing the different types of loans, to adjust for differences between their behavior and that of the 30-year FRMs. These are described below.

- Graduated Payment Mortgages: The primary difference between the graduated payment and other 30-year mortgages is the payment plan used by the GPMs. Payment plans for GPMs actually increase the mortgage value outstanding for the first 5 to 10 years of the mortgage. Increasing rather than decreasing mortgage values impacts the loan performance and cash flows in two ways: (1) an increasing mortgage obligation can result in negative equity during the early years of the mortgage, thus increasing the risk of default; and (2) an increasing mortgage obligation increases the potential claim amount that FHA must pay if the mortgage defaults.

  In analyzing the claim and prepayment rates of GPMs, we found that in aggregate the termination rates of GPMs are very similar to those of the other 30-year mortgages. Therefore, we applied the aggregate predicted claim and prepayment rates of the 30-year mortgages to the graduated payment mortgages.

  In predicting the claim payments associated with GPMs, we used an outstanding balance factor for a 5-year 7.5 percent annual growth GPM (i.e., the mortgage payment increases annually by 7.5 percent for 5 years).

- 15-Year Mortgages: As with the GPMs, the major difference of the 15-year mortgages is the payment plan. Again, because we did not model the claim and prepayment rates of the 15-year mortgages separately, we did not directly capture the impact of an accelerated reduction in principal associated with 15-year mortgages. In analyzing them more closely, we found that these mortgages tend to have claim rates approximately 2/3 of their 30-year counterparts. Therefore, we reduced the predicted claims for 30-year

mortgages by 1/3 in predicting claims for the 15-year mortgages. Prepayment rates were assumed to be the same as the 30-year mortgages.

In predicting the claim payments and associated losses for the 15-year mortgages, we applied an outstanding balance factor commensurate with the 15-year term of the mortgage.

- Adjustable Rate Mortgages: These mortgages are treated like 30-year fixed-rate mortgages.

- Mortgages endorsed prior to 1975: To analyze these loans, we used FHA's most recent survivorship tables for 30-year mortgages.[19] These mortgages are sufficiently seasoned so that economic conditions will not affect their performance significantly.

[19] Survivorship and Decrement Tables for HUD/FHA Home Mortgage Insurance as of June 30, 1991.

Exhibit B-4

Insurance in Force
End of Fiscal Year 1991
(Unamortized Value in Millions)

Endorsement Year	30-Year Mortgages	15-Year Mortgages	Adjustable Rate Mortgages	Graduated Payment Mortgages
1975	$1,917	$0		
1976	$2,528	$35		
1977	$3,715	$48		$4
1978	$4,874	$43		$762
1979	$5,892	$51		$3,181
1980	$4,174	$51		$1,899
1981	$1,830	$33		$415
1982	$767	$43		$167
1983	$5,715	$874		$726
1984	$3,133	$458	$0.26	$344
1985	$6,265	$910	$19	$371
1986	$38,056	$3,868	$303	$522
1987	$55,249	$4,472	$884	$585
1988	$29,536	$1,426	$1,563	$309
1989	$34,607	$1,185	$537	$302
1990	$43,588	$1,497	$368	$462
1991	$38,592	$1,623	$1,842	$468
Total[20]	$280,438	$16,621	$5,516	$10,521

[20] Small differences between the column figures and total are due to rounding error.

IV. Analysis of the Future Portfolio of Mortgages

In order to model value of the Fund in future years, it is necessary to make assumptions regarding the characteristics of the mortgage portfolio in the future, particularly those that may be affected by the National Affordable Housing Act of 1990 (NAHA). This legislation directly and indirectly altered many of the parameters used by the cash flow model to project fund value. Chief among these are the (a) mortgage premium structure; (b) projected loan origination volumes; (c) future distribution of loan volumes across loan-to-value categories; and (d) refund rates. Each of these changes is discussed below.

A. Mortgage Premium Structure

Prior to the enactment of NAHA, the Fund charged a single upfront premium on all loans up to the legislated limit. Beginning in July 1991, the premium rate structure will be determined according to endorsement year and loan-to-value ratio. The new premium rate structure is presented in Exhibit B-1.

B. Loan Origination Volumes

For 30-year fixed rate mortgages, a total dollar volume and a distribution across loan-to-value and loan size categories must be determined to project future cash flows. Projected originations (those beginning in endorsement year 1992 and following) are assumed to remain constant at the 1991 level.

C. Distribution of Volume Across LTV Categories

Changes in the Fund's premium policy will affect the distribution of new loan volume across LTV categories. Also, between July 1991 and October 1992, 57.25 percent of a borrower's closing costs could be financed. Both of these changes probably had the ultimate effect of

reducing the average LTV ratio at time of loan origination. This is modelled as a gradual shift of volume to lower LTV categories beginning in fiscal year 1992. However, with the passage of the recent Congressional reform regarding the 100 percent financing of closing costs, the distribution reverts back to the 1991 distribution for FY 1993 and forward. Additionally, the assumption is made that no investor loans are issued beginning in 1991.

Appendix C: Sensitivity Analyses - Performance of the Fund Under Various Scenarios

This section presents the results of several sensitivity analyses we performed in the development of the MMI FY 1991 Actuarial Review. These analyses include:

- Differences in loan termination behavior of the post-1986 books of business
- Alternative Economic Scenarios
- California Recession Scenarios
- NAHA Policy Reform Scenarios

I. Post-1986 Loan Termination Scenarios

The economic value of the FHA Mutual Mortgage Insurance Fund depends heavily on the performance of the post-1986 books of business. As of the end of FY 1991, these books accounted for 70% of the Fund's insurance-in-force. Moreover, our projections for the performance of future books -- those of 1992 and later years -- are also influenced by the claims patterns of the books of the later 1980's. Changes in the future performance of the post-1986 books could have corresponding impacts on the Fund's economic value. Based on the evidence currently available for the 1987 and later books of business, we estimate a decline of 36% in the termination propensity of these loans to date, relative to the average performance of their immediate predecessors. However, the terminations profiles of these books are still not as favorable as those of the late 1970's when high inflation rates skewed the accumulation of equity toward earlier policy years.

We attribute the majority of the current improvement to the implementation of new underwriting standards and enhanced monitoring of HUD mortgagees following fiscal year 1986. If institutional and managerial factors do indeed account for the relative improvement in the performance of these books, the books may have a higher proportion of less risky

policies. In that case, we should expect the superior performance of these books to continue through to their maturities. Whether new books of business (post-1991) will manifest similar terminations profiles depends on whether the influence of these management changes persists. If other factors are responsible for the performance of the post-1986 books, their impact on terminations rates may decline for these books as they mature. In that event, the future terminations experience of these books might come increasingly to resemble that of their predecessors.

Historical data on these recent books is limited. In fiscal year 1991, the 1987 book of business was only in its fifth policy year, and later books were in even earlier stages of their maturity. As a consequence, their ultimate termination behavior remains somewhat uncertain even when we extrapolate econometrically from their performance to date and from the longer series of performance statistics provided by neighboring books.

To account for this uncertainty, we ran sensitivity tests on alternate performance assumptions to bracket our base case. These assumptions are:

- **Superior Termination Performance**

  For policy years four and later, baseline claim rates are projected at 64% of the 1975-81 baseline rates.[21]

- **Base Case**

  For policy years four and later, the improvement in the performance of the post-1986 books over the previous average is projected to be one half of the improvement experienced in the first three policy years.

[21] This number was determined by using econometric estimation as explained in Appendix A.

That is, baseline claim rates are projected at 82% of the 1975-81 baseline rates.

- **Prior Termination Performance**

  For policy years four and later, baseline claim rates are projected at 100% of the 1975-81 baseline rates. This scenario assumes that these books perform with no improvement over the 1975-81 baseline experience.

The results of this analysis are shown in Exhibits C-1 and C-2.

Exhibit C-1

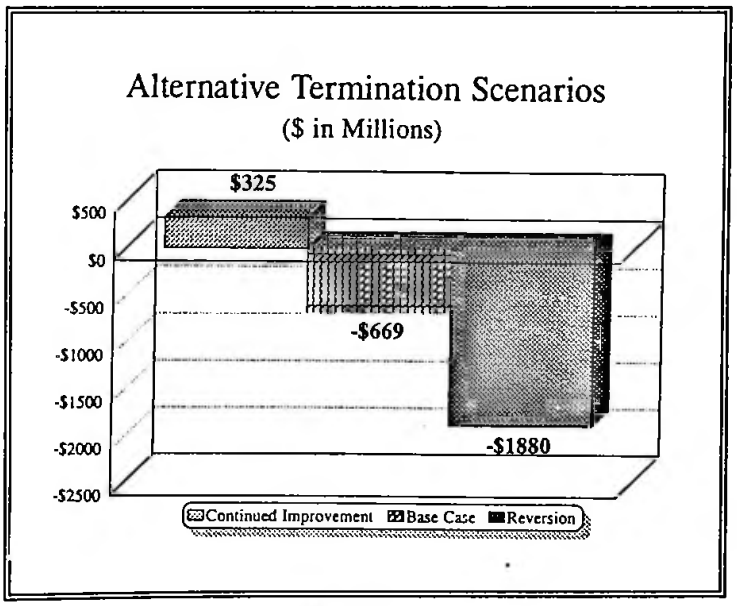


Exhibit C-2

Books of Business	Net Present Values ($ Millions) Under Alternate Termination Scenarios		
	Superior Termination Performance	Base Case	Prior Termination Performance
1987	-$195.2	-$485.7	-$842.0
1988	-$297.4	-$495.4	-$735.4
1989	-$367.5	-$556.7	-$785.3
1990	-$362.2	-$555.8	-$790.5
1991	-$231.9	-$354.8	-$506.0
MMI Economic Value	$324.7	-$669.4	-$1,880.3

Exhibit C-3

MMI FY 1991 Actuarial Review

Future Books of Business - Alternative Performance Scenarios

Scenario 1. Superior Performance	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY,Unamortized)	$304,216	$327,811	$342,545	$355,636	$371,727	$390,540	$411,201	$423,608	$453,844	$474,625	$494,491
Economic Value (BOY)			$325	$1,518	$2,790	$4,023	$5,336	$6,694	$8,100	$9,556	$11,062
Interest on Previous Business			$11	$53	$98	$141	$187	$234	$284	$334	$387
Addition of New Business			$1,182	$1,219	$1,136	$1,172	$1,172	$1,172	$1,172	$1,172	$1,172
Economic Value (EOY)		$325	$1,518	$2,790	$4,023	$5,336	$6,694	$8,100	$9,556	$11,062	$12,621
CAPITAL RATIO		0.10%	0.44%	0.78%	1.08%	1.37%	1.63%	1.87%	2.11%	2.33%	2.55%

Base Case	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY,Unamortized)	$304,216	$327,811	$342,240	$354,976	$370,701	$389,187	$409,537	$430,630	$451,536	$471,976	$492,497
Economic Value (BOY)			-$669	$380	$1,493	$2,545	$3,663	$4,819	$6,017	$7,256	$8,538
Interest on Previous Business			-$23	$13	$52	$89	$128	$169	$211	$254	$299
Addition of New Business			$1,073	$1,100	$1,000	$1,029	$1,029	$1,029	$1,029	$1,029	$1,029
Economic Value (EOY)		-$669	$380	$1,493	$2,545	$3,663	$4,819	$6,017	$7,256	$8,538	$9,866
CAPITAL RATIO		-0.20%	0.11%	0.42%	0.69%	0.94%	1.18%	1.40%	1.61%	1.81%	2.00%

Scenario 2. Prior Performance	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($ Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY,Unamortized)	$304,216	$327,811	$341,861	$354,159	$369,436	$387,523	$407,495	$428,202	$448,701	$468,720	$488,813
Economic Value (BOY)			-$1,880	-$1,009	-$93	$734	$1,609	$2,515	$3,452	$4,422	$5,426
Interest on Previous Business			-$66	-$35	-$3	$26	$56	$88	$121	$155	$190
Addition of New Business			$938	$951	$830	$849	$849	$849	$849	$849	$849
Economic Value (EOY)		-$1,880	-$1,009	$93	$734	$1,609	$2,515	$3,452	$4,422	$5,426	$6,465
CAPITAL RATIO		-0.57%	-0.30%	-0.03%	0.20%	0.42%	0.62%	0.81%	0.99%	1.16%	1.32%

II. Alternative Economic Scenarios

For our base case estimate of the economic value of the Fund, we employed DRI's[22] base case forecasted values of the CQHP appreciation rate, the FHA-insured mortgage interest rate, and the unemployment rate. DRI has judged these values most likely to approximate actual experience. To conduct tests of the sensitivity of the Fund's economic value to the strength of the recovery from the recession, and long term appreciation in house prices, we employed two alternative forecasts produced by DRI: 1) a "stagnation" (referred to as "pessimistic" in this discussion) forecast which assumes slower growth out of the recession, leading to lower growth rates in house prices, and 2) an "optimistic" forecast which assumes more rapid growth out of the recession, leading to higher growth rates in house prices.

The forecasted values of the economic variables used to produce each of the economic sensitivity scenarios can be found in Exhibit C-4. Exhibit C-5 reports the corresponding economic values. The current economic value of the Fund varies by over $1.6 billion. depending on the economic scenario. Optimistic economic growth yields a value of $149 million, while an extended downturn would result in a decline to -$1,430 million.

22 References to DRI forecasts refer to Data Resources Incorporated forecasts of U.S. annual national economic figures. Sources used in this review include the October 1992 issue of *Review of the U.S. Economy*.

Exhibit C-4

Economic Assumptions for Sensitivity Analyses
Base Case and Scenarios 3 and 4

Endorsement Year	CQHP Assumption			FHA-Insured Mortgage Rate			Unemployment Rate		
	Base Case	Pessimistic Scenario	Optimistic Scenario	Base Case	Pessimistic Scenario	Optimistic Scenario	Base Case	Pessimistic Scenario	Optimistic Scenario
1992	1.60	1.60	1.60	8.17	8.14	8.20	7.50	7.50	7.50
1993	3.50	3.50	4.10	7.91	7.49	8.33	7.30	7.50	7.10
1994	3.90	2.70	4.20	8.40	7.47	9.33	6.60	7.30	6.80
1995	3.40	2.10	3.70	8.41	7.47	9.48	6.20	7.30	5.20
1996	3.20	2.10	3.70	8.41	7.34	9.48	6.20	7.30	5.20
1997	3.20	2.10	3.70	8.41	7.34	9.48	6.20	7.30	5.20
1998	3.20	2.10	3.70	8.41	7.34	9.48	6.20	7.30	5.20
1999	3.20	2.10	3.70	8.41	7.34	9.48	6.20	7.30	5.20
2000	3.20	2.10	3.70	8.41	7.34	9.48	6.20	7.30	5.20
2001	3.20	2.10	3.70	8.41	7.34	9.48	6.20	7.30	5.20

Exhibit C-5

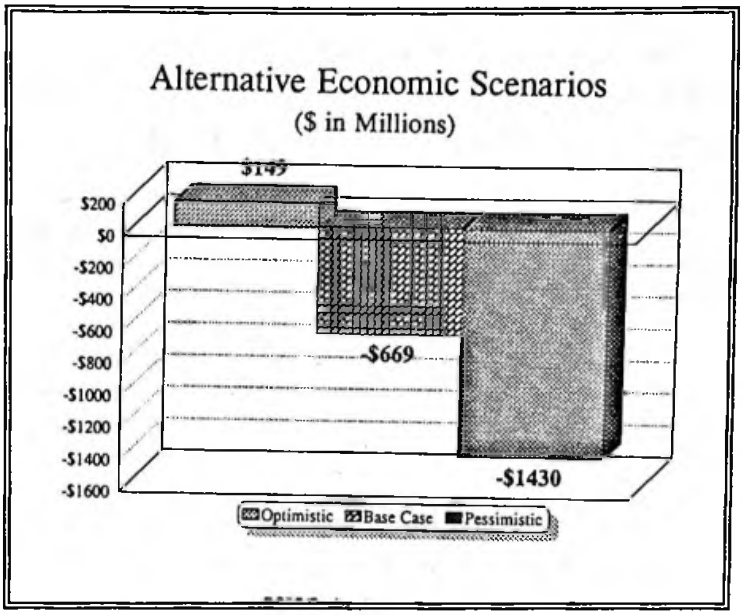


Exhibit C-6 presents the net present values (NPV) of the most recent books of business in the base case, optimistic, and pessimistic scenarios. The total NPV of the 1987-1991 books of business in the pessimistic case is -$761 million lower than in the base case, while the total NPV in the optimistic case is $818 million higher than in the base case. The 1987-1991 books account for 70 percent of the MMI Fund's insurance-in-force for FY 1991. However, these books account for 86.7 percent of the variations in FY 1991 economic value with different economic assumptions. The estimates of NPV's for these five recent books of business are consequently particularly sensitive to the forecasts of macroeconomic variables used in the simulations.

Exhibit C-6

Books of Business	Net Present Values ($ Millions) Under Alternate Economic Scenarios		
	Pessimistic	Base Case	Optimistic
1987	-$584.3	-$485.7	-$363.9
1988	-$564.3	-$495.4	-$422.9
1989	-$654.0	-$556.7	-$451.7
1990	-$716.0	-$555.8	-$353.7
1991	-$591.5	-$354.8	-$135.4
Economic Value	-$1,430.2	-$669.4	$149.3

Exhibit C-7 reports the impact of the economic scenarios on future capital ratios. The NAHA-mandated FY 1992 capital ratio target is 1.25 percent. Our projections for the 1992 Fund capital ratio range from -0.23 percent to 0.42 percent and do not reach the target. The NAHA target for FY 2000 is 2.00 percent. We report projected Fund ratios of between 1.22 percent and 2.53 percent for that year. Except in the case of a prolonged national economic recession or stagnation, the Fund can be expected to reach its FY 2000 target. In the case of a robust recovery, the target may be met as early as FY 1998, assuming no change in management practices or insurance premium policies.

In Appendix F, the future conditional claims rates are summarized for all three scenarios. These tables show claims rates to be highest under the pessimistic scenario and lowest in the optimistic case.

Exhibit C-7

MMI FY 1991 Actuarial Review

Future Books of Business - Alternative Economic Scenarios

Scenario 1. Pessimistic	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY,Unamortized)	$304,216	$327,811	$341,824	$347,287	$358,036	$372,078	$389,697	$409,405	$430,183	$451,123	$472,290
Economic Value (BOY)			-$1,430	-$795	-$100	$596	$1,387	$2,205	$3,053	$3,929	$4,837
Interest on Previous Business			-$50	-$28	-$3	$21	$49	$77	$107	$138	$169
Addition of New Business			$685	$723	$699	$770	$770	$770	$770	$770	$770
Economic Value (EOY)		-$1,430	-$795	-$100	$596	$1,387	$2,205	$3,053	$3,929	$4,837	$5,776
CAPITAL RATIO		-0.44%	-0.23%	-0.03%	0.17%	0.37%	0.57%	0.75%	0.91%	1.07%	1.22%

Base Case	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($ Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY,Unamortized)	$304,216	$327,811	$342,240	$354,976	$370,701	$389,187	$409,537	$430,630	$451,536	$471,976	$492,497
Economic Value (BOY)			-$669	$380	$1,493	$2,545	$3,663	$4,819	$6,017	$7,256	$8,538
Interest on Previous Business			-$23	$13	$52	$89	$128	$169	$211	$254	$299
Addition of New Business			$1,073	$1,100	$1,000	$1,029	$1,029	$1,029	$1,029	$1,029	$1,029
Economic Value (EOY)		-$699	$380	$1,493	$2,545	$3,663	$4,819	$6,017	$7,256	$8,538	$9,866
CAPITAL RATIO		-0.20%	-0.11%	0.42%	0.69%	0.94%	1.18%	1.40%	1.61%	1.81%	2.00%

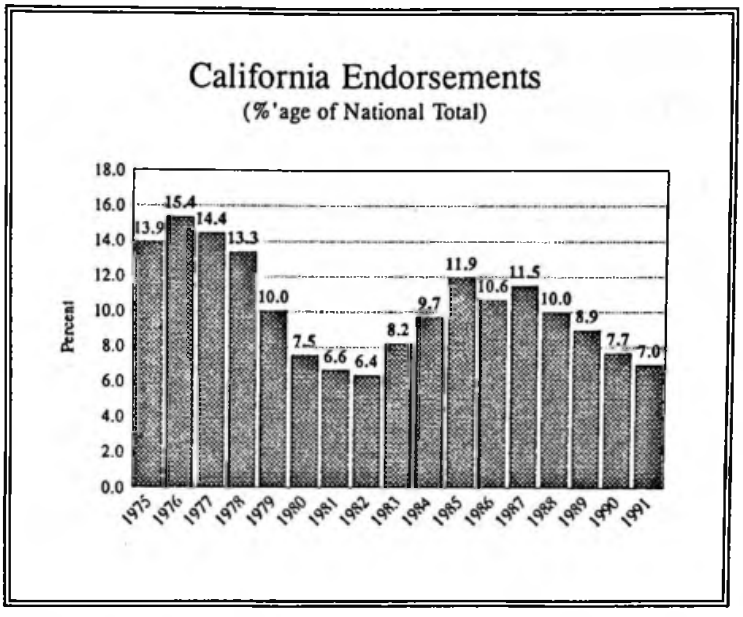
Scenario 2. Optimistic	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($ Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY,Unamortized)	$304,216	$327,811	$342,647	$369,122	$376,731	$395,251	$415,008	$434,842	$454,406	$473,445	$492,537
Economic Value (BOY)			$149	$1,430	$2,746	$3,979	$5,274	$6,614	$8,001	$9,437	$10,923
Interest on Previous Business			$5	$50	$96	$139	$185	$231	$280	$330	$382
Addition of New Business			$1,276	$1,266	$1,137	$1,156	$1,156	$1,156	$1,156	$1,156	$1,156
Economic Value (EOY)		$149	$1,430	$2,746	$3,979	$5,274	$6,614	$8,001	$9,437	$10,923	$12,462
CAPITAL RATIO		0.05%	0.42%	0.76%	1.06%	1.33%	1.59%	1.84%	2.08%	2.31%	2.53%

III. California Recession Scenario

The FY 1991 Actuarial Review was conducted as a risk assessment of the MMI Fund given projections for claims rates, prepayments and economic variables for the U.S. economy as a whole. However, many of the important elements of the risks faced by the MMI Fund in recent years have been related to the considerable regional turbulence in housing markets in the Southwest, New England and, most recently, in California. If claims rates and prepayment rates were proportional to changes in the underlying economic variables, and the regional profiles of LTVs, and MMI-insured housing market values did not differ markedly from national averages, then the aggregate national model would reflect the impact of regional volatility precisely.

The California economy is currently experiencing a recession that is evident in regional growth and unemployment statistics. After years of consistent growth and price appreciation, the California housing market is now caught in a downturn that reflects the condition of the economy as a whole. Because a considerable share of MMI-insured housing value is located in California, a severe recession there could impose large costs on the Fund, eroding economic value. Exhibit C-8 compares MMI Fund originations in California to national originations by book of business. We conducted a series of sensitivity tests specifically designed to assess the impact of a California recession on Fund economic value. The results of our tests are reported below.

Exhibit C-8



Based on the statistics available to date, we developed alternative scenarios for a mild California recession, and for a severe downturn. These recession scenarios are reflected in the projections that we used for California unemployment rates and housing price appreciation rates. In both cases we assumed that California interest rates remained similar to national rates due to national linkages among banks and the mobility of financial resources within the U.S. as investors seek the best rates of return. The economic forecasts underlying our recession scenarios are reported in Exhibit C-9.

Exhibit C-9

California Recession: Economic Forecast Assumptions			
		Constant Quality House Price Appreciation Rates	
		Recession Scenario	
Year	Unemployment	Mild	Lingering
1991	8.80	-1.00	-1.00
1992	8.10	0.00	-1.00
1993	7.70	2.00	1.00
1994	6.20	2.00	1.00
1995	6.20	3.50	1.75
1996 +	6.20	3.50	1.75

Our simulation method involved separating out claims and prepayments data for the Western census region of the United States.[23] Our claims and prepayments models were then estimated on this region alone, with regional economic projections that corresponded to the national projections used in the base simulation. The estimation results provided base case estimates of Western region/California claims and prepayments rates that were consistent with the national aggregate figures. Economic forecasts under the two recession scenarios were then used in alternative estimations of claims and prepayments experience. The impact of the California recession was captured in the difference between the Western region

[23] Data limitations precluded estimation on California data alone. For estimation purposes, tests were conducted on the Western census region as a whole with the results then scaled by California's fraction of MMI business in the Western region.

/California base case results and the results from the recession scenarios. Economic value figures for the MMI Fund at the national level were then derived from the base case national figures, less the figures for the erosion of economic value due to the California recession, adjusted for California's percentage representation of the national total.

As Exhibits C-10 and C-11 illustrate, a mild California recession would reduce the economic value of the MMI Fund by $337 million, to -$1,006 million. Capital ratios in FY 1992 and FY 2000 are expected to decline by 12 and 15 basis points respectively from the base case projection. A more severe California recession would exert a disproportionately greater impact on MMI Fund economic value, reducing value by $456 million to -$1,125 million for FY 1991. Capital ratios for FY 1992 and FY 2000 would be correspondingly lower at -0.23 percent and 0.53 percent.

Exhibit C-10

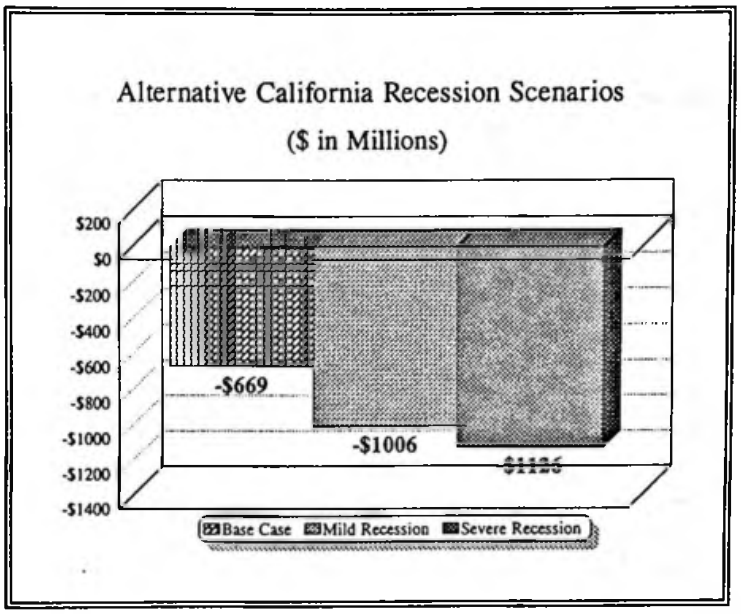

Alternative California Recession Scenarios
($ in Millions)
$200
$0
-$200
-$400
-$600
-$800
-$1000
-$1200
-$1400
-$669
-$1006
-$1126
Base Case
Mild Recession
Severe Recession

Exhibit C-11
MMI FY 1991 Actuarial Review
Future Books of Business - California Recession Scenarios

Scenario 1. Mild Recession	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY, Unamortized)	$304,216	$327,811	$341,496	$353,639	$368,681	$386,514	$406,270	$426,733	$447,061	$467,000	$487,126
Economic Value (BOY)			-$1,005	-$20	$1,033	$2,029	$3,094	$4,196	$5,337	$6,518	$7,740
Interest on Previous Business			-$35	-$1	$36	$71	$108	$147	$187	$228	$271
Addition of New Business			$1,020	$1,055	$960	$994	$994	$994	$994	$994	$994
Economic Value (EOY)		-$1,005	-$20	$1,033	$2,029	$3,094	$4,196	$5,337	$6,518	$7,740	$9,004
CAPITAL RATIO		-0.31%	-0.01%	0.29%	0.55%	0.80%	1.03%	1.25%	1.46%	1.66%	1.85%

Base Case	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($ Millions)										
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY, Unamortized)	$304,216	$4327,811	$342,240	$354,976	$370,701	$389,187	$409,537	$430,630	$451,536	$471,976	$492,497
Economic Value (BOY)			-$669	$380	$1,493	$2,545	$3,663	$4,819	$6,017	$7,256	$8,538
Interest on Previous Business			-$23	$13	$52	$89	$128	$169	$211	$254	$299
Addition of New Business			$1,073	$1,100	$1,000	$1,029	$1,029	$1,029	$1,029	$1,029	$1,029
Economic Value (EOY)		-$669	$381	$1,493	$2,545	$3,663	$4,820	$6,017	$7,257	$8,539	$9,866
CAPITAL RATIO		-0.20%	0.11%	0.42%	0.69%	0.94%	1.18%	1.40%	1.61%	1.81%	2.00

Scenario 2. Lingering Recession	ANALYSIS OF CAPITAL RATIO: MMI 1991 ($ Millions)										
$	$1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
IIF (EOY, Unamortized)	$304,216	$327,811	$341,489	$353,619	$368,636	$386,422	$406,118	$426,496	$446,725	$466,568	$486,603
Economic Value (BOY)			-$1,125	-$800	-421$	-$95	$278	$677	$1,104	$1,560	$2,044
Interest on Previous Business			-$632	-$605	-$569	-$549	-$522	-$494	-$466	-$436	-$406
Addition of New Business			$958	$983	$895	$922	$922	$921	$921	$921	$920
Economic Value (EOY)		-$1,125	$800	-$421	-$95	$278	$677	$1,104	$1,560	$2,044	$2,558
CAPITAL RATIO		-0.34%	-0.23%	-0.12%	-0.03%	0.07%	0.17%	0.26%	0.35%	0.44%	0.53%

IV. NAHA Policy Reform Scenarios

In our sensitivity studies, we have considered several policy factors which influence the economic value of the Fund. These factors include the FHA policies on upfront and annual premiums and the percentage of closing costs allowed to be financed. The following discussion presents our findings concerning the Fund's sensitivity to changes in these policies.

For forecast years 1992-1996 in the base case model, we incorporated prevailing FHA policies regarding upfront and annual premiums and the percentage of closing costs allowed to be financed. These policies are summarized as follows.

- Premium and closing cost policy for 1991:
  - 3.8% upfront premium
  - No annual premium
  - 100% of closing costs allowed to be financed
- Premium and closing cost policy for 1992:
  - 3.8% upfront premium
  - 0.50% annual premium, with higher LTV categories paying the premium for a longer period than lower LTV categories
  - 57.25% of closing costs allowed to be financed
- Premium and closing cost policy for 1993-1994:
  - 3.0% upfront premium
  - 0.50% annual premium, with higher LTV categories paying the premium for a longer period than lower LTV categories
  - 100% of closing costs allowed to be financed
- Premium and closing cost policy for 1995-1996:
  - 2.25% upfront premium
  - 0.50%-0.55% annual premium, with higher LTV categories paying the premium for a longer period than lower LTV categories
  - 100% of closing costs allowed to be financed.

We tested the sensitivity of the Fund's value to changes in policy using the following two alternate policy scenarios: 1) "**No Financing Change**:" the percentage of closing costs eligible for financing which changed from 100 percent to 57.25 percent in 1992, remains at 57.25 percent through 1996 (as opposed to the base case scenario in which the allowed percentage returns to 100 percent in 1993), and 2) "**No NAHA**:" in 1993-1996, the upfront premium remains 3.8 percent, there is no annual premium, and 100 percent of closing costs can be financed. This latter scenario models 1993-1996 policy in the (hypothetical) absence of the National Affordable Housing Act (NAHA) provisions for financing and insurance premiums.

In the "No Financing Change" scenario, the percentage of closing costs eligible for financing was limited to 57.25 percent in 1993-1996, effectively reducing the risk of business. Estimated economic values and capital ratios for 1993-1996 are higher, and ultimate claims rates are lower than the estimated base case values, in part reflecting this reduced risk. Under this scenario, the 1992 capital ratio is literally unchanged from the base case. The FY 2000 capital ratio is 6 basis points higher than in the base case.

In the "No NAHA" scenario, the upfront premium stayed at 3.8 percent, the percentage of closing costs eligible for financing was returned to 100 percent, and annual premiums were not imposed. The absence of annual premiums is expected to reduce revenue. In our sensitivity tests, we found that removing the NAHA policies has a significant negative impact on the value of future books of business. The projected capital ratios to the year 2000 remain unchanged from the FY 1991 value of -0.20 percent. A reversal of the NAHA premium policies would lead to a cumulative decline of $10,878 million in the projected net present value of books of business written between FY 1992 and FY 2000.

Appendix D: Summary of Conditional and Cumulative Claim Rates

- **Across All LTV Categories**

- **By LTV Category**
  - **0-30%**
  - **30-75%**
  - **75-85%**
  - **85-90%**
  - **90-93%**
  - **93-95%**
  - **95-97%**
  - **97-100%**
  - **Investor Loans**

Conditional Claim Rates for All LTV Categories

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.114	0.106	0.103	0.103
2	0.794	0.945	0.519	0.432	0.487	0.796	1.587	2.343	0.563	1.194	0.984	0.503	0.397	0.459	0.39	0.336	0.472	0.524	0.532	0.497	0.484	0.484
3	1.152	0.994	0.643	0.605	0.936	1.413	3.568	4.534	1.715	3.129	3.508	1.875	1.142	1.261	1.214	1.591	1.728	1.424	1.177	1.266	1.292	1.292
4	0.877	0.752	0.453	0.551	0.817	1.725	3.295	5.275	2.323	5.013	6.098	2.339	1.378	1.656	2.333	2.127	2.106	1.48	1.417	1.599	1.634	1.634
5	0.589	0.451	0.351	0.428	0.908	1.534	3.383	5.632	3.363	6.748	5.512	2.183	1.393	2.353	2.344	2.309	1.763	1.377	1.39	1.563	1.565	1.565
6	0.367	0.32	0.269	0.498	0.812	1.539	3.214	6.382	4.704	5.899	4.22	1.985	1.827	2.09	2.127	1.924	1.527	1.252	1.253	1.406	1.405	1.405
7	0.271	0.271	0.294	0.411	0.813	1.513	3.874	6.113	4.074	4.153	3.535	2.156	1.76	1.807	1.823	1.74	1.427	1.162	1.159	1.298	1.299	1.299
8	0.196	0.281	0.236	0.426	0.841	1.832	4.322	4.132	2.904	3.174	1.942	1.787	1.247	1.29	1.396	1.395	1.153	0.939	0.939	1.043	1.043	1.043
9	0.249	0.238	0.248	0.423	0.961	2.261	3.174	2.689	2.41	2.085	1.796	1.457	0.969	1.077	1.23	1.226	1.013	0.818	0.82	0.909	0.91	0.91
10	0.198	0.193	0.247	0.47	1.188	1.914	2.512	1.993	1.662	2.101	1.556	1.103	0.823	0.966	1.105	1.102	0.836	0.677	0.681	0.749	0.75	0.75
11	0.201	0.211	0.285	0.636	1.067	1.566	1.969	1.976	1.795	1.878	1.23	0.996	0.794	0.952	1.094	1.007	0.771	0.62	0.626	0.688	0.688	0.688
12	0.177	0.235	0.383	0.615	0.904	1.322	1.224	2.07	1.506	1.367	0.995	0.895	0.727	0.885	0.941	0.866	0.664	0.531	0.539	0.59	0.591	0.591
13	0.192	0.324	0.388	0.548	0.808	0.895	1.166	1.586	0.994	0.955	0.765	0.709	0.587	0.68	0.725	0.662	0.517	0.419	0.423	0.46	0.46	0.46
14	0.243	0.339	0.382	0.471	0.653	1.009	1.055	1.282	0.837	0.843	0.726	0.689	0.532	0.618	0.659	0.601	0.471	0.383	0.385	0.417	0.418	0.418
15	0.256	0.34	0.309	0.481	0.766	0.901	0.831	1.08	0.734	0.755	0.7	0.617	0.479	0.562	0.599	0.54	0.426	0.352	0.352	0.378	0.378	0.378
16	0.258	0.251	0.331	0.569	0.667	0.702	0.695	0.952	0.656	0.692	0.644	0.558	0.433	0.51	0.544	0.491	0.388	0.321	0.321	0.344	0.343	0.343
17	0.205	0.302	0.379	0.498	0.521	0.578	0.608	0.847	0.596	0.646	0.592	0.504	0.391	0.463	0.493	0.446	0.353	0.293	0.293	0.312	0.312	0.312
18	0.248	0.333	0.328	0.383	0.423	0.498	0.536	0.759	0.559	0.601	0.542	0.45	0.349	0.42	0.447	0.4	0.32	0.269	0.267	0.283	0.282	0.282
19	0.265	0.286	0.256	0.316	0.363	0.434	0.481	0.726	0.526	0.559	0.496	0.405	0.315	0.38	0.404	0.363	0.29	0.245	0.244	0.257	0.256	0.256
20	0.226	0.227	0.212	0.271	0.311	0.38	0.457	0.692	0.493	0.519	0.452	0.362	0.28	0.339	0.36	0.326	0.263	0.225	0.223	0.232	0.232	0.232
21	0.182	0.19	0.182	0.235	0.272	0.351	0.435	0.662	0.463	0.482	0.411	0.325	0.252	0.306	0.325	0.296	0.238	0.205	0.203	0.211	0.21	0.21
22	0.154	0.164	0.157	0.205	0.255	0.323	0.415	0.633	0.436	0.446	0.373	0.291	0.226	0.276	0.293	0.267	0.216	0.187	0.184	0.191	0.19	0.19
23	0.135	0.142	0.136	0.193	0.236	0.296	0.395	0.603	0.409	0.412	0.337	0.258	0.201	0.245	0.261	0.24	0.195	0.17	0.168	0.173	0.172	0.172
24	0.119	0.124	0.129	0.181	0.221	0.271	0.377	0.576	0.384	0.38	0.303	0.231	0.18	0.22	0.235	0.217	0.176	0.155	0.153	0.156	0.156	0.156
25	0.107	0.118	0.122	0.171	0.206	0.247	0.358	0.548	0.359	0.349	0.269	0.204	0.159	0.196	0.209	0.194	0.159	0.141	0.139	0.141	0.141	0.141
26	0.103	0.114	0.116	0.161	0.193	0.225	0.341	0.522	0.337	0.319	0.24	0.181	0.142	0.176	0.187	0.175	0.143	0.128	0.127	0.127	0.127	0.127
27	0.099	0.109	0.11	0.152	0.181	0.205	0.325	0.497	0.316	0.292	0.213	0.16	0.126	0.157	0.168	0.157	0.129	0.117	0.115	0.115	0.114	0.114
28	0.095	0.105	0.104	0.143	0.17	0.184	0.307	0.469	0.293	0.263	0.185	0.141	0.111	0.139	0.149	0.141	0.116	0.106	0.104	0.103	0.103	0.103
29	0.091	0.1	0.099	0.135	0.16	0.167	0.292	0.446	0.275	0.24	0.163	0.124	0.098	0.124	0.133	0.127	0.104	0.096	0.095	0.093	0.093	0.093
30	0.088	0.096	0.094	0.128	0.15	0.152	0.278	0.424	0.258	0.218	0.143	0.108	0.087	0.11	0.118	0.114	0.094	0.087	0.086	0.083	0.083	0.083

Cumulative Claim Rates for All LTV Categories

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.114	0.106	0.103	0.103
2	0.851	1.053	0.565	0.464	0.511	0.819	1.683	2.481	0.584	1.234	1.011	0.513	0.408	0.47	0.404	0.342	0.472	0.63	0.639	0.597	0.581	0.581
3	1.969	2	1.181	1.049	1.432	2.203	5.171	6.098	2.268	4.274	4.082	2.3	1.531	1.702	1.583	1.891	2.12	1.992	1.765	1.812	1.822	1.822
4	2.753	2.649	1.586	1.568	2.222	3.863	8.048	9.722	4.463	8.083	7.984	4.427	2.846	3.249	3.733	3.789	3.976	3.334	3.058	3.282	3.323	3.323
5	3.222	3	1.886	1.964	3.091	5.287	10.765	12.912	7.008	11.628	10.922	6.303	4.12	5.315	5.675	5.658	5.412	4.518	4.267	4.653	4.696	4.696
6	3.486	3.236	2.112	2.419	3.85	6.666	13.107	15.28	9.508	14.167	12.857	7.896	5.714	6.965	7.246	7.076	6.57	5.542	5.306	5.833	5.874	5.874
7	3.671	3.431	2.356	2.785	4.591	7.965	15.294	16.837	11.34	15.685	14.242	9.503	7.131	8.255	8.474	8.268	7.59	6.454	6.231	6.882	6.923	6.923
8	3.802	3.63	2.546	3.154	5.337	9.37	17.135	17.706	12.485	16.681	14.889	10.743	8.057	9.103	9.345	9.162	8.372	7.163	6.953	7.696	7.738	7.738
9	3.966	3.792	2.74	3.512	6.141	10.832	18.299	18.204	13.316	17.252	15.412	11.676	8.725	9.76	10.061	9.903	9.024	7.757	7.562	8.383	8.426	8.426
10	4.091	3.92	2.927	3.886	7.052	11.953	19.127	18.541	13.813	17.728	15.801	12.329	9.254	10.309	10.662	10.529	9.535	8.231	8.05	8.931	8.974	8.974
11	4.214	4.054	3.129	4.352	7.816	12.8	19.715	18.85	14.276	18.068	16.068	12.88	9.733	10.816	11.218	11.068	9.983	8.649	8.483	9.418	9.462	9.462
12	4.318	4.194	3.379	4.775	8.424	13.458	20.049	19.087	14.601	18.267	16.256	13.343	10.144	11.255	11.665	11.503	10.35	8.993	8.843	9.823	9.867	9.867
13	4.424	4.371	3.618	5.13	8.932	13.868	20.289	19.219	14.783	18.383	16.384	13.686	10.455	11.57	11.986	11.816	10.621	9.255	9.115	10.129	10.173	10.173
14	4.548	4.546	3.839	5.418	9.319	14.268	20.44	19.297	14.913	18.469	16.492	13.996	10.716	11.835	12.257	12.083	10.853	9.483	9.353	10.396	10.44	10.44
15	4.671	4.711	4.009	5.696	9.743	14.576	20.533	19.349	15.014	18.535	16.584	14.256	10.936	12.06	12.487	12.307	11.052	9.684	9.562	10.63	10.675	10.675
16	4.788	4.826	4.18	6.007	10.083	14.784	20.595	19.387	15.094	18.588	16.66	14.474	11.122	12.25	12.681	12.498	11.224	9.86	9.744	10.836	10.88	10.88
17	4.876	4.957	4.368	6.263	10.329	14.934	20.64	19.415	15.158	18.631	16.723	14.659	11.278	12.411	12.846	12.662	11.371	10.014	9.904	11.016	11.061	11.061
18	4.977	5.094	4.522	6.447	10.514	15.051	20.674	19.437	15.212	18.667	16.775	14.814	11.409	12.548	12.986	12.8	11.498	10.148	10.044	11.174	11.219	11.219
19	5.079	5.206	4.637	6.591	10.664	15.143	20.701	19.455	15.258	18.697	16.819	14.944	11.52	12.664	13.105	12.919	11.607	10.266	10.166	11.313	11.358	11.358
20	5.162	5.291	4.727	6.708	10.784	15.218	20.723	19.471	15.298	18.722	16.855	15.054	11.613	12.762	13.205	13.019	11.701	10.37	10.274	11.435	11.479	11.479
21	5.225	5.358	4.802	6.804	10.884	15.281	20.743	19.485	15.332	18.743	16.886	15.147	11.692	12.845	13.29	13.105	11.782	10.46	10.368	11.541	11.585	11.585
22	5.276	5.413	4.863	6.884	10.972	15.334	20.759	19.496	15.362	18.761	16.912	15.225	11.758	12.915	13.362	13.179	11.852	10.539	10.45	11.634	11.679	11.679
23	5.318	5.459	4.914	6.956	11.049	15.38	20.774	19.506	15.388	18.776	16.933	15.291	11.814	12.974	13.423	13.242	11.911	10.608	10.521	11.716	11.76	11.76
24	5.354	5.497	4.96	7.02	11.117	15.419	20.786	19.515	15.41	18.789	16.951	15.346	11.861	13.025	13.475	13.296	11.963	10.668	10.584	11.787	11.832	11.832
25	5.384	5.532	5.002	7.077	11.178	15.452	20.798	19.523	15.43	18.801	16.966	15.392	11.901	13.067	13.519	13.342	12.007	10.72	10.638	11.85	11.894	11.894
26	5.412	5.565	5.04	7.129	11.231	15.481	20.808	19.531	15.447	18.81	16.979	15.431	11.935	13.104	13.556	13.381	12.045	10.766	10.685	11.904	11.949	11.949
27	5.438	5.594	5.075	7.176	11.28	15.506	20.817	19.537	15.463	18.819	16.99	15.464	11.963	13.135	13.588	13.415	12.078	10.805	10.726	11.952	11.996	11.996
28	5.461	5.621	5.107	7.217	11.322	15.527	20.825	19.543	15.476	18.826	16.999	15.491	11.987	13.161	13.615	13.444	12.106	10.84	10.762	11.993	12.037	12.037
29	5.483	5.646	5.135	7.255	11.361	15.545	20.832	19.548	15.488	18.832	17.006	15.514	12.007	13.183	13.638	13.469	12.13	10.869	10.793	12.039	12.073	12.073
30	5.503	5.669	5.161	7.289	11.395	15.561	20.839	19.553	15.499	18.838	17.012	15.533	12.024	13.202	13.638	13.49	12.151	10.895	10.82	12.06	12.105	12.105

Policy Year	Conditional Claim Rates for LTV Category 0-30%																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1111	0.3143	0.1474	0.0501	0.0555	0.0497	0.1453	0.269	0.0169	0.0541	0.1288	0.0207	0.0299	0.0293	0.0939	0.0279	0
2	1.588	1.9324	1.2515	0.7568	0.8141	0.8808	1.6944	2.9736	0.486	1.9664	2.8302	1.3288	1.1571	1.0122	1.4355	1.1119	1.1249
3	1.81	1.6526	1.1306	0.8725	1.1553	1.4535	3.233	4.9805	1.6855	4.7866	6.8413	5.0155	2.5056	2.6803	3.5102	2.6065	2.3656
4	1.1249	1.0464	0.6866	0.7542	0.9241	1.8217	2.7977	5.4048	2.2879	6.5085	9.7213	4.8144	2.596	2.9015	2.6429	2.1565	2.3201
5	0.7043	0.6279	0.5627	0.564	0.9329	1.479	2.9923	5.5691	3.2964	8.2743	8.7841	4.1774	2.2763	1.7236	1.4309	1.5679	1.3887
6	0.383	0.3735	0.3445	0.6083	0.7943	1.4543	2.7608	5.9778	4.5492	6.5157	6.1849	3.3437	1.4433	1.2389	1.2713	1.325	1.182
7	0.295	0.3513	0.3684	0.4775	0.8193	1.3615	3.3197	5.1965	3.8854	4.6162	5.3771	1.4608	1.0553	1.0241	1.1027	1.1756	1.0492
8	0.2399	0.3356	0.2621	0.5883	0.7779	1.6676	3.7136	3.5927	3.013	4.2596	1.2841	1.0937	0.8624	0.8708	0.9721	1.046	0.9284
9	0.3144	0.2548	0.3326	0.4995	0.9187	1.9612	2.973	2.2722	2.4816	1.3697	1.0822	0.9192	0.7121	0.7521	0.8555	0.9206	0.8146
10	0.2565	0.25	0.3279	0.5039	1.1493	1.7183	2.1054	2.1472	1.1653	1.182	0.8821	0.6829	0.586	0.6346	0.726	0.7816	0.6231
11	0.2552	0.283	0.3861	0.7225	1.0295	1.3382	1.6524	1.3492	1.1817	1.0432	0.7089	0.6379	0.5712	0.6254	0.7184	0.6975	0.556
12	0.246	0.263	0.5416	0.7846	0.8505	1.3691	0.6412	1.3704	1.0378	0.802	0.6014	0.6038	0.55	0.6071	0.6312	0.6128	0.4884
13	0.2613	0.5077	0.5939	0.6839	0.728	0.5623	0.6712	1.2079	0.8159	0.657	0.5455	0.5921	0.5442	0.5471	0.5688	0.5518	0.4398
14	0.3432	0.5853	0.6461	0.5835	0.5609	0.6504	0.6573	1.0483	0.7362	0.6099	0.5636	0.6459	0.5416	0.5448	0.5663	0.5493	0.4377
15	0.3539	0.5017	0.4354	0.5533	0.6488	0.6411	0.5708	0.9357	0.6786	0.5785	0.5959	0.6423	0.5388	0.5423	0.5637	0.5403	0.4355
16	0.3689	0.3771	0.4876	0.6369	0.6121	0.5572	0.5107	0.8503	0.636	0.5647	0.5941	0.6392	0.5361	0.5399	0.5611	0.5438	0.4334
17	0.3534	0.4569	0.5442	0.5895	0.5292	0.4998	0.4654	0.781	0.6085	0.5635	0.5922	0.6359	0.5334	0.5374	0.5584	0.5411	0.4313
18	0.4069	0.4909	0.4949	0.508	0.4679	0.4568	0.4282	0.7267	0.6062	0.562	0.5901	0.6322	0.5303	0.5347	0.5556	0.5381	0.429
19	0.424	0.4371	0.4242	0.4474	0.4212	0.4228	0.3997	0.7257	0.6041	0.5603	0.5879	0.6288	0.5274	0.532	0.5527	0.5353	0.4268
20	0.3755	0.3741	0.3714	0.4002	0.3824	0.397	0.3987	0.7237	0.6015	0.5582	0.5854	0.625	0.5241	0.5287	0.5492	0.5322	0.4244
21	0.3231	0.3272	0.3294	0.3609	0.3519	0.3953	0.3976	0.7216	0.5989	0.556	0.5827	0.6215	0.5211	0.5258	0.5461	0.5292	0.4221
22	0.2852	0.2896	0.2935	0.3288	0.3502	0.3936	0.3964	0.7193	0.5961	0.5536	0.5799	0.6178	0.5181	0.5228	0.543	0.5262	0.4198
23	0.2558	0.257	0.2635	0.3273	0.3481	0.3915	0.3947	0.716	0.5929	0.5507	0.5768	0.6137	0.5146	0.5192	0.5392	0.5228	0.4172
24	0.2314	0.2292	0.2625	0.3258	0.3463	0.3895	0.3928	0.7126	0.5896	0.5477	0.5735	0.6098	0.5113	0.516	0.5358	0.5196	0.4147
25	0.2137	0.2284	0.2614	0.3242	0.3442	0.3869	0.3904	0.7082	0.5857	0.5443	0.5695	0.6055	0.5076	0.5122	0.5319	0.5161	0.412
26	0.2129	0.2276	0.2604	0.3227	0.3422	0.3845	0.3879	0.7037	0.5817	0.5405	0.5657	0.6014	0.504	0.5087	0.5282	0.5126	0.4093
27	0.2121	0.2267	0.2593	0.321	0.3401	0.3818	0.3852	0.6987	0.5775	0.5365	0.5616	0.597	0.5003	0.505	0.5243	0.509	0.4065
28	0.2112	0.2258	0.2582	0.3193	0.3378	0.3784	0.3815	0.6921	0.572	0.5313	0.5565	0.5923	0.4963	0.5008	0.52	0.5051	0.4036
29	0.2104	0.2249	0.257	0.3175	0.3355	0.3754	0.378	0.686	0.5672	0.5266	0.5519	0.5876	0.4923	0.4968	0.5158	0.5012	0.4006
30	0.2095	0.2239	0.2558	0.3157	0.3332	0.3721	0.3741	0.6792	0.5621	0.5215	0.5469	0.5827	0.4881	0.4926	0.5114	0.4971	0.3975

Cumulative Claim Rates for LTV Category
0-30%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1111	0.3143	0.1474	0.0501	0.0555	0.0497	0.1453	0.269	0.0169	0.0541	0.1288	0.0207	0.0299	0.0293	0.0939	0.0279	0
2	1.6952	2.233	1.3933	0.8048	0.8656	0.9279	1.8337	3.2235	0.5017	2.0158	2.9395	1.328	1.1771	1.0364	1.5091	1.1255	1.1249
3	3.4415	3.7829	2.4735	1.6307	1.9953	2.3562	4.9889	7.1882	2.1622	6.6473	8.5373	5.8099	3.5985	3.6275	4.8023	3.534	3.3231
4	4.439	4.666	3.0861	2.3626	2.8819	4.1159	7.5007	10.8787	4.339	11.6525	13.9712	9.7662	6.005	6.2897	7.1025	5.3452	5.2851
5	4.9967	5.1438	3.5674	2.8848	3.7655	5.4944	10.0125	14.0159	6.9088	16.2496	17.9646	12.9133	8.0079	7.7802	8.2218	6.5374	6.3564
6	5.2722	5.4127	3.8553	3.441	4.4992	6.8034	12.1436	16.3359	9.4256	19.234	20.3302	15.2096	9.2129	8.75	9.1185	7.4587	7.1961
7	5.4743	5.658	4.1593	3.8667	5.2373	7.9765	14.1641	17.7928	11.2526	21.0433	22.0752	16.1262	10.0352	9.4942	9.8445	8.2263	7.899
8	5.6343	5.8888	4.3689	4.3782	5.9184	9.2424	15.8986	18.6507	12.4959	22.4888	22.4353	16.7692	10.6645	10.0887	10.4463	8.8715	8.4887
9	5.8409	6.0577	4.6268	4.8002	6.6775	10.4752	17.1072	19.138	13.3859	22.8961	22.7092	17.2724	11.1517	10.5705	10.9438	9.4073	8.978
10	6.0031	6.2176	4.8732	5.2026	7.5476	11.4495	17.8822	19.5644	13.7452	23.2065	22.9102	17.6225	11.5291	10.9536	11.3417	9.8374	9.3325
11	6.1586	6.3921	5.1473	5.7338	8.2752	12.1487	18.4357	19.8152	14.0698	23.4458	23.0568	17.93	11.8763	11.31	11.7132	10.2006	9.6325
12	6.303	6.5447	5.5042	6.2757	8.8393	12.8049	18.6329	20.0288	14.3204	23.608	23.1701	18.204	12.192	11.6365	12.021	10.5027	9.8825
13	6.4475	6.8172	5.8727	6.721	9.2923	13.0521	18.8052	20.1861	14.4953	23.7264	23.2641	18.4565	12.4862	11.9135	12.2822	10.7597	10.0956
14	6.623	7.1134	6.2527	7.0787	9.6219	13.3102	18.9436	20.3018	14.6363	23.8248	23.3532	18.7155	12.762	12.1734	12.5273	11.0017	10.2964
15	6.794	7.3532	6.4946	7.3997	9.9793	13.5398	19.0463	20.3919	14.754	23.9095	23.44	18.9578	13.0208	12.4177	12.7575	11.2294	10.4856
16	6.9629	7.524	6.7527	7.7489	10.2934	13.7206	19.1255	20.4639	14.8542	23.9847	23.5199	19.1846	13.2639	12.6474	12.9739	11.4441	10.664
17	7.1162	7.721	7.0273	8.0528	10.547	13.8682	19.1882	20.5225	14.9414	24.0531	23.5934	19.397	13.4921	12.8632	13.1773	11.6464	10.8322
18	7.2839	7.9223	7.2648	8.2995	10.7574	13.9923	19.2397	20.5716	15.0212	24.1158	23.6615	19.596	13.7066	13.0666	13.3688	11.8372	10.9909
19	7.4499	8.0927	7.4585	8.5048	10.9355	14.0983	19.2826	20.6159	15.0943	24.1733	23.7245	19.7826	13.9083	13.2581	13.5491	12.0172	11.1407
20	7.5893	8.2313	7.6201	8.6787	11.0881	14.1908	19.3216	20.6564	15.1617	24.2266	23.7832	19.9577	14.0982	13.4387	13.719	12.1872	11.2821
21	7.7031	8.3467	7.757	8.8274	11.2208	14.2766	19.3571	20.6935	15.2238	24.2759	23.8378	20.1221	14.277	13.6091	13.8794	12.3478	11.4156
22	7.7986	8.4442	7.8736	8.9561	11.3456	14.3562	19.3894	20.7276	15.2812	24.3216	23.8887	20.2764	14.4455	13.7699	14.0306	12.4995	11.5417
23	7.88	8.5269	7.9737	9.0779	11.4632	14.4304	19.4192	20.7591	15.3345	24.3643	23.9363	20.4215	14.6044	13.9218	14.1734	12.643	11.6608
24	7.9503	8.5974	8.0691	9.193	11.5739	14.4996	19.4468	20.7883	15.3841	24.4041	23.9809	20.5579	14.7543	14.0654	14.3083	12.7787	11.7733
25	8.0123	8.6646	8.1599	9.3019	11.6784	14.5646	19.4726	20.8156	15.4304	24.4415	24.0228	20.6862	14.8958	14.2013	14.436	12.9071	11.8797
26	8.0712	8.7285	8.2464	9.4051	11.777	14.6255	19.4966	20.8413	15.4737	24.4767	24.0622	20.807	15.0294	14.3299	14.5568	13.0288	11.9802
27	8.1271	8.7894	8.3287	9.5026	11.8701	14.6827	19.5191	20.8652	15.5142	24.5098	24.0993	20.9207	15.1557	14.4518	14.6711	13.1439	12.0752
28	8.1803	8.8474	8.4071	9.595	11.9581	14.7366	19.5404	20.8878	15.5523	24.541	24.1342	21.0278	15.2751	14.5673	14.7794	13.253	12.1651
29	8.2309	8.9026	8.4816	9.6825	12.0413	14.7874	19.5604	20.9092	15.5881	24.5705	24.1672	21.1287	15.3879	14.6768	14.8821	13.3564	12.2501
30	8.2789	8.9552	8.5526	9.7653	12.12	14.8354	19.5792	20.9293	15.6217	24.5983	24.1983	21.2237	15.4946	14.7806	14.9793	13.4543	12.3304

Conditional Claim Rates for LTV Category

30-75%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0	0	0	0.017	0	0	0.0325	0	0	0.011	0.0038	0	0.0012	0	0.0044	0	0
2	0.0534	0.0879	0.0596	0.0518	0.0816	0.1644	0.3375	0.3585	0.0798	0.1831	0.1423	0.0589	0.0895	0.1093	0.156	0.1487	0.1122
3	0.1963	0.0945	0.1477	0.0912	0.1433	0.3146	0.8083	1.0052	0.33	0.5295	0.7827	0.3674	0.2545	0.4674	0.3947	0.4002	0.3952
4	0.0926	0.1742	0.0918	0.1891	0.1703	0.623	0.5793	1.3764	0.4275	1.1437	1.7692	0.548	0.372	0.5031	0.569	0.4861	0.5043
5	0.103	0.1519	0.0718	0.058	0.2939	0.2971	0.9052	1.4645	0.6423	1.8373	1.5039	0.5723	0.3585	0.5917	0.5366	0.5575	0.474
6	0.0756	0.3964	0.0244	0.0977	0.2274	0.5526	0.8054	1.6301	1.2119	1.4767	1.1608	0.5392	0.5408	0.5129	0.5296	0.5232	0.4522
7	0.0396	0.0816	0.0248	0.1215	0.182	0.4494	1.1466	2.379	1.0783	1.5177	0.9836	0.6156	0.5153	0.5017	0.5346	0.5438	0.4746
8	0.0811	0.0828	0.0512	0.2709	0.3228	0.5083	1.3578	1.4126	0.7547	0.8096	0.4691	0.4173	0.342	0.3418	0.3792	0.3921	0.3399
9	0.082	0.1282	0.0794	0.0432	0.4057	0.8543	0.8053	0.594	0.5614	0.4955	0.4075	0.3479	0.2784	0.2923	0.3323	0.3435	0.2972
10	0.0424	0.0443	0.0275	0.2799	0.4529	0.7603	0.9293	0.6344	0.5388	0.5651	0.4282	0.3328	0.2933	0.3177	0.3629	0.375	0.297
11	0.1762	0.1386	0.2347	0.0256	0.3642	0.4052	0.4007	0.5203	0.4782	0.4345	0.3012	0.266	0.2451	0.2683	0.3074	0.2916	0.231
12	0.0914	0.0982	0.032	0.1359	0.3353	0.4387	0.4538	0.5376	0.4219	0.3412	0.2584	0.2505	0.234	0.2582	0.2724	0.2583	0.2048
13	0.0486	0.0535	0.0685	0.2026	0.2202	0.3054	0.3986	0.3966	0.2783	0.2361	0.1958	0.2003	0.1892	0.1935	0.2041	0.1925	0.1531
14	0	0.1147	0.0366	0.0929	0.2507	0.3379	0.381	0.3362	0.2434	0.2136	0.1929	0.2051	0.1795	0.1839	0.194	0.1828	0.1456
15	0	0	0.078	0.2048	0.2837	0.3171	0.3215	0.292	0.2177	0.1963	0.1936	0.1935	0.1695	0.1746	0.1841	0.1724	0.1379
16	0.1193	0	0.1547	0.233	0.2568	0.2661	0.2804	0.2597	0.1976	0.1845	0.1848	0.1835	0.1604	0.1657	0.1746	0.1635	0.1309
17	0.0634	0.1363	0.171	0.2101	0.2141	0.2311	0.2497	0.2325	0.1823	0.1765	0.1763	0.1737	0.1517	0.157	0.1654	0.1549	0.1242
18	0.1186	0.1455	0.1521	0.1725	0.1819	0.2047	0.223	0.2095	0.1733	0.1684	0.1678	0.1635	0.1424	0.1485	0.1564	0.1458	0.1174
19	0.123	0.1274	0.1258	0.1479	0.1592	0.1834	0.2015	0.2002	0.1649	0.1603	0.1594	0.1545	0.1343	0.1403	0.1476	0.1379	0.1111
20	0.107	0.1054	0.1077	0.129	0.1393	0.1656	0.1916	0.1903	0.1561	0.1522	0.1512	0.1452	0.1258	0.1314	0.1381	0.1295	0.1048
21	0.0893	0.0903	0.0939	0.1135	0.1239	0.157	0.1821	0.1809	0.1479	0.1442	0.143	0.1368	0.1184	0.1237	0.13	0.1221	0.099
22	0.0771	0.0787	0.0821	0.1006	0.1175	0.1486	0.1725	0.1714	0.1398	0.1362	0.135	0.1287	0.1112	0.1162	0.1222	0.1149	0.0933
23	0.0678	0.0687	0.0722	0.0957	0.1105	0.1399	0.1624	0.1613	0.1313	0.1281	0.127	0.1204	0.1037	0.1083	0.1138	0.1075	0.0877
24	0.0602	0.0601	0.0692	0.0911	0.1044	0.1316	0.1526	0.1517	0.1234	0.1202	0.1191	0.1129	0.097	0.1013	0.1066	0.1008	0.0824
25	0.0542	0.0576	0.0661	0.0864	0.0979	0.1228	0.1424	0.1415	0.115	0.1122	0.1107	0.1052	0.0901	0.094	0.0989	0.0939	0.0771
26	0.0519	0.0552	0.0632	0.082	0.0922	0.1147	0.1324	0.1317	0.1072	0.1042	0.1031	0.0982	0.0839	0.0876	0.0921	0.0877	0.0722
27	0.0497	0.0528	0.0603	0.0777	0.0866	0.1067	0.1224	0.1219	0.0994	0.0963	0.0956	0.0914	0.0779	0.0813	0.0855	0.0816	0.0674
28	0.0475	0.0504	0.0575	0.0734	0.0808	0.0976	0.1112	0.1108	0.0907	0.0875	0.0874	0.0845	0.0718	0.0749	0.0788	0.0755	0.0626
29	0.0454	0.048	0.0547	0.0693	0.0755	0.0901	0.1014	0.1013	0.0835	0.0801	0.0804	0.0782	0.0663	0.0691	0.0727	0.0699	0.0582
30	0.0432	0.0457	0.052	0.0652	0.0703	0.0827	0.0917	0.0918	0.0764	0.0727	0.0736	0.0721	0.0609	0.0634	0.0667	0.0644	0.0538

Cumulative Claim Rates for LTV Category

30-75%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0	0	0	0.017	0	0	0.0325	0	0	0.011	0.0038	0	0.0012	0	0.0044	0	0
2	0.0529	0.0868	0.0588	0.068	0.0808	0.1633	0.368	0.3557	0.0792	0.193	0.1447	0.0583	0.0901	0.108	0.159	0.147	0.1123
3	0.2382	0.1735	0.196	0.1529	0.2194	0.4704	1.1583	1.0585	0.3987	0.7003	0.7693	0.3975	0.3364	0.5524	0.5345	0.5275	0.4751
4	0.3175	0.3181	0.2743	0.3229	0.3811	1.0714	1.6346	1.863	0.7925	1.4778	1.7101	0.8788	0.6836	1.0051	1.042	0.9406	0.897
5	0.3969	0.4338	0.3331	0.3738	0.6582	1.3458	2.3057	2.5489	1.2234	2.2884	2.3918	1.3555	1.0032	1.5032	1.4649	1.3657	1.265
6	0.4499	0.723	0.3527	0.4588	0.8661	1.8358	2.8361	3.0146	1.746	2.8398	2.8603	1.7769	1.4623	1.8847	1.8317	1.7305	1.5931
7	0.4763	0.7808	0.3723	0.5607	1.0277	2.2147	3.3882	3.4973	2.1447	3.3416	3.2107	2.2246	1.8643	2.2212	2.1728	2.0864	1.9207
8	0.5292	0.8386	0.4115	0.7816	1.3048	2.5871	3.8536	3.7429	2.3948	3.5787	3.355	2.5085	2.11	2.4338	2.3994	2.3299	2.1456
9	0.5822	0.9254	0.4703	0.8156	1.6282	3.0966	4.0918	3.8361	2.5607	3.707	3.4645	2.7269	2.2957	2.6035	2.5864	2.5329	2.334
10	0.6086	0.9543	0.4899	1.0195	1.9515	3.5082	4.3408	3.9292	2.6992	3.8251	3.5617	2.92	2.4776	2.7759	2.7786	2.743	2.5136
11	0.7145	1.0411	0.6467	1.0365	2.194	3.7107	4.4382	4.0006	2.8034	3.8962	3.6211	3.0643	2.6203	2.913	2.9323	2.898	2.647
12	0.7674	1.0989	0.6663	1.1215	2.4018	3.9132	4.5377	4.0497	2.8769	3.9402	3.6655	3.1914	2.748	3.0365	3.0601	3.0276	2.7594
13	0.7939	1.1278	0.7055	1.2404	2.5289	4.0416	4.5933	4.0723	2.9163	3.9648	3.695	3.286	2.844	3.1224	3.1491	3.1182	2.8387
14	0.7939	1.1857	0.7251	1.2914	2.6648	4.1529	4.618	4.0835	2.9434	3.9823	3.7198	3.3745	2.9269	3.1965	3.2262	3.1972	2.9086
15	0.7939	1.1857	0.7643	1.3972	2.8015	4.2341	4.6312	4.0904	2.9637	3.9956	3.7414	3.4509	2.9983	3.2608	3.2932	3.266	2.9701
16	0.8468	1.1857	0.8379	1.5068	2.9092	4.2885	4.6392	4.0949	2.9793	4.006	3.7594	3.5172	3.06	3.3165	3.3515	3.3262	3.0244
17	0.8732	1.2425	0.9127	1.5953	2.9883	4.3273	4.6444	4.0981	2.9916	4.0143	3.7745	3.5748	3.1134	3.3648	3.4021	3.3789	3.0723
18	0.9202	1.298	0.9736	1.6611	3.0486	4.357	4.6481	4.1004	3.0017	4.0211	3.7871	3.6246	3.1594	3.4068	3.4461	3.4248	3.1144
19	0.9645	1.3422	1.0198	1.7127	3.0967	4.3801	4.6508	4.1022	3.0101	4.0268	3.7978	3.6679	3.1993	3.4432	3.4845	3.4651	3.1515
20	0.9994	1.3756	1.0564	1.7544	3.1353	4.3987	4.653	4.1036	3.0172	4.0315	3.807	3.7055	3.2337	3.4747	3.5177	3.5002	3.1842
21	1.0258	1.402	1.0863	1.7885	3.167	4.4145	4.6548	4.1048	3.0232	4.0354	3.8148	3.7381	3.2636	3.5022	3.5467	3.531	3.213
22	1.0468	1.4235	1.1108	1.8167	3.1947	4.4277	4.6562	4.1068	3.0283	4.0388	3.8214	3.7665	3.2895	3.526	3.5719	3.558	3.2383
23	1.0639	1.4409	1.131	1.8417	3.2188	4.439	4.6574	4.1066	3.0326	4.0416	3.8272	3.7911	3.3119	3.5467	3.5938	3.5815	3.2605
24	1.0781	1.4553	1.1491	1.8639	3.2399	4.4487	4.6584	4.1073	3.0362	4.044	3.8321	3.8125	3.3313	3.5647	3.6129	3.6021	3.2801
25	1.09	1.4681	1.1654	1.8836	3.2583	4.457	4.6593	4.1079	3.0394	4.0461	3.8363	3.831	3.3481	3.5803	3.6295	3.6201	3.2972
26	1.1006	1.4796	1.18	1.901	3.2744	4.4642	4.66	4.1084	3.0421	4.0478	3.84	3.8471	3.3627	3.5938	3.644	3.6358	3.3122
27	1.1101	1.4899	1.193	1.9165	3.2885	4.4703	4.6606	4.1089	3.0444	4.0494	3.8431	3.861	3.3752	3.6056	3.6565	3.6495	3.3254
28	1.1186	1.4991	1.2047	1.9301	3.3008	4.4755	4.6612	4.1092	3.0464	4.0506	3.8458	3.873	3.3861	3.6158	3.6674	3.6615	3.3368
29	1.1262	1.5074	1.2151	1.9422	3.3116	4.48	4.6616	4.1095	3.0481	4.0518	3.8482	3.8834	3.3955	3.6246	3.6769	3.6718	3.3468
30	1.1329	1.5147	1.2243	1.9528	3.3209	4.4839	4.662	4.1098	3.0495	4.0527	3.8502	3.8924	3.4035	3.6323	3.6851	3.6808	3.3555

Policy Year	Conditional Claim Rates for LTV Category 75-85%																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0203	0	0	0	0	0.0074	0.0404	0.0504	0.0082	0.0066	0.0187	0.0011	0.0223	0.0057	0.0059	0.0028	0.0001
2	0.1019	0.1778	0.0437	0.0754	0.0743	0.2981	0.8497	1.6836	0.2641	0.4833	0.4666	0.2571	0.3161	0.3356	0.2449	0.1713	0.3
3	0.2758	0.2364	0.1079	0.0635	0.4016	0.6829	2.1806	2.6406	0.7878	1.5352	1.7429	1.1467	0.7661	0.7218	0.6786	0.9625	1.0005
4	0.3261	0.2632	0.133	0.1313	0.2416	0.9437	2.405	3.0199	1.2148	2.744	3.6614	1.3882	0.9312	1.0346	1.451	1.2661	1.2566
5	0.2339	0.258	0.1036	0.217	0.5506	0.7069	2.2344	2.7093	1.9516	4.1173	3.3416	1.2438	0.938	1.5266	1.4478	1.4405	1.1327
6	0.0846	0.1817	0.0705	0.1855	0.3286	0.8296	2.145	4.2802	3.0756	3.6727	2.6251	1.1625	1.3027	1.3506	1.3748	1.2809	1.038
7	0.0886	0.031	0.0533	0.1562	0.269	0.8487	2.7789	4.3313	2.5228	2.5026	2.0194	1.2699	1.1846	1.1642	1.2016	1.1675	0.9695
8	0.0301	0.1569	0.0917	0.2316	0.4427	0.983	3.2816	2.6196	1.8388	1.9023	1.1352	1.0308	0.8548	0.8505	0.9259	0.9268	0.7632
9	0.1825	0.0322	0.0944	0.1474	0.3844	1.6043	1.9847	1.8542	1.6665	1.3204	1.0838	0.8982	0.7166	0.7611	0.8607	0.8605	0.7076
10	0.0944	0.1328	0.0977	0.2167	0.4435	1.2815	1.5674	1.5193	1.082	1.2365	0.8952	0.6595	0.5874	0.6545	0.7433	0.7425	0.5596
11	0.0652	0.069	0.1045	0.3237	0.495	0.6764	1.6316	1.126	1.0337	0.9915	0.6449	0.5399	0.5102	0.576	0.656	0.6028	0.4548
12	0.068	0.1478	0.1374	0.2542	0.5657	0.8037	0.9786	1.2909	0.9621	0.8156	0.5829	0.5371	0.5147	0.5875	0.6177	0.5669	0.4282
13	0.1088	0.0805	0.0732	0.1956	0.4617	0.5276	0.7751	0.8315	0.5396	0.4889	0.3853	0.3692	0.3595	0.3826	0.4021	0.3654	0.2776
14	0.1193	0.086	0.2058	0.0516	0.3644	0.5802	0.7295	0.6808	0.4527	0.4319	0.368	0.3627	0.3282	0.351	0.3689	0.3347	0.2548
15	0	0.0457	0.0548	0.2566	0.4175	0.5208	0.5893	0.5724	0.3926	0.3867	0.3573	0.3277	0.2972	0.3216	0.3378	0.3033	0.2326
16	0.1325	0.0494	0.1671	0.2976	0.3618	0.4139	0.4984	0.4995	0.3458	0.3538	0.3305	0.2986	0.2704	0.2942	0.309	0.2773	0.2131
17	0.0942	0.1398	0.1879	0.2596	0.2848	0.3441	0.4355	0.4382	0.3092	0.3289	0.3052	0.2717	0.2457	0.2688	0.2823	0.2532	0.195
18	0.1115	0.1516	0.1618	0.1992	0.2295	0.2949	0.3794	0.3851	0.2837	0.3045	0.281	0.2447	0.2204	0.245	0.2569	0.2287	0.1774
19	0.1174	0.1289	0.1263	0.1637	0.1944	0.2557	0.3348	0.3585	0.2608	0.2812	0.2581	0.2219	0.1996	0.2228	0.2334	0.2081	0.1618
20	0.099	0.1007	0.1039	0.1383	0.1633	0.2226	0.3087	0.3306	0.2378	0.2585	0.2362	0.1992	0.1785	0.1996	0.209	0.1874	0.1468
21	0.0783	0.083	0.0882	0.1181	0.1403	0.2034	0.2848	0.3049	0.2172	0.2366	0.2154	0.1799	0.1609	0.1806	0.1891	0.1699	0.1334
22	0.0651	0.0705	0.0751	0.1015	0.128	0.1852	0.2614	0.2799	0.1975	0.2158	0.1957	0.162	0.1446	0.1629	0.1705	0.1536	0.121
23	0.0558	0.0598	0.0641	0.093	0.1151	0.1671	0.2373	0.2542	0.178	0.1955	0.1769	0.1445	0.1285	0.1448	0.1517	0.1374	0.109
24	0.0482	0.051	0.0595	0.0855	0.1045	0.1507	0.2149	0.2304	0.1603	0.1762	0.1592	0.1293	0.1148	0.1298	0.136	0.1235	0.0983
25	0.0421	0.0473	0.0551	0.0781	0.0936	0.1341	0.1922	0.2063	0.1426	0.1576	0.1411	0.1147	0.1014	0.1147	0.1202	0.1099	0.0882
26	0.0392	0.0439	0.0509	0.0714	0.0845	0.1195	0.1712	0.184	0.1268	0.14	0.1255	0.1019	0.0899	0.102	0.107	0.0981	0.079
27	0.0364	0.0407	0.047	0.0652	0.0759	0.1057	0.151	0.1626	0.1119	0.1233	0.1108	0.0902	0.0793	0.0903	0.0947	0.0871	0.0705
28	0.0336	0.0375	0.0432	0.0591	0.0674	0.091	0.1295	0.1397	0.096	0.1056	0.0957	0.0791	0.0692	0.0789	0.0828	0.0767	0.0626
29	0.031	0.0346	0.0397	0.0536	0.0601	0.0796	0.1117	0.121	0.0837	0.0915	0.0835	0.0693	0.0605	0.0691	0.0726	0.0675	0.0554
30	0.0286	0.0318	0.0363	0.0484	0.0533	0.069	0.0951	0.1034	0.0723	0.0784	0.0722	0.0604	0.0525	0.0601	0.0632	0.0591	0.0485

Cumulative Claim Rates for LTV Category
75-85%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0203	0	0	0	0	0.0074	0.0404	0.0504	0.0082	0.0066	0.0187	0.0011	0.0223	0.0057	0.0059	0.0028	0.0001
2	0.1215	0.1764	0.0432	0.0745	0.074	0.3034	0.8883	1.7243	0.2712	0.4882	0.483	0.2563	0.337	0.3389	0.2492	0.1732	0.3001
3	0.3848	0.3968	0.144	0.1341	0.4686	0.9693	3.0282	3.6604	1.0437	1.9793	1.9227	1.333	1.0855	1.0367	0.9047	1.1041	1.2348
4	0.6684	0.6173	0.2591	0.2533	0.7028	1.8794	5.0469	5.5158	2.1914	3.8992	3.9981	2.578	1.9678	1.9936	2.2301	2.2098	2.3137
5	0.8507	0.8157	0.3455	0.447	1.233	2.5379	6.7326	6.8569	3.5912	5.7333	5.5968	3.6382	2.821	3.3222	3.4069	3.346	3.2186
6	0.9115	0.948	0.4031	0.6109	1.5413	3.2852	8.1659	8.188	5.0238	7.0924	6.6937	4.572	3.9543	4.3677	4.3925	4.2687	3.9947
7	0.9723	0.97	0.4463	0.745	1.7879	4.0178	9.4983	9.1056	6.0154	7.8973	7.426	5.5254	4.9046	5.1804	5.1812	5.0548	4.6839
8	0.9925	1.0802	0.5183	0.9388	2.1825	4.7577	10.6087	9.5694	6.651	8.4317	7.775	6.25	5.5362	5.7278	5.7465	5.644	5.2026
9	1.114	1.1023	0.5903	1.058	2.5031	5.7344	11.184	9.8619	7.1577	8.7578	8.0635	6.8336	6.0271	6.1832	6.2387	6.1626	5.6628
10	1.1748	1.1905	0.6623	1.2219	2.836	6.4373	11.5878	10.0837	7.4404	8.9984	8.2626	7.2294	6.4011	6.548	6.6369	6.5851	6.0096
11	1.2153	1.2346	0.7342	1.4454	3.1813	6.7777	11.9713	10.2368	7.6675	9.1444	8.3854	7.5326	6.7061	6.8497	6.9674	6.9099	6.279
12	1.2558	1.3228	0.8206	1.6093	3.5512	7.1476	12.1807	10.3454	7.8352	9.236	8.481	7.8153	6.9952	7.1377	7.2588	7.1985	6.5208
13	1.3166	1.3668	0.8638	1.7285	3.8348	7.3698	12.2831	10.3879	7.912	9.2801	8.5366	7.9979	7.1843	7.3127	7.4361	7.3736	6.6698
14	1.3774	1.4109	0.979	1.7583	4.0445	7.5657	12.323	10.4067	7.963	9.3104	8.5822	8.1635	7.3432	7.4598	7.5854	7.5224	6.7979
15	1.3774	1.433	1.0078	1.8982	4.2623	7.7055	12.3423	10.4175	8.0001	9.3328	8.6208	8.302	7.476	7.584	7.7115	7.6479	6.9077
16	1.4381	1.455	1.0909	2.0488	4.4303	7.7949	12.3529	10.4244	8.028	9.3499	8.6522	8.4189	7.5877	7.6888	7.8181	7.7546	7.0022
17	1.4786	1.5139	1.1785	2.1692	4.5484	7.8564	12.3595	10.429	8.0493	9.3631	8.6776	8.5176	7.6816	7.7771	7.908	7.8454	7.0835
18	1.5238	1.5735	1.2489	2.254	4.6349	7.9021	12.364	10.4322	8.0664	9.3737	8.6985	8.6002	7.7598	7.8517	7.9841	7.922	7.153
19	1.568	1.6205	1.3	2.3187	4.7022	7.9369	12.3672	10.4347	8.0803	9.3822	8.7156	8.6699	7.8256	7.9147	8.0482	7.9872	7.2128
20	1.6024	1.6545	1.3394	2.3699	4.7548	7.964	12.3697	10.4367	8.0916	9.3891	8.7299	8.7283	7.8805	7.9673	8.1019	8.0423	7.2638
21	1.6276	1.6808	1.3711	2.4111	4.7969	7.9863	12.3716	10.4382	8.1008	9.3947	8.7417	8.7776	7.9267	8.0118	8.1472	8.0892	7.3076
22	1.6471	1.7018	1.3966	2.4444	4.8325	8.0045	12.3731	10.4395	8.1084	9.3993	8.7515	8.819	7.9654	8.0492	8.1855	8.1289	7.3451
23	1.6628	1.7186	1.4173	2.4731	4.8625	8.0195	12.3744	10.4405	8.1146	9.4031	8.7596	8.8537	7.9977	8.0805	8.2175	8.1624	7.377
24	1.6756	1.7322	1.4355	2.4981	4.888	8.0319	12.3754	10.4413	8.1197	9.4063	8.7664	8.8828	8.0247	8.1067	8.2444	8.1908	7.4042
25	1.6861	1.7441	1.4514	2.5196	4.9094	8.0421	12.3762	10.442	8.124	9.4089	8.772	8.9071	8.0472	8.1287	8.2668	8.2147	7.4273
26	1.6953	1.7545	1.4654	2.5381	4.9276	8.0506	12.3769	10.4425	8.1275	9.411	8.7767	8.9274	8.0659	8.1471	8.2857	8.2348	7.4468
27	1.7034	1.7637	1.4776	2.5541	4.9429	8.0576	12.3774	10.443	8.1304	9.4128	8.7805	8.9443	8.0815	8.1624	8.3015	8.2517	7.4634
28	1.7105	1.7717	1.4882	2.5678	4.9558	8.0632	12.3779	10.4434	8.1327	9.4142	8.7837	8.9583	8.0944	8.1752	8.3146	8.2658	7.4774
29	1.7166	1.7786	1.4974	2.5796	4.9666	8.0679	12.3782	10.4437	8.1347	9.4154	8.7863	8.9699	8.105	8.1858	8.3255	8.2776	7.4891
30	1.722	1.7847	1.5054	2.5896	4.9757	8.0717	12.3785	10.4439	8.1362	9.4164	8.7884	8.9795	8.1138	8.1945	8.3345	8.2874	7.4989

Conditional Claim Rates for LTV Category

85-90%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.019	0.0211	0	0.0093	0.0086	0	0.0113	0.0606	0.0127	0.0078	0.0164	0.0041	0.0095	0.004	0.0071	0.0095	0
2	0.1909	0.2436	0.1276	0.1304	0.1634	0.3416	0.5196	0.8865	0.2537	0.6002	0.5915	0.2708	0.2142	0.2371	0.1988	0.2043	0.2268
3	0.2746	0.3204	0.2894	0.2598	0.417	0.7905	1.698	2.4881	1.0683	2.8852	2.8505	1.2712	0.7359	0.7682	0.6343	0.8748	0.8917
4	0.3617	0.374	0.2206	0.345	0.4036	0.8893	2.035	3.223	1.4369	4.2278	5.281	1.8169	0.9634	1.0834	1.4382	1.2001	1.2213
5	0.2501	0.3291	0.1006	0.2601	0.3802	0.9536	2.0963	3.547	2.3757	5.8371	4.4739	1.7245	1.1017	1.5759	1.4372	1.4407	1.185
6	0.2085	0.1919	0.1673	0.2523	0.3249	0.7806	2.1519	4.9548	3.3096	4.619	3.3971	1.5986	1.2853	1.2763	1.3136	1.264	1.0578
7	0.1495	0.1259	0.1123	0.248	0.3781	1.0026	2.9946	4.4662	3.0729	3.4343	2.8264	1.487	1.1421	1.1229	1.2055	1.192	1.0033
8	0.1249	0.141	0.1156	0.18	0.5209	1.3145	3.9601	3.1048	2.0861	2.7785	1.396	1.2139	0.8623	0.8833	0.9866	0.9842	0.8228
9	0.0979	0.0873	0.0694	0.2292	0.6572	1.6951	2.7653	1.8759	1.6196	1.5247	1.1649	0.9665	0.6779	0.7321	0.8327	0.8292	0.6936
10	0.1442	0.1049	0.1333	0.257	0.6235	1.3282	2.3529	1.5835	1.3385	1.4818	1.0416	0.7862	0.6087	0.6768	0.7734	0.7692	0.5889
11	0.045	0.1398	0.1093	0.4342	0.7526	1.3219	1.8757	1.7512	1.5115	1.4627	0.9447	0.8016	0.6459	0.729	0.8358	0.7616	0.5845
12	0.0311	0.0499	0.1318	0.2873	0.6007	0.9077	0.8548	1.3686	1.0058	0.8801	0.6167	0.5657	0.4626	0.5287	0.5579	0.5075	0.3911
13	0.033	0.1271	0.1665	0.2475	0.5878	0.5041	0.7315	0.9905	0.6531	0.6033	0.4572	0.4365	0.3631	0.3864	0.4076	0.3667	0.2849
14	0.1083	0.0964	0.2045	0.1542	0.3494	0.5336	0.6696	0.8203	0.5535	0.5285	0.4339	0.4268	0.329	0.3523	0.3718	0.3337	0.2605
15	0.0961	0.1221	0.1298	0.2361	0.3868	0.4802	0.5512	0.6954	0.4758	0.4704	0.4192	0.3824	0.2955	0.3209	0.3386	0.3004	0.2367
16	0.1422	0.151	0.1509	0.2648	0.3368	0.3913	0.4699	0.6012	0.416	0.4285	0.3852	0.3456	0.2668	0.2919	0.308	0.2729	0.216
17	0.0214	0.1264	0.1639	0.2318	0.2727	0.3291	0.4067	0.5236	0.3695	0.3969	0.3534	0.312	0.2405	0.2651	0.2798	0.2477	0.1969
18	0.0966	0.1322	0.1418	0.1828	0.2229	0.2798	0.3521	0.4578	0.3373	0.3665	0.3234	0.2786	0.214	0.2403	0.2533	0.2224	0.1785
19	0.0979	0.1129	0.1138	0.1522	0.1877	0.2409	0.3091	0.4253	0.3086	0.3376	0.2952	0.2506	0.1923	0.2174	0.229	0.2012	0.1623
20	0.0826	0.0908	0.095	0.1277	0.1569	0.2085	0.2845	0.3916	0.2802	0.3098	0.2686	0.2231	0.1705	0.1936	0.2039	0.1802	0.1467
21	0.0671	0.076	0.0802	0.1083	0.1342	0.1898	0.262	0.3609	0.2547	0.2833	0.2436	0.1998	0.1526	0.1743	0.1837	0.1624	0.1325
22	0.0564	0.0642	0.0678	0.0925	0.1222	0.1721	0.2402	0.3312	0.2307	0.2581	0.2202	0.1785	0.1361	0.1564	0.165	0.1461	0.1202
23	0.048	0.0542	0.0576	0.0845	0.1097	0.1547	0.218	0.3009	0.2072	0.2338	0.1981	0.1579	0.12	0.1384	0.1461	0.1301	0.1081
24	0.0412	0.0459	0.0534	0.0774	0.0995	0.1391	0.1974	0.273	0.186	0.2107	0.1774	0.1402	0.1064	0.1235	0.1305	0.1164	0.0973
25	0.0358	0.0426	0.0493	0.0705	0.089	0.1234	0.1767	0.2448	0.165	0.1887	0.1566	0.1233	0.0932	0.1087	0.115	0.1031	0.087
26	0.0331	0.0395	0.0455	0.0643	0.0802	0.1096	0.1575	0.2187	0.1464	0.1678	0.1387	0.1087	0.0821	0.0963	0.102	0.0917	0.0779
27	0.0306	0.0365	0.0419	0.0585	0.0721	0.0968	0.1392	0.1938	0.1289	0.1481	0.1221	0.0955	0.0719	0.085	0.0901	0.0812	0.0695
28	0.0281	0.0336	0.0385	0.0529	0.064	0.0832	0.1197	0.1672	0.1104	0.1272	0.1051	0.0831	0.0623	0.074	0.0786	0.0712	0.0616
29	0.0259	0.031	0.0353	0.0478	0.0571	0.0727	0.1037	0.1454	0.0962	0.1107	0.0915	0.0723	0.0541	0.0647	0.0688	0.0625	0.0545
30	0.0237	0.0284	0.0323	0.0431	0.0506	0.063	0.0886	0.125	0.0831	0.0953	0.079	0.0625	0.0467	0.0562	0.0599	0.0546	0.048

Cumulative Claim Rates for LTV Category

85-90%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.019	0.0211	0	0.0093	0.0086	0	0.0113	0.0606	0.0127	0.0078	0.0164	0.0041	0.0095	0.004	0.0071	0.0095	0
2	0.2093	0.2636	0.1271	0.1388	0.1716	0.3409	0.5301	0.9456	0.2658	0.6072	0.6064	0.2735	0.2233	0.2405	0.2052	0.2133	0.2269
3	0.4757	0.5694	0.4052	0.3887	0.5836	1.1237	2.2104	2.9094	1.3193	3.4252	3.032	1.4857	0.9486	0.994	0.8245	1.0681	1.069
4	0.7992	0.8963	0.6038	0.7127	0.9784	1.9948	3.9923	5.14	2.6861	6.4767	6.1896	3.1497	1.8743	2.0161	2.1597	2.1411	2.1396
5	0.999	1.16	0.6912	0.9534	1.3474	2.9039	5.6953	7.1524	4.4167	9.3103	8.4403	4.6499	2.8916	3.4201	3.3577	3.3131	3.1067
6	1.1512	1.3076	0.8342	1.1847	1.6564	3.6235	7.2742	8.8132	6.0335	11.1552	9.9153	5.9533	4.0256	4.4371	4.3324	4.2518	3.912
7	1.2558	1.4025	0.9295	1.4069	2.0082	4.5136	8.9094	9.8072	7.3053	12.3385	10.9642	7.0838	4.9619	5.2545	5.1566	5.0802	4.6373
8	1.3415	1.508	1.0249	1.5642	2.4803	5.5426	10.5222	10.3891	8.0615	13.1558	11.3997	7.9471	5.6172	5.8485	5.7829	5.7232	5.2035
9	1.408	1.5712	1.0805	1.7586	3.0381	6.6473	11.492	10.7043	8.5772	13.5399	11.7163	8.5843	6.0957	6.3048	6.2753	6.2334	5.6577
10	1.5032	1.645	1.1838	1.9622	3.5187	7.4301	12.2364	10.9468	8.9433	13.8442	11.9594	9.0656	6.4961	6.697	6.7021	6.6784	6.0239
11	1.5317	1.74	1.2632	2.2769	4.0594	8.1497	12.7777	11.1965	9.2973	14.0827	12.1508	9.5246	6.8944	7.0919	7.1331	7.0934	6.3699
12	1.5508	1.7716	1.3506	2.4713	4.4628	8.6043	13.0022	11.3323	9.4925	14.197	12.2597	9.8279	7.1617	7.3586	7.4012	7.3532	6.5895
13	1.5698	1.8454	1.4539	2.6287	4.8318	8.8344	13.138	11.4013	9.5999	14.2618	12.3313	10.0477	7.3584	7.5401	7.5838	7.5296	6.7413
14	1.6269	1.8981	1.5731	2.7212	5.0384	9.0436	13.2171	11.4406	9.6768	14.3087	12.3912	10.2483	7.5243	7.6934	7.7381	7.6796	6.8722
15	1.6744	1.9614	1.6446	2.8562	5.2507	9.2057	13.264	11.466	9.7346	14.3444	12.4429	10.4166	7.6634	7.8232	7.869	7.8062	6.9847
16	1.741	2.0352	1.7229	2.9991	5.4207	9.3196	13.2937	11.4832	9.779	14.3724	12.4855	10.5591	7.7809	7.9331	7.9798	7.914	7.0817
17	1.7505	2.0936	1.804	3.1163	5.5473	9.4032	13.3134	11.4952	9.8138	14.3947	12.5204	10.6796	7.8799	8.0259	8.0736	8.0057	7.1654
18	1.7911	2.1517	1.8706	3.203	5.6433	9.4669	13.3275	11.504	9.8423	14.4129	12.5494	10.7806	7.9625	8.1046	8.153	8.0832	7.2372
19	1.8301	2.1985	1.9211	3.271	5.7189	9.5163	13.3377	11.5109	9.8657	14.4277	12.5735	10.8661	8.0322	8.1711	8.2202	8.1492	7.299
20	1.8611	2.2341	1.9612	3.325	5.7782	9.5555	13.3458	11.5164	9.8851	14.4399	12.5936	10.9378	8.0903	8.2268	8.2764	8.2049	7.352
21	1.8849	2.2623	1.9934	3.3685	5.826	9.5881	13.3523	11.5208	9.9011	14.4501	12.6104	10.9983	8.1393	8.2738	8.324	8.2523	7.3976
22	1.9038	2.285	2.0195	3.4038	5.8669	9.6151	13.3575	11.5244	9.9144	14.4584	12.6243	11.0493	8.1804	8.3135	8.3642	8.2925	7.4367
23	1.919	2.3032	2.0406	3.4344	5.9016	9.6377	13.3617	11.5274	9.9255	14.4653	12.636	11.0919	8.2147	8.3466	8.3978	8.3264	7.47
24	1.9315	2.318	2.0593	3.4612	5.9313	9.6566	13.3652	11.5298	9.9347	14.4711	12.6457	11.1277	8.2434	8.3745	8.4261	8.3551	7.4986
25	1.9418	2.331	2.0758	3.4843	5.9565	9.6722	13.368	11.5318	9.9423	14.4759	12.6538	11.1575	8.2672	8.3977	8.4498	8.3792	7.5229
26	1.9509	2.3426	2.0903	3.5044	5.978	9.6853	13.3704	11.5335	9.9487	14.48	12.6605	11.1824	8.2871	8.4173	8.4697	8.3996	7.5436
27	1.9589	2.3527	2.1031	3.5218	5.9963	9.6962	13.3723	11.5349	9.9539	14.4833	12.6661	11.2032	8.3037	8.4336	8.4863	8.4167	7.5611
28	1.9659	2.3616	2.1143	3.5368	6.0118	9.705	13.3739	11.536	9.9582	14.486	12.6706	11.2204	8.3173	8.4472	8.5002	8.431	7.5759
29	1.972	2.3695	2.124	3.5497	6.0249	9.7124	13.3752	11.5369	9.9617	14.4882	12.6744	11.2346	8.3286	8.4584	8.5117	8.443	7.5884
30	1.9774	2.3763	2.1326	3.5608	6.036	9.7184	13.3762	11.5377	9.9646	14.4901	12.6775	11.2463	8.3378	8.4678	8.5212	8.4529	7.5989

Conditional Claim Rates for LTV Category 90-93%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.021	0.0075	0.01	0.0188	0	0.0055	0.0497	0.0645	0.0207	0.0559	0.0176	0.0146	0.0068	0.01	0.0111	0	0.0002
2	0.2597	0.2868	0.1916	0.1758	0.1687	0.6109	1.1243	1.6419	0.6578	0.7671	0.5408	0.3428	0.2332	0.2685	0.1866	0.1763	0.2483
3	0.5681	0.4952	0.3133	0.3174	0.6736	0.9671	2.4095	3.5539	1.3434	2.0497	2.3868	1.4162	0.8014	0.8888	0.697	1.0054	1.0715
4	0.5199	0.446	0.1617	0.2393	0.4092	1.2754	2.4662	3.9547	1.9254	4.0898	4.8497	1.9489	1.1016	1.2727	1.7088	1.4956	1.4878
5	0.382	0.2929	0.1672	0.2359	0.5861	1.168	2.7774	4.765	3.0328	5.7032	4.671	1.9887	1.2339	1.9159	1.8353	1.8088	1.4134
6	0.2771	0.1781	0.1464	0.1972	0.6639	1.2483	2.6531	6.5738	4.5789	4.8335	3.3511	1.7695	1.5523	1.6205	1.6459	1.5137	1.2261
7	0.1803	0.1719	0.1417	0.2573	0.5884	1.2636	3.6297	6.0443	3.4854	3.7634	3.0517	1.822	1.4757	1.4306	1.4697	1.4142	1.1803
8	0.1432	0.1532	0.1214	0.1778	0.5262	1.7328	4.461	4.5692	2.6285	2.7259	1.7129	1.5677	1.0995	1.0779	1.1725	1.1654	0.9664
9	0.1136	0.1372	0.1125	0.335	0.7552	2.067	2.9079	3.0735	2.4185	1.9533	1.5815	1.3054	0.8775	0.9235	1.047	1.039	0.8623
10	0.1171	0.0654	0.1293	0.3492	1.0713	1.7327	2.532	1.0708	1.6872	1.9445	1.3733	1.0017	0.7551	0.838	0.9543	0.9457	0.7202
11	0.0989	0.1357	0.1245	0.4436	0.8785	1.5461	1.8415	2.1124	1.8461	1.7677	1.1165	0.9277	0.7444	0.8387	0.9579	0.872	0.6665
12	0.1028	0.0854	0.2971	0.3387	0.7812	1.0551	1.2578	2.0373	1.4368	1.213	0.8445	0.7736	0.6294	0.7184	0.757	0.6879	0.5278
13	0.1224	0.1607	0.122	0.4467	0.6056	0.7431	1.1203	1.4624	0.8975	0.8148	0.6271	0.5954	0.4927	0.5251	0.5531	0.4969	0.3847
14	0.1469	0.1723	0.2247	0.2176	0.4893	0.814	1.0126	1.1652	0.7411	0.7125	0.5926	0.5778	0.4437	0.4763	0.5017	0.4498	0.3499
15	0.1001	0.2592	0.1015	0.3248	0.5618	0.7207	0.8004	0.9663	0.6351	0.6327	0.5696	0.5147	0.396	0.4316	0.4545	0.4025	0.3165
16	0.0756	0.1131	0.1958	0.3782	0.4808	0.5629	0.667	0.8369	0.5535	0.5746	0.5217	0.4628	0.3555	0.3906	0.4113	0.3639	0.2875
17	0.0802	0.164	0.221	0.3263	0.3723	0.4617	0.5778	0.73	0.4898	0.5306	0.4771	0.4156	0.3187	0.353	0.3717	0.3286	0.2609
18	0.1258	0.1784	0.1884	0.2458	0.296	0.3919	0.5002	0.639	0.445	0.4882	0.4351	0.3691	0.2817	0.3183	0.3348	0.2935	0.2354
19	0.1325	0.1502	0.1445	0.1994	0.2484	0.3368	0.439	0.5935	0.4054	0.4483	0.396	0.3304	0.2517	0.2866	0.3011	0.2643	0.2132
20	0.1103	0.1157	0.1175	0.1669	0.2067	0.2907	0.4032	0.5463	0.3663	0.41	0.3592	0.2926	0.2219	0.2539	0.2667	0.2355	0.1919
21	0.0857	0.0944	0.0989	0.1412	0.1761	0.2637	0.3707	0.5033	0.3315	0.3737	0.3248	0.2608	0.1974	0.2274	0.239	0.2114	0.1732
22	0.0703	0.0796	0.0835	0.1203	0.1594	0.2383	0.3393	0.4619	0.299	0.3394	0.2928	0.232	0.1752	0.2032	0.2137	0.1893	0.156
23	0.0596	0.0671	0.0708	0.1094	0.1423	0.2135	0.3073	0.4196	0.2673	0.3065	0.2627	0.2041	0.1535	0.1789	0.1883	0.1678	0.1397
24	0.051	0.0567	0.0652	0.0998	0.1283	0.1912	0.2779	0.3807	0.2388	0.2754	0.2347	0.1805	0.1354	0.159	0.1674	0.1495	0.1253
25	0.0442	0.0524	0.0599	0.0904	0.1141	0.1691	0.2482	0.3414	0.2109	0.2459	0.2066	0.158	0.118	0.1393	0.1469	0.1319	0.1118
26	0.0407	0.0483	0.055	0.0821	0.1023	0.1498	0.2209	0.3053	0.1863	0.218	0.1826	0.1388	0.1034	0.123	0.1297	0.1169	0.0997
27	0.0374	0.0445	0.0504	0.0743	0.0914	0.1318	0.1949	0.2707	0.1634	0.1919	0.1604	0.1214	0.0902	0.1081	0.1141	0.1031	0.0886
28	0.0343	0.0408	0.0461	0.0669	0.0807	0.113	0.1673	0.2337	0.1393	0.1644	0.1379	0.1052	0.0778	0.0939	0.0992	0.0902	0.0784
29	0.0314	0.0374	0.042	0.0602	0.0716	0.0985	0.1448	0.2036	0.121	0.1427	0.1199	0.0912	0.0673	0.0818	0.0865	0.079	0.0692
30	0.0286	0.0342	0.0382	0.054	0.0632	0.0851	0.1237	0.1754	0.1041	0.1227	0.1034	0.0787	0.0578	0.0708	0.075	0.0688	0.0605

Cumulative Claim Rates for LTV Category
90-93%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.021	0.0075	0.01	0.0188	0	0.0055	0.0497	0.0645	0.0207	0.0559	0.0176	0.0146	0.0068	0.01	0.0111	0	0.0002
2	0.2801	0.2935	0.201	0.1938	0.1683	0.6154	1.1726	1.7037	0.6775	0.8214	0.5573	0.356	0.2395	0.2778	0.1971	0.1758	0.2484
3	0.8333	0.7676	0.5024	0.5001	0.8344	1.5691	3.5476	4.6076	2.0013	2.8217	2.6346	1.7168	1.0312	1.1513	0.879	1.1615	1.2695
4	1.3024	1.1589	0.6481	0.7251	1.234	2.811	5.7239	7.4471	3.8367	5.8334	5.6678	3.5178	2.0935	2.3551	2.4706	2.5068	2.5841
5	1.6105	1.3922	0.7938	0.9439	1.802	3.9144	7.9897	10.2865	6.1076	8.6271	8.1191	5.2626	3.237	4.0617	4.0081	3.9845	3.7455
6	1.8136	1.5277	0.9194	1.1251	2.433	5.0566	9.9573	12.6613	8.4719	10.566	9.6462	6.7173	4.6128	5.358	5.2344	5.1132	4.6867
7	1.9396	1.6556	1.04	1.3564	2.9799	6.1654	12.0143	14.1069	9.9824	11.8567	10.8348	8.1127	5.8246	6.3943	6.2351	6.095	5.5445
8	2.0377	1.7685	1.1405	1.5127	3.4567	7.5183	13.9223	15.0103	10.9848	12.6558	11.4023	9.2362	6.6597	7.1135	6.9748	6.8549	6.2125
9	2.1147	1.8663	1.2309	1.8002	4.1018	8.849	14.9955	15.5395	11.7901	13.1534	11.8584	10.1018	7.278	7.6839	7.5894	7.4927	6.7805
10	2.1917	1.9115	1.3314	2.0815	4.9362	9.8581	15.8402	15.7073	12.27	13.5549	12.1959	10.7177	7.7738	8.165	8.1119	8.0386	7.2309
11	2.2547	2.0018	1.4218	2.4066	5.5743	10.6897	16.3967	16.0207	12.7193	13.8391	12.4325	11.2512	8.2322	8.615	8.602	8.5127	7.6278
12	2.3178	2.0545	1.6178	2.6378	6.1071	11.2109	16.7423	16.2292	13.0063	13.9917	12.5879	11.6681	8.5958	8.9742	8.9629	8.8644	7.9265
13	2.3878	2.1448	1.6931	2.9254	6.4928	11.5471	16.958	16.3318	13.1571	14.0757	12.69	11.9699	8.863	9.2191	9.209	9.1035	8.1333
14	2.4648	2.2351	1.8238	3.0566	6.7857	11.8636	17.0741	16.3857	13.2614	14.1354	12.7747	12.2434	9.087	9.4246	9.4157	9.3057	8.311
15	2.5138	2.363	1.879	3.2413	7.0986	12.1031	17.1375	16.4192	13.3389	14.1803	12.8471	12.4714	9.2739	9.5976	9.5898	9.4753	8.463
16	2.5488	2.4157	1.9801	3.4449	7.3447	12.2633	17.1757	16.4414	13.398	14.2151	12.9063	12.6635	9.4306	9.7432	9.7365	9.6191	8.5936
17	2.5839	2.4879	2.0888	3.6097	7.5197	12.3774	17.2003	16.4567	13.4439	14.2425	12.9547	12.8252	9.5621	9.8657	9.86	9.741	8.7059
18	2.6357	2.5624	2.1768	3.7262	7.6489	12.4639	17.2176	16.4679	13.4813	14.2647	12.9946	12.9602	9.6712	9.969	9.964	9.8434	8.8018
19	2.6875	2.6218	2.2408	3.8153	7.7502	12.5308	17.2301	16.4765	13.5117	14.2825	13.0275	13.0738	9.7627	10.0559	10.0516	9.9302	8.8842
20	2.7283	2.6651	2.2903	3.886	7.8294	12.5836	17.2399	16.4834	13.5367	14.2972	13.0549	13.1688	9.8387	10.1283	10.1245	10.0033	8.9546
21	2.7582	2.6985	2.33	3.943	7.893	12.6274	17.2476	16.4889	13.5574	14.3093	13.0777	13.2486	9.9025	10.1892	10.186	10.0652	9.0145
22	2.7815	2.7254	2.3621	3.9891	7.9473	12.6636	17.2538	16.4934	13.5743	14.3191	13.0966	13.3156	9.9558	10.2404	10.2376	10.1176	9.0666
23	2.8002	2.747	2.3881	4.0291	7.993	12.6937	17.2588	16.497	13.5884	14.3273	13.1124	13.3715	10.0001	10.283	10.2806	10.1616	9.1106
24	2.8155	2.7645	2.411	4.0638	8.032	12.7187	17.2628	16.5	13.6	14.3341	13.1255	13.4182	10.037	10.3187	10.3168	10.1987	9.1481
25	2.8282	2.7798	2.4312	4.0938	8.0649	12.7395	17.2662	16.5025	13.6096	14.3397	13.1363	13.4571	10.0675	10.3484	10.3469	10.2299	9.18
26	2.8393	2.7934	2.4489	4.1197	8.0929	12.7568	17.2689	16.5046	13.6176	14.3444	13.1453	13.4895	10.0929	10.3733	10.3721	10.2561	9.2071
27	2.849	2.8053	2.4643	4.1422	8.1167	12.7711	17.2712	16.5063	13.6242	14.3483	13.1528	13.5164	10.114	10.3941	10.3932	10.2781	9.23
28	2.8575	2.8157	2.4778	4.1614	8.1367	12.7828	17.273	16.5077	13.6295	14.3515	13.1589	13.5387	10.1313	10.4112	10.4106	10.2965	9.2494
29	2.865	2.8248	2.4896	4.1779	8.1535	12.7925	17.2745	16.5088	13.6339	14.3541	13.1639	13.557	10.1455	10.4255	10.4251	10.3118	9.2657
30	2.8714	2.8327	2.4998	4.1921	8.1677	12.8004	17.2757	16.5098	13.6374	14.3562	13.1681	13.5721	10.1572	10.4373	10.4371	10.3245	9.2794

Policy Year	Conditional Claim Rates for LTV Category 93-95%																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0365	0.0354	0.008	0.0326	0.0068	0.0072	0.0486	0.0896	0.0204	0.0383	0.0204	0.0016	0.0112	0.0113	0.0039	0.0085	0.0001
2	0.2996	0.3488	0.1876	0.2727	0.2537	0.617	0.9849	1.4948	0.5189	0.7998	0.6876	0.3491	0.3125	0.3429	0.2536	0.2029	0.3184
3	0.6347	0.4245	0.3966	0.3699	0.6982	1.1513	2.8452	3.955	1.6029	2.1926	2.5453	1.5064	0.9435	0.9337	0.9139	1.19	1.2747
4	0.5672	0.4242	0.2963	0.3672	0.805	1.5204	2.4668	4.7657	2.2724	3.9079	5.0363	2.1571	1.1997	1.4006	1.9176	1.7115	1.6622
5	0.4434	0.2753	0.234	0.3324	0.7788	1.3493	3.0018	5.1064	3.5414	6.0184	5.0895	2.1184	1.2131	2.0498	2.0068	1.9551	1.4993
6	0.3501	0.1876	0.1448	0.2946	0.743	1.3925	3.3833	7.331	4.7969	5.3082	4.2847	2.1172	1.791	1.9015	1.9254	1.7516	1.3933
7	0.2728	0.1439	0.2071	0.2288	0.709	1.3567	4.8346	7.0479	3.9579	3.6126	3.5371	2.2883	1.7373	1.6753	1.7047	1.6241	1.3332
8	0.1073	0.2579	0.1453	0.2955	0.6904	1.8608	4.9654	4.7551	3.1479	3.44	2.1755	2.0302	1.3071	1.266	1.364	1.3452	1.0957
9	0.1299	0.1586	0.1447	0.2716	0.7901	1.9868	3.1826	3.2932	2.6133	2.2047	1.8311	1.5292	0.9423	0.978	1.0999	1.083	0.882
10	0.1233	0.0347	0.1545	0.3495	1.0483	2.0131	2.4227	1.87	1.9452	2.2402	1.617	1.197	0.8234	0.9012	1.0177	1.0007	0.7522
11	0.0926	0.0901	0.1708	0.4268	0.9352	1.5269	2.0765	2.1848	1.9533	1.874	1.2137	1.0141	0.7425	0.8237	0.9327	0.8487	0.6396
12	0.1567	0.1649	0.2403	0.299	0.7939	1.294	1.3705	2.2784	1.6496	1.4039	0.9969	0.9131	0.6772	0.7601	0.7997	0.7265	0.5485
13	0.1549	0.1612	0.2189	0.392	0.5652	0.7728	1.1612	1.5655	0.9914	0.9066	0.7078	0.6676	0.5037	0.5308	0.5584	0.5011	0.3816
14	0.113	0.1845	0.2116	0.3375	0.5059	0.8384	1.0428	1.2478	0.8188	0.7932	0.6636	0.64	0.4513	0.4786	0.5034	0.4508	0.3446
15	0.1358	0.1597	0.2033	0.3232	0.5767	0.7383	0.8239	1.0355	0.7025	0.7036	0.6319	0.5666	0.4005	0.4308	0.4531	0.4005	0.3092
16	0.0961	0.1046	0.1937	0.3741	0.493	0.5771	0.6866	0.8987	0.6124	0.6369	0.5755	0.5067	0.3576	0.3874	0.4073	0.3598	0.2787
17	0.1193	0.1546	0.2176	0.3228	0.3825	0.4736	0.5956	0.7849	0.5411	0.5851	0.5233	0.4524	0.3187	0.3477	0.3657	0.3227	0.251
18	0.1268	0.1678	0.1854	0.243	0.3045	0.4027	0.5159	0.687	0.4893	0.5358	0.4745	0.3993	0.28	0.3115	0.3271	0.286	0.2246
19	0.1336	0.1415	0.1421	0.1975	0.2565	0.3463	0.4527	0.6348	0.4436	0.4894	0.4293	0.3553	0.2487	0.2784	0.2921	0.2558	0.2017
20	0.1117	0.1088	0.1157	0.1657	0.2139	0.2988	0.4134	0.5811	0.3989	0.4452	0.3871	0.3125	0.2178	0.2447	0.2566	0.2261	0.18
21	0.087	0.0888	0.0976	0.1406	0.1826	0.2697	0.378	0.5325	0.3592	0.4035	0.3478	0.2769	0.1927	0.2176	0.2283	0.2014	0.161
22	0.0716	0.0751	0.0826	0.12	0.1647	0.2425	0.3441	0.4859	0.3223	0.3643	0.3115	0.2447	0.1699	0.1929	0.2025	0.179	0.1438
23	0.061	0.0634	0.0701	0.1085	0.1464	0.2161	0.3097	0.4386	0.2865	0.327	0.2776	0.2138	0.1478	0.1684	0.1769	0.1573	0.1276
24	0.0524	0.0538	0.0641	0.0985	0.1314	0.1925	0.2782	0.3954	0.2546	0.292	0.2462	0.1878	0.1296	0.1484	0.156	0.1391	0.1134
25	0.0455	0.0493	0.0586	0.0887	0.1163	0.1692	0.2468	0.3522	0.2235	0.2589	0.215	0.1632	0.1121	0.1289	0.1356	0.1216	0.1001
26	0.0418	0.0452	0.0534	0.0801	0.1039	0.149	0.2181	0.3126	0.1962	0.228	0.1886	0.1423	0.0975	0.1128	0.1188	0.1068	0.0885
27	0.0383	0.0413	0.0486	0.0722	0.0924	0.1303	0.191	0.2751	0.171	0.1992	0.1643	0.1235	0.0845	0.0982	0.1036	0.0934	0.0775
28	0.0349	0.0376	0.0441	0.0646	0.0812	0.1108	0.1625	0.2353	0.1447	0.1691	0.1399	0.1062	0.0723	0.0845	0.0891	0.0809	0.0681
29	0.0318	0.0342	0.0399	0.0578	0.0717	0.0959	0.1394	0.2032	0.1247	0.1456	0.1206	0.0914	0.062	0.0729	0.077	0.0701	0.0595
30	0.029	0.031	0.036	0.0515	0.063	0.0823	0.118	0.1734	0.1065	0.124	0.103	0.0781	0.0529	0.0625	0.0661	0.0605	0.0518

Cumulative Claim Rates for LTV Category
93-95%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0365	0.0354	0.008	0.0326	0.0068	0.0072	0.0486	0.0896	0.0204	0.0383	0.0204	0.0016	0.0112	0.0113	0.0039	0.0085	0.0001
2	0.3355	0.3835	0.195	0.3042	0.2601	0.6232	1.0324	1.5823	0.5385	0.8369	0.7071	0.3495	0.3234	0.3535	0.257	0.2111	0.3186
3	0.9555	0.7906	0.5769	0.6626	0.9516	1.7621	3.8382	4.941	2.1215	2.9835	2.9633	1.8007	1.2573	1.272	1.1534	1.3808	1.5374
4	1.4661	1.1622	0.8435	1.0103	1.7389	3.2448	6.0245	8.5237	4.292	5.9669	6.2536	3.7994	2.4166	2.6002	2.9521	2.9283	3.0089
5	1.8235	1.3805	1.0464	1.3199	2.492	4.5197	8.5024	11.748	7.0091	9.142	9.0534	5.6629	3.5436	4.4364	4.6502	4.5318	4.2407
6	2.0788	1.5221	1.1697	1.5914	3.1971	5.7947	11.0531	14.6141	9.6161	11.4419	11.0929	7.4072	5.1391	5.9716	6.0993	5.8421	5.3089
7	2.2684	1.6283	1.3448	1.7978	3.8543	6.9909	13.8224	16.4353	11.4438	12.7835	12.5358	9.1629	6.575	7.1955	7.2709	6.9717	6.2752
8	2.3414	1.8171	1.4642	2.0586	4.4773	8.4593	15.9116	17.4354	12.7208	13.8759	13.2847	10.6141	7.5701	8.0441	8.1362	7.8473	7.0286
9	2.4289	1.9292	1.5795	2.2921	5.1482	9.7772	17.0655	18.0475	13.6429	14.4777	13.834	11.6213	8.2349	8.6503	8.7847	8.5098	7.6049
10	2.5091	1.9528	1.6989	2.5745	5.956	10.9878	17.855	18.3609	14.2377	14.9758	14.2471	12.3512	8.7762	9.1696	9.3443	9.0854	8.0717
11	2.5675	2.0118	1.8222	2.8896	6.627	11.833	18.4744	18.6995	14.7499	15.2984	14.5134	12.928	9.2334	9.6126	9.8231	9.5448	8.4491
12	2.6623	2.1121	1.9814	3.096	7.161	12.4919	18.8513	18.9476	15.1064	15.488	14.7037	13.4147	9.625	9.994	10.2061	9.9149	8.7572
13	2.7498	2.2006	2.1167	3.3513	7.5169	12.8534	19.08	19.0648	15.287	15.5884	14.8232	13.749	9.8984	10.2425	10.456	10.1553	8.9607
14	2.8082	2.295	2.24	3.5577	7.8172	13.1945	19.2063	19.1275	15.4127	15.6603	14.922	14.0487	10.1271	10.4504	10.6652	10.3579	9.1345
15	2.8738	2.3717	2.3514	3.7443	8.1375	13.4533	19.2767	19.1668	15.5067	15.7147	15.006	14.2974	10.3172	10.6248	10.8408	10.527	9.2822
16	2.9176	2.4189	2.4517	3.9496	8.3901	13.6278	19.3197	19.1933	15.5788	15.7568	15.0745	14.5061	10.4762	10.7711	10.9882	10.6698	9.4085
17	2.9686	2.4847	2.5595	4.1163	8.5708	13.753	19.3479	19.2116	15.635	15.79	15.1303	14.681	10.6091	10.8936	11.1118	10.7902	9.5162
18	3.0199	2.5527	2.647	4.2344	8.7048	13.8485	19.368	19.225	15.6806	15.8167	15.1762	14.8264	10.719	10.9965	11.2155	10.891	9.6078
19	3.0713	2.6071	2.7109	4.3252	8.8106	13.9227	19.3824	19.2354	15.7178	15.8383	15.2141	14.9483	10.8109	11.0827	11.3025	10.976	9.6858
20	3.112	2.6468	2.7604	4.3976	8.8938	13.9814	19.3939	19.2437	15.7483	15.856	15.2454	15.0496	10.8868	11.1541	11.3744	11.0471	9.7521
21	3.142	2.6776	2.8005	4.4561	8.9607	14.0301	19.4029	19.2504	15.7735	15.8705	15.2714	15.1345	10.9503	11.2139	11.4348	11.1071	9.8085
22	3.1654	2.7024	2.833	4.5037	9.0178	14.0702	19.4101	19.2558	15.7941	15.8823	15.2929	15.2054	11.0033	11.2639	11.4853	11.1575	9.8564
23	3.1844	2.7225	2.8595	4.5448	9.0658	14.1035	19.4159	19.2601	15.8111	15.8921	15.3107	15.2641	11.0469	11.3052	11.5271	11.1997	9.8969
24	3.1999	2.7387	2.8827	4.5803	9.1067	14.1312	19.4206	19.2637	15.8252	15.9002	15.3255	15.3131	11.0832	11.3397	11.5621	11.235	9.9312
25	3.2129	2.753	2.903	4.6109	9.1411	14.154	19.4245	19.2667	15.8368	15.9069	15.3377	15.3535	11.1131	11.3681	11.5909	11.2645	9.9601
26	3.2242	2.7654	2.9208	4.6373	9.1703	14.173	19.4277	19.2692	15.8463	15.9125	15.3477	15.3871	11.1378	11.3918	11.615	11.2891	9.9844
27	3.2341	2.7763	2.9363	4.66	9.195	14.1886	19.4303	19.2712	15.8542	15.917	15.356	15.4148	11.1582	11.4115	11.635	11.3096	10.0049
28	3.2427	2.7858	2.9497	4.6794	9.2157	14.2013	19.4324	19.2728	15.8605	15.9207	15.3627	15.4375	11.1748	11.4276	11.6514	11.3266	10.022
29	3.2502	2.7941	2.9614	4.696	9.2332	14.2117	19.4341	19.2741	15.8657	15.9237	15.3682	15.4562	11.1885	11.4409	11.6649	11.3407	10.0363
30	3.2568	2.8012	2.9714	4.7102	9.2478	14.2203	19.4355	19.2752	15.8699	15.9262	15.3727	15.4714	11.1996	11.4518	11.676	11.3523	10.0482

Policy Year	Conditional Claim Rates for LTV Category 95-97%																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0281	0.0125	0.0165	0.0321	0.0232	0.0275	0.0639	0.1511	0.0275	0.0623	0.0273	0.023	0.0119	0.0155	0.0102	0.0044	0
2	0.4308	0.425	0.3025	0.314	0.3488	0.738	1.3661	2.1378	0.6257	1.2314	0.9567	0.5152	0.4558	0.4751	0.3611	0.3046	0.4436
3	0.7692	0.5937	0.5127	0.4496	0.8416	1.4021	3.4711	4.5567	2.1442	3.2066	3.5625	1.958	1.3284	1.2948	1.1887	1.6174	1.7388
4	0.7161	0.5451	0.4162	0.4718	0.7487	1.7686	3.5476	6.0411	3.0765	5.4839	6.131	2.5135	1.5798	1.6712	2.4137	2.1759	2.0991
5	0.5133	0.3922	0.3127	0.3647	0.8014	1.6601	3.4822	7.22	4.4853	7.2947	5.8255	2.604	1.6491	2.4983	2.4605	2.4004	1.8042
6	0.4148	0.3117	0.2351	0.4932	0.8448	1.665	3.7173	8.4806	6.219	5.8124	4.9222	2.4351	2.1603	2.2934	2.313	2.0876	1.632
7	0.2807	0.2465	0.2796	0.4398	0.8481	1.8242	4.6579	9.0858	5.0225	4.6797	4.1623	2.7537	2.1361	2.0408	2.0523	1.9493	1.5796
8	0.1777	0.2622	0.2414	0.4146	0.9223	2.1226	5.5174	5.957	3.8805	3.6283	2.5887	2.4478	1.596	1.519	1.6256	1.6089	1.2907
9	0.2235	0.2584	0.2277	0.3574	1.0928	2.755	4.022	4.0741	3.3753	2.9288	2.4751	2.064	1.279	1.311	1.4743	1.4565	1.1655
10	0.1671	0.2021	0.2203	0.4984	1.1929	2.1568	3.3491	2.5241	2.4459	2.8028	2.0291	1.485	1.0353	1.1264	1.2718	1.2545	0.9228
11	0.1735	0.1614	0.2651	0.5875	1.0328	1.7881	2.4051	2.7971	2.5778	2.4164	1.556	1.2941	0.9687	1.068	1.209	1.1016	0.8103
12	0.1457	0.2257	0.3468	0.5023	0.9747	1.3944	1.6069	2.9204	2.1435	1.7604	1.2523	1.1506	0.874	0.9745	1.0233	0.9307	0.6845
13	0.1771	0.2935	0.3119	0.4794	0.8969	0.9726	1.4648	2.1231	1.3504	1.1956	0.9438	0.8938	0.6917	0.7228	0.7587	0.6817	0.5039
14	0.1449	0.2334	0.2328	0.4351	0.6418	1.0733	1.3133	1.6742	1.111	1.047	0.8884	0.8606	0.6225	0.6541	0.6864	0.6154	0.4552
15	0.2148	0.2285	0.2126	0.4231	0.7429	0.9456	1.0261	1.3813	0.9561	0.9299	0.8495	0.7643	0.5551	0.5912	0.6202	0.5489	0.4087
16	0.1722	0.1948	0.2694	0.497	0.6342	0.7319	0.8499	1.1998	0.8361	0.8431	0.7765	0.6856	0.498	0.5337	0.5597	0.4948	0.3687
17	0.1251	0.2179	0.307	0.4284	0.4867	0.5981	0.7379	1.0489	0.7416	0.7762	0.7087	0.6141	0.4461	0.4812	0.5044	0.4455	0.3322
18	0.1767	0.2398	0.2617	0.3198	0.3855	0.5098	0.6399	0.9191	0.6736	0.7121	0.645	0.5439	0.3941	0.4329	0.4531	0.3965	0.2975
19	0.1889	0.2021	0.1992	0.2587	0.3251	0.4397	0.5621	0.851	0.6134	0.6518	0.5858	0.4857	0.3519	0.3886	0.4063	0.356	0.2673
20	0.1578	0.1541	0.1616	0.2177	0.2716	0.3805	0.5146	0.7807	0.5541	0.5941	0.5302	0.4289	0.31	0.3432	0.3586	0.316	0.2387
21	0.1218	0.1254	0.1369	0.1852	0.2323	0.3448	0.4716	0.7168	0.5014	0.5395	0.4783	0.3814	0.2758	0.3066	0.3204	0.2827	0.2137
22	0.0998	0.1063	0.1162	0.1584	0.2101	0.3113	0.4302	0.6553	0.452	0.4882	0.4301	0.3384	0.2446	0.2732	0.2855	0.2523	0.191
23	0.0853	0.09	0.099	0.1439	0.1873	0.2786	0.3882	0.5928	0.4038	0.439	0.3848	0.297	0.2143	0.2397	0.2506	0.2227	0.1696
24	0.0735	0.0766	0.0912	0.1312	0.1687	0.2493	0.3496	0.5354	0.3606	0.3927	0.3427	0.262	0.189	0.2123	0.2221	0.1977	0.1508
25	0.064	0.0706	0.0838	0.1188	0.1499	0.22	0.3108	0.4778	0.3182	0.3488	0.3006	0.2287	0.1646	0.1853	0.194	0.1737	0.1332
26	0.0591	0.065	0.0769	0.1078	0.1343	0.1946	0.2753	0.4248	0.2807	0.3077	0.2647	0.2004	0.1442	0.163	0.1707	0.1532	0.1177
27	0.0544	0.0597	0.0704	0.0975	0.1198	0.171	0.2416	0.3745	0.246	0.2693	0.2317	0.1748	0.1257	0.1427	0.1495	0.1346	0.1037
28	0.0499	0.0547	0.0643	0.0877	0.1056	0.1462	0.206	0.3209	0.2093	0.2289	0.1981	0.151	0.1084	0.1234	0.1293	0.1171	0.0907
29	0.0458	0.0501	0.0586	0.0789	0.0936	0.1271	0.1771	0.2775	0.1814	0.1973	0.1714	0.1306	0.0937	0.107	0.1122	0.102	0.0793
30	0.0418	0.0457	0.0532	0.0707	0.0825	0.1095	0.1501	0.237	0.1557	0.1683	0.1471	0.1123	0.0805	0.0922	0.0968	0.0883	0.0685

Cumulative Claim Rates for LTV Category
95-97%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0281	0.0125	0.0165	0.0321	0.0232	0.0273	0.0639	0.1511	0.0275	0.0623	0.0275	0.023	0.0119	0.0155	0.0102	0.0044	0
2	0.4581	0.4368	0.318	0.3449	0.3714	0.7645	1.4277	2.2823	0.6523	1.2918	0.9826	0.5367	0.4671	0.4897	0.3704	0.3083	0.4436
3	1.2096	1.0078	0.8104	0.7806	1.2041	2.1499	4.837	6.1895	2.7701	4.4297	4.1864	2.4271	1.7798	1.7617	1.5331	1.8943	2.1118
4	1.8525	1.4821	1.1826	1.2271	1.9352	3.8686	8.0066	10.8071	5.7033	8.7216	8.3519	4.7559	3.2996	3.3404	3.7815	3.8619	3.9801
5	2.2584	1.7878	1.4511	1.5666	2.7099	5.4314	10.8886	15.455	9.2274	12.7283	11.6796	7.0424	4.8221	5.567	5.8541	5.839	5.4702
6	2.5517	2.0187	1.649	2.0211	3.5107	6.9482	13.7013	18.8634	12.7875	15.3546	14.1025	9.0375	6.725	7.4134	7.5988	7.4108	6.7284
7	2.7406	2.1966	1.8822	2.4168	4.297	8.5477	16.45	21.3044	15.2209	17.1678	15.843	11.1323	8.467	8.9044	9.0142	8.775	7.8781
8	2.8571	2.3838	2.0777	2.7804	5.1297	10.2205	18.9325	22.5816	16.8664	18.3777	16.7612	12.8615	9.6692	9.9269	10.0527	9.8302	8.7694
9	3.0018	2.5616	2.2568	3.0851	6.061	12.0738	20.4933	23.3298	18.116	19.2253	17.5283	14.2038	10.5641	10.7462	10.9305	10.7291	9.5342
10	3.1063	2.6958	2.424	3.4862	6.9953	13.3918	21.6599	23.7455	18.9075	19.896	18.0699	15.0973	11.2413	11.4034	11.639	11.4582	10.1096
11	3.2108	2.7988	2.6125	3.9193	7.7526	14.4041	22.4164	24.1689	19.6257	20.3547	18.4293	15.823	11.836	11.9866	12.2692	12.0611	10.5899
12	3.2952	2.9329	2.8386	4.2668	8.4257	15.132	22.8784	24.4885	20.1234	20.6224	18.6825	16.4269	12.3405	12.4842	12.7677	12.5408	10.9757
13	3.3916	3.092	3.0294	4.5796	9.006	15.6	23.1896	24.6548	20.3896	20.7738	18.8521	16.8668	12.7155	12.829	13.1133	12.8716	11.2453
14	3.4639	3.2106	3.1637	4.8469	9.3968	16.052	23.3754	24.7476	20.5763	20.8843	18.9937	17.2626	13.031	13.1195	13.4045	13.1518	11.4757
15	3.5644	3.3198	3.2792	5.0933	9.8199	16.3989	23.4832	24.8076	20.7175	20.9692	19.1154	17.5919	13.295	13.3649	13.6506	13.387	11.6717
16	3.6407	3.4072	3.4176	5.3681	10.1539	16.6331	23.5517	24.8493	20.8271	21.0359	19.2155	17.8689	13.5174	13.5721	13.8585	13.5867	11.8394
17	3.693	3.4996	3.5685	5.5913	10.391	16.8021	23.5986	24.8791	20.9136	21.0895	19.2979	18.1019	13.7046	13.7471	14.0341	13.7561	11.9827
18	3.7628	3.5966	3.6914	5.7483	10.5664	16.9324	23.6327	24.9015	20.9847	21.1332	19.3663	18.2961	13.8605	13.895	14.1824	13.8986	12.1046
19	3.8339	3.6745	3.7804	5.8685	10.7052	17.0346	23.6581	24.9192	21.0433	21.169	19.4231	18.4596	13.9919	14.02	14.3077	14.0196	12.2087
20	3.8903	3.7309	3.8494	5.9647	10.8148	17.1163	23.6786	24.9336	21.0919	21.1986	19.4707	18.5959	14.1015	14.1243	14.4121	14.1215	12.2972
21	3.9316	3.7747	3.9054	6.0428	10.9035	17.1846	23.6951	24.9454	21.1324	21.2231	19.5104	18.7106	14.1937	14.2123	14.5003	14.2079	12.3726
22	3.9638	3.8101	3.9511	6.1066	10.9794	17.2417	23.7084	24.955	21.166	21.2434	19.5434	18.8069	14.2712	14.2865	14.5747	14.2811	12.4368
23	3.9901	3.839	3.9885	6.162	11.0437	17.2894	23.7194	24.9629	21.1939	21.2603	19.5711	18.8871	14.3357	14.3483	14.6368	14.3427	12.4911
24	4.0117	3.8625	4.0216	6.2102	11.0986	17.3293	23.7284	24.9695	21.2173	21.2743	19.5942	18.9542	14.3898	14.4002	14.689	14.3946	12.5372
25	4.0298	3.8832	4.0508	6.2519	11.1452	17.3627	23.7359	24.975	21.2367	21.2861	19.6134	19.01	14.4348	14.4435	14.7325	14.4382	12.5761
26	4.0457	3.9016	4.0764	6.2881	11.1849	17.3905	23.7421	24.9795	21.2528	21.2958	19.6294	19.0565	14.4723	14.4798	14.769	14.4749	12.609
27	4.0598	3.9177	4.099	6.3195	11.2187	17.4137	23.7472	24.9833	21.2662	21.3039	19.6426	19.0952	14.5035	14.5101	14.7995	14.5057	12.6367
28	4.0721	3.9319	4.1187	6.3465	11.2472	17.4326	23.7514	24.9864	21.2771	21.3104	19.6534	19.1271	14.5292	14.5352	14.8247	14.5313	12.6598
29	4.083	3.9443	4.136	6.3697	11.2713	17.4483	23.7548	24.989	21.286	21.3158	19.6623	19.1534	14.5505	14.556	14.8457	14.5527	12.6792
30	4.0925	3.9552	4.151	6.3897	11.2917	17.4613	23.7576	24.9911	21.2934	21.3202	19.6696	19.1751	14.568	14.5732	14.8631	14.5705	12.6953

Policy Year	Conditional Claim Rates for LTV Category 97-100%																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0724	0.0789	0.0526	0.0357	0.0221	0.0451	0.1898	0.2663	0.0574	0.0659	0.0363	0.0216	0.0133	0.0146	0.0158	0.0092	0.0001
2	0.9025	0.9547	0.5944	0.4768	0.5533	1.2995	2.5306	3.9662	1.1093	1.7337	1.1853	0.7061	0.5241	0.5401	0.4278	0.3731	0.56
3	1.446	1.1049	0.7657	0.7439	1.128	2.1829	5.7116	6.8929	3.0962	4.0974	4.2109	2.3448	1.4798	1.4555	1.3667	1.96	2.1925
4	1.1306	0.8637	0.5593	0.621	1.0328	2.4709	4.989	7.9982	3.9321	6.4201	6.9086	2.9982	1.7937	1.9268	2.9767	2.7709	2.6714
5	0.7289	0.4393	0.4254	0.4913	1.1961	2.2114	5.0147	8.2334	5.191	8.2579	6.3665	2.8552	1.7579	3.0281	3.0829	2.9876	2.195
6	0.4027	0.3482	0.3625	0.6055	1.0356	2.1434	4.5366	8.2293	6.7653	6.6739	4.9681	2.5939	2.4605	2.7012	2.7059	2.3763	1.8486
7	0.3065	0.3043	0.4103	0.4874	1.0204	2.0494	5.0676	8.0769	5.1861	5.0701	4.1182	2.8442	2.3735	2.2432	2.1952	2.0588	1.6938
8	0.2327	0.3104	0.3089	0.4548	1.0996	2.4672	5.5293	5.3103	3.8487	3.7996	2.5792	2.5453	1.7043	1.5717	1.6606	1.6532	1.35
9	0.2888	0.3052	0.3358	0.534	1.2017	2.8839	4.2955	3.6574	3.2069	2.84	2.4744	2.0697	1.2868	1.2966	1.466	1.4584	1.1913
10	0.2334	0.2413	0.333	0.5569	1.4789	2.4282	3.3662	2.8794	2.4918	2.942	2.1068	1.5141	1.0728	1.1684	1.3273	1.3199	0.9932
11	0.261	0.2486	0.3689	0.7811	1.3456	2.0842	2.7488	3.1435	2.9399	2.721	1.6958	1.4065	1.0877	1.2012	1.369	1.2581	0.9494
12	0.2058	0.3008	0.4793	0.7845	1.0974	1.7887	2.0681	3.5737	2.5554	2.0244	1.414	1.3207	1.035	1.1566	1.2228	1.1229	0.8499
13	0.2396	0.3387	0.5383	0.6515	1.0643	1.3534	2.14	2.8257	1.7141	1.4834	1.171	1.1285	0.9	0.9425	0.9968	0.9051	0.6908
14	0.3195	0.3571	0.5012	0.5757	0.8855	1.5348	1.8886	2.1442	1.3788	1.2916	1.0969	1.0828	0.8053	0.8487	0.8978	0.8144	0.624
15	0.3271	0.4154	0.4595	0.5887	1.0563	1.3324	1.4215	1.7275	1.1804	1.1407	1.0439	0.9572	0.7136	0.763	0.8076	0.7238	0.5602
16	0.3497	0.2954	0.4107	0.7138	0.889	0.994	1.1502	1.4917	1.0274	1.0287	0.9491	0.855	0.6364	0.6852	0.7255	0.6503	0.5053
17	0.2139	0.3367	0.4829	0.6085	0.6579	0.7934	0.9927	1.2965	0.907	0.9418	0.8615	0.7626	0.5666	0.6143	0.6508	0.5835	0.4553
18	0.2744	0.3821	0.4082	0.4387	0.5089	0.6723	0.856	1.1294	0.8199	0.8592	0.7798	0.6721	0.4971	0.5496	0.5817	0.5173	0.4076
19	0.3025	0.3193	0.3013	0.3478	0.4268	0.5764	0.7478	1.0401	0.7432	0.7817	0.704	0.5975	0.4411	0.4906	0.5191	0.4628	0.3663
20	0.2507	0.2364	0.2402	0.2918	0.3544	0.4958	0.6808	0.9488	0.6679	0.7082	0.6334	0.5249	0.3857	0.4303	0.4554	0.4092	0.327
21	0.1878	0.189	0.2034	0.2475	0.3013	0.4466	0.6204	0.8661	0.6012	0.6391	0.5678	0.4646	0.3408	0.3821	0.4047	0.3646	0.2927
22	0.1514	0.1603	0.1727	0.2112	0.2712	0.4008	0.5626	0.7869	0.5391	0.5743	0.5072	0.4101	0.3002	0.3382	0.3586	0.3241	0.2615
23	0.1294	0.1358	0.1472	0.1914	0.2403	0.3563	0.5043	0.7072	0.4788	0.5128	0.4506	0.358	0.2608	0.2945	0.3128	0.2848	0.2321
24	0.1116	0.1156	0.1356	0.1741	0.2153	0.3167	0.4511	0.6343	0.4251	0.4552	0.3984	0.3141	0.2283	0.2591	0.2755	0.2517	0.2063
25	0.0974	0.1066	0.1247	0.1572	0.19	0.2773	0.3981	0.5619	0.3725	0.4011	0.3465	0.2725	0.1972	0.2243	0.2389	0.2201	0.1821
26	0.09	0.0983	0.1144	0.1423	0.1692	0.2434	0.3499	0.4957	0.3264	0.3506	0.3027	0.2374	0.1713	0.1958	0.2088	0.1931	0.1608
27	0.083	0.0904	0.1048	0.1284	0.15	0.2122	0.3044	0.4332	0.2839	0.304	0.2626	0.2058	0.1481	0.17	0.1816	0.1687	0.1415
28	0.0763	0.0829	0.0958	0.1152	0.1314	0.1795	0.2568	0.3673	0.2394	0.2554	0.2222	0.1766	0.1265	0.1457	0.1559	0.146	0.1237
29	0.07	0.076	0.0873	0.1033	0.1156	0.1546	0.2185	0.3144	0.2057	0.2178	0.1904	0.1517	0.1082	0.1252	0.1342	0.1264	0.1079
30	0.0641	0.0694	0.0794	0.0923	0.1011	0.1319	0.1831	0.2655	0.1751	0.1836	0.1617	0.1295	0.092	0.1069	0.1148	0.1088	0.0937

Cumulative Claim Rates for LTV Category
97-100%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0724	0.0789	0.0526	0.0357	0.0221	0.0451	0.1898	0.2663	0.0574	0.0659	0.0363	0.0216	0.0133	0.0146	0.0158	0.0092	0.0001
2	0.973	1.0313	0.645	0.5113	0.5743	1.3417	2.7132	4.218	1.1648	1.7966	1.2196	0.7259	0.5367	0.5532	0.4421	0.3811	0.5601
3	2.3805	2.0912	1.3794	1.2333	1.6865	3.4809	8.2493	10.0623	4.21	5.785	5.0426	2.9901	1.9973	1.9788	1.7726	2.295	2.6674
4	3.3906	2.8385	1.8763	1.8192	2.6872	5.8428	12.543	15.9637	7.9075	10.8537	9.8448	5.7561	3.7169	3.7805	4.5184	4.7834	5.0409
5	3.9663	3.1784	2.2374	2.2731	3.8303	7.8758	16.4957	21.0233	11.9423	15.4827	13.5194	8.2349	5.3248	6.4313	7.0745	7.2116	6.8415
6	4.2504	3.4323	2.5372	2.8255	4.7967	9.772	19.7248	24.5328	15.8077	18.5044	15.9573	10.3211	7.4631	8.5537	9.0708	8.9627	8.2465
7	4.4546	3.6474	2.8726	3.2589	5.7256	11.5095	22.5804	26.8296	18.2889	20.4278	17.6643	12.431	9.3575	10.14	10.5383	10.3616	9.4545
8	4.605	3.864	3.1174	3.6535	6.6986	13.4086	24.9763	28.0422	19.894	21.653	18.5675	14.1778	10.608	11.1593	11.5618	11.4096	10.3647
9	4.7889	4.0691	3.3756	4.1042	7.7059	15.3266	26.5745	28.765	21.0602	22.4479	19.3256	15.4846	11.4833	11.9387	12.4024	12.2775	11.1268
10	4.9319	4.2254	3.6229	4.5485	8.8468	16.7979	27.6895	29.2739	21.8478	23.1289	19.8813	16.3664	12.1629	12.5918	13.1115	13.0145	11.7289
11	5.086	4.3803	3.8811	5.1246	9.8177	17.965	28.5109	29.7842	22.6486	23.6338	20.2689	17.1285	12.8074	13.2182	13.7938	13.6742	12.2752
12	5.203	4.5567	4.192	5.6683	10.561	18.8876	29.0755	30.213	23.2287	23.9356	20.5509	17.7953	13.3809	13.7793	14.3606	14.2263	12.7387
13	5.3311	4.7403	4.5213	6.0941	11.2358	19.533	29.5151	30.4629	23.5586	24.1199	20.7577	18.3268	13.8469	14.2046	14.7907	14.6435	13.0954
14	5.4889	4.9225	4.8113	6.4487	11.7653	20.175	29.7866	30.6021	23.7851	24.2541	20.9291	18.8014	14.2352	14.5598	15.1504	14.9949	13.3999
15	5.6412	5.1233	5.0622	6.7914	12.3554	20.6624	29.9424	30.6914	23.9555	24.3566	21.0753	19.1929	14.5568	14.8573	15.4521	15.288	13.6586
16	5.7953	5.2581	5.2747	7.1854	12.8148	20.9804	30.041	30.7541	24.0869	24.437	21.1947	19.5197	14.8252	15.1065	15.7052	15.5354	13.8796
17	5.8844	5.4037	5.5142	7.5018	13.129	21.205	30.1092	30.7992	24.1899	24.5011	21.2923	19.7925	15.049	15.3152	15.9174	15.7443	14.0684
18	5.9926	5.5618	5.7077	7.7165	13.3557	21.3769	30.1589	30.8329	24.274	24.5532	21.3727	20.0181	15.2336	15.4903	16.0955	15.9189	14.2289
19	6.1066	5.6878	5.8439	7.8775	13.534	21.511	30.1959	30.8597	24.3429	24.5955	21.4389	20.2066	15.3877	15.637	16.2447	16.0665	14.3658
20	6.1966	5.7766	5.9477	8.0057	13.6736	21.6171	30.2257	30.8814	24.3997	24.6303	21.4939	20.3626	15.5148	15.7583	16.3682	16.1899	14.4821
21	6.2607	5.8444	6.032	8.1092	13.7856	21.7052	30.2497	30.8992	24.4466	24.659	21.5395	20.4929	15.6209	15.8599	16.4719	16.2942	14.5812
22	6.3099	5.8993	6.1008	8.1934	13.8809	21.7782	30.269	30.9136	24.4853	24.6825	21.5771	20.6015	15.7092	15.9448	16.5586	16.382	14.6655
23	6.3502	5.944	6.1571	8.2661	13.9609	21.8388	30.2848	30.9254	24.5174	24.7019	21.6084	20.6912	15.782	16.0148	16.6303	16.4554	14.7369
24	6.3834	5.9805	6.2069	8.3292	14.0289	21.8891	30.2977	30.9352	24.5438	24.7179	21.6342	20.7657	15.8423	16.0733	16.6903	16.517	14.7974
25	6.4111	6.0127	6.2508	8.3836	14.0859	21.9307	30.3083	30.9433	24.5657	24.7312	21.6554	20.8272	15.892	16.1214	16.7398	16.5684	14.8484
26	6.4357	6.0412	6.2896	8.4306	14.1343	21.9652	30.3171	30.95	24.5838	24.7422	21.6729	20.878	15.933	16.1614	16.781	16.6114	14.8914
27	6.4574	6.0664	6.3236	8.4711	14.1751	21.9935	30.3243	30.9555	24.5986	24.7511	21.6873	20.92	15.9667	16.1945	16.8152	16.6473	14.9277
28	6.4765	6.0885	6.3535	8.5059	14.2092	22.0164	30.33	30.96	24.6105	24.7583	21.6988	20.9543	15.9943	16.2216	16.8432	16.677	14.9579
29	6.4933	6.1079	6.3796	8.5357	14.2378	22.0352	30.3347	30.9636	24.6202	24.7641	21.7083	20.9823	16.0168	16.2439	16.8663	16.7015	14.9832
30	6.508	6.1249	6.4024	8.5612	14.2618	22.0506	30.3384	30.9665	24.6281	24.7688	21.716	21.0052	16.0351	16.2622	16.8852	16.7218	15.0043

Conditional Claim Rates for LTV Category

Investor Loans

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0094	0	0.0157	0.0135	0	0.0145	0.031	0.1368	0.0132	0.0219	0.0377	0.0132	0.011	0.0102	0.0171	0	0
2	0.2632	0.4154	0.2597	0.2307	0.2343	0.506	1.8769	2.9168	0.6692	1.2156	1.487	0.7377	0.3898	0.4669	0.2984	0.3272	0
3	0.8461	0.8773	0.4632	0.4051	0.6828	1.1432	4.5276	5.8596	1.9586	3.4465	4.8908	2.6847	1.2884	1.354	1.2457	1.4215	0
4	0.8383	0.7909	0.4126	0.5736	0.6272	1.5654	4.3359	6.2981	2.6487	5.0857	8.0966	2.9721	1.4721	1.4997	1.9935	1.7585	0
5	0.7124	0.5598	0.3009	0.3662	0.7255	1.5401	4.1746	6.4621	3.4586	6.7513	6.7882	2.3335	1.5146	2.1363	2.0236	2.0285	0
6	0.54	0.4315	0.2895	0.4751	0.6687	1.6327	3.8277	6.181	4.5837	7.8429	4.7474	1.9795	1.854	1.8663	1.8847	1.7498	0
7	0.3749	0.3425	0.1834	0.3422	0.7783	1.4153	4.0435	5.3925	5.8379	4.2557	2.7808	2.4289	1.8758	1.7832	1.8102	1.763	0
8	0.2435	0.314	0.3105	0.4145	0.6068	1.4081	3.7848	4.1255	3.02	2.2637	1.6644	1.5484	1.0643	1.0132	1.0913	1.1037	0
9	0.4163	0.1968	0.2336	0.2912	0.6543	1.8868	2.4577	2.4983	1.9127	1.7531	1.4619	1.2275	0.8028	0.8194	0.9241	0.9336	0
10	0.2152	0.1566	0.1817	0.3404	1.0784	1.7288	2.2359	2.2239	1.6978	1.8911	1.3705	1.0146	0.7461	0.804	0.9106	0.9194	0
11	0.2506	0.2122	0.2458	0.4796	0.8783	1.289	1.6545	2.0122	1.8674	1.706	1.0995	0.9375	0.7374	0.8039	0.9131	0.8453	0
12	0.1737	0.266	0.2778	0.4431	0.763	1.1523	1.3311	2.0132	1.5066	1.1948	0.8553	0.8144	0.6496	0.7149	0.7472	0.691	0
13	0.1068	0.2449	0.2338	0.3539	0.6165	0.7783	1.1381	1.3678	0.8911	0.7573	0.6054	0.6035	0.4886	0.4989	0.5212	0.4775	0
14	0.2462	0.185	0.1819	0.4426	0.573	0.8751	1.0381	1.0849	0.7438	0.669	0.5818	0.6002	0.45	0.4609	0.4812	0.4403	0
15	0.3133	0.2131	0.3046	0.4088	0.669	0.7881	0.8204	0.8997	0.6481	0.6005	0.569	0.5479	0.4114	0.4252	0.4437	0.402	0
16	0.2226	0.2469	0.283	0.4825	0.5821	0.6194	0.6844	0.7821	0.5739	0.5514	0.5294	0.5039	0.3777	0.3917	0.4086	0.37	0
17	0.1999	0.2338	0.3238	0.421	0.4543	0.5126	0.596	0.6847	0.5162	0.5148	0.4917	0.4628	0.3463	0.3604	0.3758	0.3401	0
18	0.1933	0.2579	0.2791	0.3211	0.366	0.4417	0.5198	0.6023	0.4775	0.4791	0.4555	0.4212	0.3139	0.3309	0.3445	0.3096	0
19	0.2069	0.2191	0.2161	0.2629	0.3119	0.3851	0.4592	0.5625	0.4425	0.4448	0.4211	0.3857	0.2869	0.3032	0.3153	0.2838	0
20	0.1743	0.1698	0.1771	0.2233	0.2643	0.3376	0.4257	0.5213	0.4072	0.4114	0.388	0.35	0.2593	0.2739	0.2847	0.2576	0
21	0.1366	0.1394	0.151	0.1916	0.2288	0.3112	0.3947	0.4831	0.375	0.3791	0.3564	0.3192	0.2361	0.2497	0.2595	0.2352	0
22	0.113	0.1189	0.1292	0.1656	0.2108	0.2858	0.3644	0.4459	0.3442	0.3481	0.3263	0.2905	0.2143	0.2271	0.2359	0.2142	0
23	0.0973	0.1014	0.111	0.1532	0.1919	0.2605	0.3332	0.4078	0.3134	0.3179	0.2974	0.262	0.1925	0.2037	0.2117	0.1933	0
24	0.0844	0.0868	0.1038	0.142	0.1761	0.2373	0.3041	0.3722	0.2851	0.2889	0.2699	0.2371	0.1738	0.1842	0.1914	0.1751	0
25	0.0743	0.0813	0.097	0.1309	0.1596	0.2136	0.2745	0.3362	0.2567	0.2608	0.2416	0.2127	0.1552	0.1643	0.1708	0.1572	0
26	0.0696	0.076	0.0904	0.1208	0.1456	0.1924	0.2468	0.3025	0.2309	0.2339	0.217	0.1913	0.1392	0.1475	0.1533	0.1414	0
27	0.0651	0.071	0.0842	0.1112	0.1324	0.1723	0.2199	0.2699	0.2063	0.2082	0.1936	0.1713	0.1242	0.1318	0.137	0.1268	0
28	0.0607	0.0661	0.0782	0.1018	0.1191	0.1506	0.191	0.2348	0.1797	0.1806	0.1693	0.1521	0.1098	0.1164	0.121	0.1127	0
29	0.0565	0.0614	0.0725	0.0932	0.1075	0.1335	0.1669	0.2057	0.1589	0.1584	0.1494	0.135	0.0972	0.103	0.1071	0.1001	0
30	0.0525	0.057	0.067	0.0851	0.0966	0.1173	0.144	0.1781	0.1392	0.1375	0.1307	0.1193	0.0855	0.0906	0.0942	0.0885	0

Cumulative Claim Rates for LTV Category

Investor Loans

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.0094	0	0.0157	0.0135	0	0.0145	0.031	0.1368	0.0132	0.0219	0.0377	0.0132	0.011	0.0102	0.0171	0	0
2	0.2715	0.4141	0.2742	0.2429	0.2333	0.5126	1.9044	3.0277	0.6796	1.2337	1.519	0.7457	0.3995	0.4731	0.3125	0.3256	0
3	1.0952	1.2595	0.7207	0.6342	0.9039	1.5863	6.3171	7.5412	2.5928	4.5649	5.8304	3.2752	1.6617	1.7746	1.5069	1.6828	0
4	1.8628	1.9669	1.0967	1.1739	1.5105	3.0324	10.0021	11.5574	5.0664	8.4947	11.0068	5.9184	3.0584	3.1432	3.2992	3.215	0
5	2.4619	2.4327	1.3631	1.5113	2.2045	4.4059	13.1761	14.9083	7.7673	12.1034	14.5406	7.8673	4.4358	4.9779	4.9437	4.8249	0
6	2.8831	2.7778	1.6138	1.9431	2.8285	5.8035	15.7669	17.1713	10.3535	15.5246	16.6473	9.4132	6.0325	6.4233	6.3111	6.0977	0
7	3.1639	3.0452	1.7705	2.2467	3.5341	6.9594	17.9139	18.5763	13.1515	17.0601	17.7103	11.2179	7.5255	7.673	7.5141	7.2928	0
8	3.3418	3.2867	2.029	2.6042	4.0649	7.9896	19.3951	19.4591	14.4027	17.7656	18.2924	12.2869	8.3045	8.3269	8.1862	7.9948	0
9	3.6413	3.4334	2.217	2.8471	4.6072	9.1551	20.2054	19.9254	15.1002	18.2509	18.7442	13.0705	8.8515	8.8197	8.7194	8.5566	0
10	3.7911	3.5455	2.358	3.117	5.4295	10.1127	20.8609	20.3027	15.6624	18.6873	19.1087	13.6714	9.3263	9.2718	9.2124	9.079	0
11	3.9596	3.6922	2.5382	3.4678	6.0535	10.7704	21.2978	20.5876	16.1966	19.0013	19.3635	14.1904	9.7671	9.6959	9.6762	9.5325	0
12	4.0719	3.8647	2.7262	3.7714	6.5609	11.3109	21.5813	20.7935	16.5508	19.1778	19.537	14.6121	10.1313	10.0481	10.0304	9.8811	0
13	4.1374	4.0114	2.875	4.0008	6.9461	11.6438	21.758	20.8921	16.7277	19.2712	19.6463	14.9052	10.3879	10.2774	10.2611	10.1075	0
14	4.2778	4.1149	2.9847	4.2715	7.2852	11.9656	21.8619	20.9475	16.853	19.3403	19.7397	15.1772	10.6081	10.4741	10.4589	10.3029	0
15	4.4463	4.2271	3.1579	4.5094	7.6521	12.2118	21.9226	20.9835	16.9489	19.3943	19.8218	15.4095	10.7963	10.6431	10.6289	10.4702	0
16	4.5586	4.3497	3.3086	4.7733	7.9432	12.3777	21.9616	21.0088	17.0242	19.4376	19.8907	15.6095	10.9579	10.7883	10.775	10.6148	0
17	4.6544	4.458	3.4718	4.9873	8.1513	12.4976	21.9887	21.0271	17.0845	19.473	19.9484	15.7815	11.0966	10.913	10.9005	10.7397	0
18	4.7403	4.5705	3.6044	5.1395	8.3067	12.5902	22.0087	21.041	17.1349	19.5024	19.9972	15.9286	11.2145	11.0202	11.0083	10.8467	0
19	4.8268	4.6603	3.7011	5.2565	8.4303	12.6633	22.0238	21.0522	17.1771	19.5268	20.0385	16.0552	11.3158	11.1124	11.1009	10.9391	0
20	4.8951	4.7257	3.7763	5.3504	8.5289	12.7221	22.0361	21.0614	17.2128	19.5474	20.0736	16.1634	11.4021	11.1907	11.1796	11.0183	0
21	4.9452	4.7764	3.8373	5.4269	8.6092	12.7718	22.0463	21.069	17.2429	19.5647	20.1034	16.2564	11.476	11.258	11.2471	11.0867	0
22	4.9844	4.8175	3.8872	5.4896	8.679	12.8138	22.0546	21.0753	17.2683	19.5793	20.1287	16.3363	11.5394	11.3156	11.305	11.1455	0
23	5.0163	4.8509	3.9281	5.5448	8.739	12.8494	22.0616	21.0806	17.2899	19.5916	20.1502	16.4043	11.5932	11.3645	11.3542	11.1959	0
24	5.0427	4.8781	3.9647	5.5934	8.7911	12.8795	22.0674	21.085	17.3082	19.6021	20.1685	16.4626	11.6391	11.4063	11.3962	11.2391	0
25	5.0648	4.9024	3.9973	5.636	8.8359	12.9051	22.0723	21.0887	17.3236	19.6109	20.1839	16.5122	11.6781	11.4418	11.4319	11.276	0
26	5.0845	4.924	4.0263	5.6734	8.8747	12.9267	22.0765	21.0919	17.3367	19.6184	20.197	16.5545	11.7112	11.472	11.4623	11.3076	0
27	5.102	4.9433	4.0521	5.7062	8.9082	12.945	22.0799	21.0945	17.3478	19.6247	20.208	16.5904	11.7393	11.4977	11.4882	11.3345	0
28	5.1175	4.9603	4.0749	5.7348	8.9368	12.9601	22.0828	21.0967	17.357	19.6299	20.2172	16.6208	11.763	11.5193	11.5099	11.3574	0
29	5.1313	4.9755	4.0951	5.7597	8.9615	12.9729	22.0852	21.0986	17.3647	19.6342	20.2249	16.6464	11.7829	11.5376	11.5283	11.3767	0
30	5.1435	4.9888	4.1129	5.7814	8.9826	12.9836	22.0871	21.1001	17.3711	19.6379	20.2314	16.668	11.7996	11.5529	11.5438	11.393	0

Appendix E: Summary of Conditional and Cumulative Prepayment Rates

- **Across All LTV Categories**

- **By LTV Category**
  - **0-30%**
  - **30-75%**
  - **75-85%**
  - **85-90%**
  - **90-93%**
  - **93-95%**
  - **95-97%**
  - **97-100%**
  - **Investor Loans**

Conditional Prepayment Rates for All LTV Categories

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.066
2	1.877	3.396	3.258	2.454	0.811	0.924	0.409	17.488	0.903	1.389	11.2	3.722	1.025	1.513	2.003	1.974	4.171	2.733	2.681	2.383	2.377	2.377
3	6.797	8.442	6.209	2.054	0.67	0.336	7.103	9.337	2.138	18.682	23.394	2.663	1.743	3.058	4.017	6.711	5.861	3.721	3.37	2.988	2.98	2.98
4	10.065	9.046	3.53	1.307	0.348	1.738	4.693	12.267	17.566	25.842	10.595	3.165	2.849	4.435	7.707	7.182	5.422	3.678	3.345	2.936	2.929	2.929
5	9.041	4.745	1.806	0.732	1.393	1.995	5.943	28.888	26.406	11.34	8.484	4.461	3.26	7.788	8.564	6.578	5.183	3.529	3.213	2.82	2.813	2.813
6	4.514	2.407	0.779	1.969	1.607	2.599	19.269	24.929	10.659	9.193	10.319	5.225	5.847	7.418	6.586	5.234	4.183	2.853	2.599	2.278	2.273	2.273
7	2.327	0.977	2.663	2.047	1.998	9.172	20.713	11.321	8.284	9.903	11.827	4.765	6.044	6.128	5.58	4.554	3.729	2.615	2.396	2.075	2.07	2.07
8	1.111	3.228	2.731	2.355	4.761	13.882	9.533	7.857	9.612	9.98	10.525	5.937	5.913	5.878	5.375	4.467	3.832	2.698	2.471	2.139	2.135	2.135
9	3.289	3.3	3.104	5.248	7.437	7.116	7.017	6.186	11.18	15.193	12.494	6.015	5.8	5.717	5.323	4.693	4.083	2.96	2.73	2.33	2.324	2.324
10	3.344	3.542	5.743	7.565	5.419	5.767	6.838	5.318	11.924	17.958	11.773	5.556	5.389	5.475	5.35	4.728	4.113	2.989	2.759	2.352	2.346	2.346
11	3.55	6.053	7.578	5.549	5.09	6.441	6.778	24.917	14.786	17.577	11.467	5.48	5.408	5.733	5.6	4.953	4.301	3.135	2.896	2.465	2.458	2.458
12	5.82	7.834	5.654	5.079	5.424	6.787	23.411	25.222	13.402	15.093	10.343	5.432	5.619	5.863	5.733	5.14	4.531	3.408	3.172	2.661	2.651	2.651
13	7.678	5.774	5.133	5.302	4.943	12.531	29.222	25.767	13.912	15.611	11.095	6.254	6.466	6.596	6.432	5.761	5.064	3.819	3.557	2.975	2.964	2.964
14	5.655	5.247	5.399	4.942	6.133	12.704	21.056	18.592	11.382	12.591	9.887	6.046	6.203	6.258	6.115	5.561	4.972	3.879	3.643	3.001	2.989	2.989
15	5.135	5.348	4.886	4.93	6.982	12.399	18.817	16.685	10.649	12.327	9.761	6.018	6.169	6.221	6.08	5.535	4.956	3.877	3.644	2.999	2.987	2.987
16	5.261	4.981	4.233	5.542	6.976	11.372	17.018	15.323	10.455	12.072	9.627	5.987	6.133	6.181	6.042	5.507	4.938	3.876	3.646	2.998	2.986	2.986
17	5.098	4.499	4.48	5.548	6.29	9.368	13.015	12.297	9.175	10.236	8.555	5.778	5.871	5.849	5.73	5.307	4.845	3.942	3.74	3.026	3.013	3.013
18	4.81	4.717	4.633	5.219	5.908	8.821	12.653	11.972	9.046	10.061	8.453	5.751	5.84	5.814	5.698	5.282	4.829	3.94	3.741	3.024	3.011	3.011
19	4.972	4.893	4.426	4.869	5.412	7.701	10.077	9.594	7.886	8.464	7.457	5.536	5.573	5.48	5.383	5.077	4.731	4.012	3.846	3.055	3.04	3.04
20	5.194	4.616	4.171	4.659	5.379	7.623	9.883	9.409	7.796	8.349	7.382	5.512	5.546	5.452	5.356	5.055	4.716	4.009	3.846	3.052	3.038	3.038
21	4.889	4.362	3.993	4.641	5.351	7.534	9.672	9.208	7.695	8.221	7.298	5.487	5.517	5.42	5.326	5.032	4.701	4.008	3.847	3.051	3.036	3.036
22	4.622	4.212	4.052	4.579	5.097	6.546	7.69	7.363	6.674	6.874	6.4	5.271	5.251	5.093	5.017	4.826	4.601	4.086	3.963	3.084	3.068	3.068
23	4.425	4.203	4.05	4.568	5.075	6.487	7.575	7.253	6.608	6.795	6.343	5.249	5.228	5.068	4.994	4.807	4.588	4.083	3.962	3.081	3.065	3.065
24	4.426	4.232	4.123	4.501	4.812	5.567	5.94	5.721	5.664	5.602	5.498	5.023	4.953	4.733	4.677	4.592	4.481	4.173	4.095	3.119	3.102	3.102
25	4.419	4.227	4.12	4.491	4.796	5.536	5.89	5.673	5.629	5.564	5.467	5.008	4.937	4.718	4.662	4.579	4.47	4.167	4.091	3.116	3.098	3.098
26	4.412	4.222	4.117	4.481	4.778	5.498	5.827	5.613	5.587	5.516	5.429	4.991	4.919	4.7	4.644	4.564	4.458	4.163	4.088	3.113	3.095	3.095
27	4.421	4.256	4.202	4.409	4.504	4.645	4.484	4.346	4.717	4.468	4.638	4.753	4.633	4.357	4.318	4.338	4.344	4.267	4.244	3.156	3.137	3.137
28	4.414	4.25	4.197	4.401	4.495	4.637	4.475	4.337	4.707	4.46	4.629	4.744	4.624	4.35	4.312	4.33	4.336	4.259	4.236	3.152	3.132	3.132
29	4.406	4.244	4.191	4.393	4.487	4.629	4.465	4.328	4.697	4.451	4.62	4.734	4.615	4.343	4.305	4.323	4.328	4.25	4.228	3.147	3.128	3.128
30	4.399	4.237	4.186	4.385	4.478	4.621	4.455	4.319	4.686	4.443	4.61	4.725	4.607	4.336	4.298	4.315	4.32	4.243	4.22	3.143	3.123	3.123

Cumulative Prepayment Rates for All LTV Categories

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.068
2	2.075	3.662	3.603	2.794	1.098	1.279	0.574	17.753	1.176	1.588	11.454	4.21	1.279	1.882	2.439	2.341	4.173	3.765	3.713	3.421	3.414	3.414
3	8.673	11.707	9.553	4.781	1.756	1.607	7.517	25.2	3.276	19.743	31.932	6.748	2.993	4.867	6.341	8.873	9.762	7.323	6.936	6.288	6.275	6.275
4	17.667	19.513	12.704	6.012	2.093	3.28	11.614	33.628	19.868	39.378	38.711	9.627	5.713	9.011	13.441	15.282	14.54	10.658	9.991	8.987	8.967	8.967
5	24.862	23.206	14.252	6.689	3.427	5.132	16.389	49.993	39.849	45.336	43.233	13.461	8.694	15.849	20.537	20.607	18.763	13.693	12.785	11.461	11.435	11.435
6	28.108	24.983	14.906	8.488	4.929	7.46	30.425	59.241	45.514	49.292	47.964	17.653	13.794	21.702	25.4	24.466	21.935	16.027	14.941	13.372	13.341	13.341
7	29.7	25.684	17.116	10.311	6.752	15.337	42.121	62.125	49.24	52.911	52.598	21.204	18.662	26.077	29.161	27.584	24.601	18.078	16.851	15.049	15.014	15.014
8	30.44	27.972	19.315	12.358	10.973	25.984	46.18	63.778	53.029	56.045	56.104	25.323	23.052	29.941	32.515	30.45	27.2	20.114	18.752	16.719	16.68	16.68
9	32.603	30.229	21.74	16.792	17.197	30.584	48.754	64.924	56.885	60.203	59.748	29.174	27.05	33.429	35.612	33.284	29.83	22.266	20.78	18.48	18.437	18.437
10	34.724	32.566	26.078	22.821	21.351	33.962	51.007	65.821	60.448	64.269	62.691	32.464	30.513	36.543	38.52	35.97	32.345	24.358	22.758	20.2	20.153	20.153
11	36.896	36.411	31.458	26.888	24.996	37.446	53.032	69.722	64.267	67.45	65.175	35.494	33.773	39.594	41.369	38.621	34.845	26.471	24.762	21.947	21.895	21.895
12	40.324	41.074	35.156	30.38	28.64	40.823	59.421	72.609	67.154	69.65	67.132	38.302	36.949	42.505	44.089	41.207	37.345	28.682	26.879	23.773	23.715	23.715
13	44.574	44.235	38.311	33.818	31.751	46.557	65.431	74.753	69.705	71.551	68.992	41.332	40.373	45.559	46.938	43.932	39.994	31.063	29.165	25.749	25.684	25.684
14	47.458	46.931	41.447	36.835	35.39	51.59	68.446	75.877	71.48	72.831	70.453	44.056	43.425	48.246	49.452	46.393	42.449	33.378	31.414	27.673	27.601	27.601
15	49.923	49.526	44.12	39.683	39.252	55.829	70.544	76.686	72.939	73.915	71.743	46.585	46.257	50.734	51.783	48.692	44.763	35.593	33.572	29.531	29.452	29.452
16	52.312	51.806	46.316	42.711	42.812	59.199	72.069	77.296	74.207	74.838	72.882	48.935	48.885	53.037	53.945	50.84	46.945	37.715	35.645	31.325	31.24	31.24
17	54.499	53.757	48.534	45.557	45.777	61.64	73.029	77.706	75.197	75.52	73.79	51.054	51.235	55.071	55.86	52.786	48.972	39.781	37.688	33.075	32.983	32.983
18	56.453	55.705	50.716	48.072	48.372	63.71	73.834	78.053	76.077	76.118	74.605	53.03	53.426	56.966	57.645	54.611	50.887	41.759	39.649	34.765	34.668	34.668
19	58.371	57.623	52.698	50.287	50.598	65.349	74.392	78.296	76.771	76.568	75.26	54.815	55.388	58.64	59.228	56.266	52.666	43.689	41.584	36.417	36.313	36.313
20	60.269	59.339	54.478	52.297	52.683	66.839	74.88	78.509	77.399	76.971	75.856	56.486	57.226	60.208	60.713	57.824	54.351	45.535	43.439	38.012	37.903	37.903
21	61.96	60.882	56.107	54.2	54.639	68.194	75.309	78.696	77.968	77.333	76.399	58.052	58.947	61.676	62.104	59.292	55.947	47.302	45.22	39.554	39.44	39.44
22	63.477	62.305	57.692	55.986	56.397	69.278	75.616	78.832	78.421	77.609	76.839	59.469	60.491	62.977	63.341	60.624	57.432	49.028	46.98	41.062	40.942	40.942
23	64.859	63.661	59.208	57.683	58.054	70.279	75.893	78.954	78.838	77.862	77.246	60.802	61.944	64.202	64.506	61.884	58.841	50.679	48.667	42.52	42.395	42.395
24	66.179	64.969	60.688	59.275	59.542	71.08	76.093	79.043	79.17	78.056	77.574	62.007	63.245	65.286	65.54	63.027	60.152	52.294	50.338	43.947	43.816	43.816
25	67.438	66.217	62.104	60.789	60.95	71.829	76.279	79.126	79.48	78.237	77.882	63.145	64.476	66.312	66.521	64.111	61.398	53.838	51.937	45.327	45.191	45.191
26	68.637	67.41	63.458	62.23	62.283	72.531	76.452	79.203	79.769	78.405	78.17	64.22	65.64	67.284	67.45	65.141	62.584	55.313	53.467	46.66	46.519	46.519
27	69.784	68.56	64.782	63.581	63.477	73.09	76.576	79.259	79.999	78.534	78.403	65.191	66.681	68.141	68.272	66.073	63.686	56.76	54.989	47.967	47.822	47.822
28	70.878	69.659	66.048	64.869	64.613	73.62	76.695	79.312	80.216	78.656	78.623	66.112	67.67	68.958	69.056	66.961	64.737	58.142	56.441	49.231	49.08	49.08
29	71.921	70.708	67.257	66.095	65.694	74.125	76.807	79.362	80.423	78.773	78.833	66.987	68.611	69.738	69.804	67.808	65.739	59.46	57.828	50.451	50.296	50.296
30	72.915	71.711	68.413	67.265	66.722	74.604	76.914	79.41	80.619	78.883	79.032	67.818	69.505	70.481	70.517	68.617	66.696	60.719	59.152	51.63	51.472	51.472

Conditional Prepayment Rates for LTV Category
0-30%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1377	0.3961	0.2994	0.2182	0.4321	0.2452	0.2145	0.3757	0.234	0.1819	0.5621	1.6046	0.8258	0.4681	1.3213	1.2652	0.0095
2	1.6905	3.6142	2.7807	2.0264	0.9256	0.5617	0.3565	16.9068	0.7435	1.0448	14.7759	7.8324	1.3682	1.8312	3.3983	5.3306	5.9427
3	6.2773	8.36	5.4744	1.7911	0.7226	0.2462	4.7762	9.2405	1.7467	15.7368	24.8461	3.0263	1.5737	2.4122	3.8533	6.4952	6.6315
4	9.5856	8.7777	3.4431	1.1352	0.3534	1.681	3.7046	12.0958	15.7718	21.2454	8.9462	3.5098	2.4832	2.9334	7.4855	7.319	6.4492
5	8.4458	4.7751	1.758	0.6799	1.5538	1.9589	5.0475	25.5384	25.7386	9.2832	7.084	4.664	2.9048	7.754	8.3851	6.9833	6.5333
6	4.3548	2.6223	0.904	1.9051	1.6681	2.8165	18.3937	21.7789	10.4564	7.9111	8.9712	5.4688	5.2303	5.9195	5.4052	4.7669	4.4971
7	2.3927	1.176	2.7352	1.9863	1.995	10.5381	19.9409	9.6324	8.3581	8.8058	8.6972	4.8303	5.2915	5.0501	4.862	4.3533	4.1615
8	1.1994	3.2235	2.7307	2.2236	4.8457	15.528	9.2494	6.5901	10.0766	8.5048	8.4728	5.8012	5.3749	5.2743	5.0897	4.5938	4.4833
9	3.4885	3.3041	2.7852	5.0014	7.4566	7.8342	6.4794	5.1361	11.8161	10.3081	8.8614	5.4252	5.1525	5.0313	4.8969	4.5491	4.4855
10	3.3418	3.3777	5.2133	7.4292	5.4988	6.1251	6.8864	4.3456	9.7552	11.4425	8.3681	5.2998	5.0413	4.954	4.9202	4.5773	4.5167
11	3.4118	5.5654	6.7489	5.3277	5.1304	6.9444	6.6579	14.8087	10.931	10.7892	8.182	5.2294	5.0089	5.0167	4.9871	4.6437	4.5858
12	5.6304	7.2417	5.3283	4.938	5.3202	6.9976	15.8602	15.0646	10.1575	10.1304	7.9481	5.3832	5.2369	5.2106	5.187	4.8752	4.8641
13	7.2	5.2263	4.6175	5.18	4.8842	9.1377	17.3423	14.063	9.8447	9.8115	7.7881	5.4169	5.2719	5.2408	5.2184	4.9088	4.9013
14	5.1262	4.9445	4.9144	4.7879	5.686	9.131	13.9123	11.675	8.738	8.6074	7.2042	5.2902	5.1244	5.055	5.0407	4.7893	4.8347
15	4.9678	4.7588	4.2543	4.9543	6.1827	8.7779	13.2076	11.1041	8.4612	8.4865	7.1323	5.2682	5.1019	5.0288	5.0158	4.7692	4.8177
16	4.8685	4.4694	4.205	5.3418	6.0183	8.4256	12.5495	10.6328	8.3522	8.365	7.0565	5.2451	5.0782	5.0011	4.9894	4.7482	4.8002
17	4.6304	4.3644	4.3673	5.1911	5.6577	7.4848	10.3821	9.0824	7.5948	7.4617	6.5106	5.1167	4.9293	4.8155	4.8113	4.6271	4.7321
18	4.6302	4.5077	4.3469	5.0276	5.4747	7.2562	10.1803	8.9156	7.5112	7.3678	6.4483	5.0956	4.9078	4.7908	4.7877	4.6079	4.7156
19	4.7333	4.5061	4.2646	4.8385	5.1791	6.5865	8.5306	7.5678	6.7902	6.5292	5.92	4.9626	4.7541	4.6012	4.6054	4.4827	4.6447
20	4.7631	4.372	4.1427	4.7251	5.1517	6.5276	8.4005	7.4564	6.7261	6.46	5.8711	4.9437	4.7352	4.5801	4.5851	4.4656	4.6293
21	4.6203	4.2449	4.0537	4.7068	5.1259	6.4626	8.2578	7.3355	6.6556	6.3837	5.8174	4.9235	4.7148	4.5572	4.563	4.4473	4.6133
22	4.4937	4.1727	4.0926	4.6548	4.9407	5.8426	6.8755	6.1924	5.9883	5.628	5.3198	4.7886	4.5596	4.3677	4.3804	4.3204	4.5407
23	4.3929	4.1621	4.0868	4.6404	4.9191	5.7955	6.7863	6.1162	5.9377	5.5757	5.2804	4.7713	4.5425	4.3491	4.3624	4.3048	4.5261
24	4.3908	4.1788	4.134	4.5852	4.7252	5.1929	5.5708	5.0963	5.2932	4.8646	4.7914	4.6287	4.3794	4.152	4.172	4.1709	4.449
25	4.3813	4.1702	4.1269	4.5721	4.7087	5.1644	5.5258	5.0573	5.263	4.8353	4.767	4.6151	4.3665	4.1387	4.159	4.1588	4.4363
26	4.3718	4.1618	4.1203	4.5586	4.6907	5.131	5.4717	5.0108	5.2276	4.8004	4.7386	4.6002	4.3522	4.1237	4.1444	4.1456	4.4231
27	4.3737	4.1815	4.1748	4.4995	4.4865	4.5465	4.4122	4.1067	4.6067	4.1343	4.2587	4.4488	4.1798	3.9178	3.945	4.0035	4.3405
28	4.3639	4.1722	4.166	4.4879	4.4755	4.5348	4.4	4.0959	4.5945	4.1244	4.2481	4.439	4.1713	3.9098	3.9372	3.9951	4.3299
29	4.3541	4.1629	4.1573	4.4763	4.4646	4.5231	4.388	4.0853	4.5824	4.1146	4.2375	4.4292	4.1628	3.9019	3.9294	3.9867	4.3193
30	4.3443	4.1537	4.1486	4.4647	4.4537	4.5114	4.376	4.0747	4.5703	4.1049	4.2269	4.4195	4.1544	3.8941	3.9217	3.9784	4.3088

Cumulative Prepayment Rates for LTV Category
0-30%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1377	0.3961	0.2994	0.2182	0.4321	0.2452	0.2145	0.3757	0.234	0.1819	0.5621	1.6046	0.8258	0.4681	1.3213	1.2652	0.0095
2	1.824	3.9846	3.0676	2.2392	1.3532	0.8053	0.5697	17.1735	0.9756	1.2242	15.236	9.3097	2.1823	2.2902	4.6715	6.5269	5.9516
3	7.8805	11.8248	8.2978	3.9757	2.0598	1.0472	5.2311	24.5292	2.6965	16.4512	35.5662	12.0141	3.7032	4.6222	8.2867	12.5287	12.1138
4	16.3808	19.2325	11.3701	5.047	2.3988	2.671	8.5571	32.7885	17.702	32.7892	40.5668	14.8983	6.005	7.3136	14.8017	18.676	17.5674
5	23.0682	22.8664	12.874	5.6766	3.8706	4.497	12.7941	47.175	37.7676	37.9468	43.7873	18.412	8.561	14.0189	21.3606	23.9856	22.6077
6	26.2008	24.7543	13.6293	7.4185	5.4113	7.0321	26.9928	55.6272	43.5525	41.5704	47.2186	22.1677	12.9276	18.6527	25.1735	27.3001	25.8023
7	27.8405	25.5755	15.8863	9.1891	7.2085	16.1121	39.1295	58.3278	47.4826	45.0219	50.041	25.1984	17.0505	22.323	28.3742	30.1426	28.5906
8	28.6403	27.7922	18.0696	11.1224	11.4512	27.8997	43.4496	59.9015	51.6407	47.908	52.4171	28.6094	20.9726	25.9233	31.525	32.9763	31.4379
9	30.9331	29.9835	20.2298	15.3486	17.6126	32.8241	46.0836	61.0031	55.8783	50.9728	54.6597	31.5793	24.4979	29.1468	34.3727	35.6242	34.1325
10	33.046	32.1438	24.1473	21.2809	21.7757	36.2971	48.6184	61.8661	58.8866	53.9775	56.5669	34.2965	27.7449	32.1371	37.0694	38.1427	36.7021
11	35.1255	35.5743	28.9376	25.1976	25.4017	39.9258	50.8488	64.6187	61.8893	56.4531	58.2592	36.8172	30.7894	34.9961	39.6483	40.5609	39.1768
12	38.4315	39.7769	32.4497	28.6082	28.9302	43.2794	55.7259	66.9664	64.3416	58.5024	59.7569	39.2598	33.7949	37.7979	42.1777	42.964	41.6668
13	42.4106	42.5823	35.3147	31.9813	31.9696	47.2962	60.1788	68.7979	66.4522	60.2703	61.0991	41.5706	36.6453	40.4521	44.5743	45.2509	44.0415
14	45.0322	45.0842	38.205	34.9161	35.3106	50.9207	63.1075	70.0861	68.1259	61.6588	62.2371	43.6917	39.2549	42.864	46.7553	47.3603	46.2588
15	47.4339	47.359	40.5679	37.7906	38.7165	54.0643	65.4828	71.1555	69.593	62.9017	63.2763	45.6786	41.7059	45.1291	48.8038	49.3487	48.3518
16	49.6623	49.3831	42.7943	40.7192	41.8053	56.7975	67.4287	72.0562	70.9089	64.0157	64.2249	47.5398	44.0078	47.2562	50.7279	51.2231	50.3277
17	51.6707	51.2642	44.9981	43.395	44.5165	59.0073	68.8283	72.7372	71.9978	64.9206	65.0332	49.2487	46.1168	49.1908	52.4803	52.9531	52.1736
18	53.5793	53.1133	47.0839	45.8368	46.9777	60.9786	70.0519	73.3398	72.9865	65.7425	65.777	50.8526	48.1018	51.0125	54.1304	54.5868	53.9181
19	55.432	54.8694	49.0311	48.0566	49.1677	62.63	70.9684	73.8019	73.8077	66.4131	66.4117	52.3252	49.9202	52.669	55.6329	56.0943	55.548
20	57.2003	56.489	50.834	50.1098	51.2241	64.1519	71.7903	74.2195	74.561	67.0295	67.0002	53.7101	51.6357	54.2332	57.0517	57.5208	57.0901
21	58.8274	57.9868	52.5185	52.0502	53.1569	65.5543	72.5272	74.5968	75.2518	67.5959	67.5457	55.0126	53.2539	55.71	58.3911	58.8704	58.5492
22	60.3317	59.3919	54.1446	53.872	54.9179	66.7352	73.0876	74.8895	75.8282	68.0606	68.0126	56.2091	54.7369	57.0535	59.6112	60.1162	59.913
23	61.732	60.7309	55.6972	55.5976	56.5784	67.8335	73.6005	75.1587	76.3621	68.4925	68.4487	57.3369	56.1394	58.3259	60.7665	61.2974	61.205
24	63.0666	62.0158	57.1995	57.218	58.0894	68.7567	73.9913	75.3677	76.807	68.8463	68.8212	58.372	57.4231	59.4815	61.8172	62.3866	62.4122
25	64.3367	63.2416	58.6332	58.7544	59.5188	69.6237	74.3559	75.563	77.2233	69.1788	69.172	59.35	58.6404	60.5795	62.8153	63.4216	63.5574
26	65.5458	64.4111	60.0017	60.2112	60.8708	70.4372	74.6955	75.7454	77.6127	69.4913	69.502	60.274	59.7946	61.6228	63.7633	64.4052	64.6438
27	66.7	65.5345	61.3277	61.579	62.0988	71.1182	74.9533	75.8863	77.9358	69.746	69.7829	61.1211	60.8493	62.568	64.6234	65.3108	65.6584
28	67.7988	66.6061	62.5921	62.8775	63.2647	71.7641	75.1981	76.0201	78.2414	69.9882	70.0496	61.9237	61.8525	63.4695	65.4436	66.1737	66.6225
29	68.845	67.6282	63.7982	64.1104	64.3718	72.3766	75.4305	76.1472	78.5305	70.2186	70.3029	62.6842	62.807	64.3296	66.2256	66.9961	67.5388
30	69.8411	68.6033	64.9485	65.2811	65.4232	72.9576	75.6512	76.2679	78.8039	70.4378	70.5434	63.405	63.7152	65.1502	66.9713	67.7799	68.4096

Conditional Prepayment Rates for LTV Category
30-75%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.9262	1.3302	1.4109	1.5633	0.9815	0.6468	0.5521	0.796	0.7504	0.5845	0.9636	1.1059	0.6632	1.1795	0.8835	1.1188	0.0055
2	4.7009	6.8581	5.7444	5.2486	2.2624	1.5978	1.3284	29.1592	2.368	3.4282	19.2793	6.5601	2.4866	3.6858	3.8645	3.704	8.0702
3	8.9176	9.5118	7.9553	3.4822	1.6838	0.8434	15.0814	15.4051	4.5351	28.5221	32.584	4.5426	3.3158	4.8928	5.8747	10.2029	8.4826
4	9.9969	8.0488	3.9495	1.9853	0.4866	3.6568	9.2549	18.4874	26.7308	33.9552	12.979	4.5916	4.1093	5.9453	11.0743	9.7987	6.694
5	9.094	4.0623	2.034	1.005	2.7672	3.693	10.2643	37.5339	35.0915	13.5233	9.469	5.5939	4.4207	11.0771	11.5653	8.0194	6.0936
6	4.4596	2.4178	1.2955	3.4577	2.5894	4.3401	26.0848	27.3563	13.032	9.9823	10.57	6.4586	7.5578	9.2891	7.3599	5.5948	4.3713
7	2.3357	1.4274	3.1707	2.6939	3.1973	12.6675	27.6529	11.9366	9.2894	9.9066	12.766	5.8156	7.3896	6.7889	5.8079	4.5752	3.6833
8	1.0543	3.0228	3.2242	3.3347	6.8469	18.0756	12.3776	8.378	10.065	10.9019	12.1845	7.3196	6.8301	6.3277	5.4426	4.4157	3.851
9	3.1583	3.4615	3.836	7.2432	9.9986	8.3899	8.6018	5.7775	12.5262	18.7328	15.1213	7.2321	6.7568	6.2287	5.5222	4.9092	4.3542
10	3.7304	4.0337	6.1123	8.7453	6.2914	6.9153	8.3232	5.9977	14.7194	21.2207	12.7163	6.1757	5.7937	5.4876	5.265	4.6975	4.1721
11	3.3921	5.7763	8.0669	5.6396	6.521	7.2288	9.4835	32.8422	19.6473	20.6602	12.6373	6.2283	6.0067	6.1478	5.9146	5.2834	4.6993
12	5.9845	8.1041	6.5259	5.9783	6.612	8.5621	35.8365	37.0406	18.2442	18.752	12.0917	6.5885	6.8267	6.9309	6.6816	6.0497	5.4638
13	8.5117	6.6346	6.4019	6.3097	5.8247	21.3157	53.2502	41.2808	20.8571	21.4618	14.3416	8.5315	8.8563	8.9799	8.6592	7.8497	7.1001
14	5.8511	6.3073	6.0761	5.7895	10.878	21.8957	35.9197	29.0873	16.4049	16.8753	12.8163	8.2566	8.5068	8.5268	8.2407	7.58	6.9705
15	5.2542	6.6176	5.2632	8.8081	12.6262	19.8872	30.7788	25.2577	14.8816	16.5219	12.6419	8.2157	8.4591	8.4679	8.1862	7.5385	6.9426
16	5.8438	5.3806	7.8497	10.0759	11.7008	17.4359	26.6405	22.6196	14.5991	16.1994	12.4587	8.1723	8.4084	8.4056	8.1285	7.495	6.9137
17	5.1363	8.3742	8.4122	9.3263	9.979	13.739	19.4196	18.133	12.7778	13.7738	11.1145	7.8956	8.0599	7.9616	7.7175	7.2254	6.7817
18	8.8767	8.9045	8.0364	8.3034	8.889	12.4908	18.948	17.7542	12.5934	13.5488	10.973	7.8563	8.0147	7.9077	7.6675	7.1866	6.7548
19	9.2992	8.5596	7.2846	7.3428	7.8085	10.882	14.8573	14.1269	10.9342	11.4182	9.7221	7.572	7.6598	7.4626	7.2542	6.9111	6.6176
20	9.0298	7.6367	6.5241	6.7509	7.748	10.7574	14.6106	13.8993	10.8021	11.2673	9.618	7.5375	7.621	7.418	7.2128	6.8775	6.593
21	8.0544	6.8355	6.0117	6.7142	7.7031	10.6189	14.3347	13.6453	10.6561	11.0995	9.5033	7.5002	7.5788	7.3692	7.1675	6.8415	6.5671
22	7.228	6.3414	6.092	6.6202	7.3201	9.2134	11.1339	10.7595	9.1915	9.2864	8.3736	7.2143	7.2254	6.9335	6.7616	6.5659	6.4272
23	6.6529	6.316	6.0863	6.602	7.284	9.1198	10.979	10.614	9.0943	9.1813	8.295	7.1832	7.1912	6.8956	6.7263	6.5364	6.4043
24	6.6465	6.3605	6.1949	6.5013	6.8877	7.8126	8.349	8.2038	7.7425	7.5658	7.2285	6.8841	6.825	6.4511	6.3109	6.2493	6.2559
25	6.6345	6.3495	6.1862	6.4852	6.8621	7.7615	8.2834	8.1403	7.6902	7.5145	7.1845	6.8607	6.8005	6.4256	6.2871	6.2275	6.2368
26	6.6226	6.3391	6.1787	6.4684	6.8332	7.7	8.1982	8.0589	7.6275	7.4507	7.1322	6.8347	6.7729	6.3965	6.26	6.2034	6.2166
27	6.6354	6.3905	6.304	6.3595	6.4216	6.4917	6.07	6.0735	6.3877	6.0244	6.1299	6.5204	6.3921	5.9421	5.8338	5.903	6.0582
28	6.6226	6.3779	6.2919	6.3459	6.4067	6.4755	6.0626	6.0652	6.3718	6.0135	6.1151	6.505	6.3775	5.9289	5.8215	5.8893	6.0432
29	6.6098	6.3652	6.2798	6.3322	6.392	6.4595	6.0554	6.057	6.3561	6.0027	6.1004	6.4896	6.3629	5.9159	5.8093	5.8758	6.0283
30	6.5969	6.3525	6.2676	6.3186	6.3772	6.4435	6.0484	6.0489	6.3404	5.9921	6.0859	6.4742	6.3484	5.9029	5.7972	5.8624	6.0135

Cumulative Prepayment Rates for LTV Category
30-75%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.9262	1.3302	1.4109	1.5633	0.9815	0.6468	0.5521	0.796	0.7504	0.5845	0.9636	1.1059	0.6632	1.1795	0.8835	1.1188	0.0055
2	5.5835	8.0972	7.0743	6.729	3.2217	2.2343	1.8727	29.7231	3.1006	3.9923	20.0564	7.5934	3.1332	4.8218	4.7137	4.7813	8.0752
3	13.9984	16.8305	14.4621	9.9745	4.8499	3.0574	16.6162	40.4945	7.4915	31.3207	46.058	11.7884	6.3421	9.4734	10.3022	14.4819	15.8633
4	22.5721	23.5107	17.8326	11.7587	5.3118	6.5852	24.226	51.2999	32.1132	54.4031	52.9593	15.8205	10.177	14.8227	20.1787	22.8104	21.4636
5	29.5845	26.605	19.4983	12.6423	7.9215	9.9954	31.8359	68.8797	55.6576	60.3695	57.2517	20.4803	14.1175	24.1494	29.2922	28.9256	26.1946
6	32.7071	28.369	20.5369	15.65	10.2887	13.8433	49.0149	76.6957	61.2769	64.097	61.5174	25.5287	20.5335	31.0581	34.39	32.826	29.3656
7	34.2683	29.3811	23.0453	17.9099	13.1293	24.5247	62.3295	79.1176	64.7119	67.3725	66.0649	29.7578	26.2987	35.6124	38.0954	35.8204	31.[illegible]35
8	34.9563	31.4922	25.5144	20.6287	19.0069	37.767	66.5729	80.5741	68.0477	70.5652	69.8138	34.7384	31.2062	39.5477	41.3475	38.5625	34.4568
9	36.9939	33.8346	28.3559	26.3212	26.9746	42.7713	69.1167	81.4802	71.7502	75.4135	73.8775	39.2787	35.7128	43.1632	44.4551	41.4645	37.2173
10	39.3226	36.4662	32.7063	32.6933	31.4665	46.5147	71.3466	82.3609	75.5345	79.8497	76.7642	42.8619	39.3052	46.1407	47.2445	44.0954	39.7392
11	41.3601	40.081	38.0952	36.4316	35.8083	50.1274	73.6523	86.8657	79.815	83.2277	79.2559	46.2404	42.803	49.2829	50.2017	46.9045	42.453
12	44.8267	44.8525	42.0929	40.1699	39.9076	54.0798	81.507	90.2513	82.9899	85.647	81.3316	49.5822	46.5297	52.5979	53.3345	49.9416	45.4526
13	49.4575	48.4384	45.7574	43.8743	43.2679	63.0372	88.9429	92.6066	85.942	87.8872	83.4894	53.6136	51.0231	56.5843	57.1122	53.6338	49.1296
14	52.3684	51.6194	49.0104	47.0518	49.1649	70.2488	91.2678	93.5745	87.7732	89.2665	85.1374	57.1745	54.9487	60.0223	60.3887	56.9124	52.4777
15	54.8293	54.7426	51.6559	51.6021	55.2479	75.3427	92.5368	94.1677	89.1578	90.3861	86.5515	60.4178	58.5132	63.1391	63.369	59.92	55.575
16	57.4226	57.1139	55.3909	56.3381	60.1573	78.9063	93.2935	94.5632	90.311	91.3003	87.7662	63.3728	61.7506	65.9656	66.0806	62.6796	58.4411
17	59.566	60.606	59.0732	60.2699	63.8436	81.2173	93.6967	94.8077	91.171	91.9503	88.7129	65.9891	64.5879	68.4134	68.4413	65.1362	61.0544
18	63.0778	64.0032	62.2891	63.4366	66.7926	83.0248	94.0127	95.0031	91.9088	92.5005	89.542	68.3824	67.1776	70.6472	70.6018	67.3993	63.4776
19	66.4259	66.9733	64.9654	65.9996	69.1481	84.3995	94.2129	95.1307	92.4675	92.9006	90.1947	70.504	69.4508	72.5854	72.4859	69.416	65.6884
20	69.3706	69.3929	67.1847	68.1795	71.2991	85.6082	94.3802	95.2382	92.9583	93.2496	90.7766	72.4528	71.5362	74.3656	74.2207	71.2815	67.7428
21	71.7572	71.3911	69.0941	70.1984	73.269	86.671	94.52	95.3289	93.3893	93.5542	91.2955	74.243	73.4493	76.0006	75.8178	73.0072	69.652
22	73.7245	73.1163	70.9108	72.0531	74.9945	87.4937	94.6129	95.3905	93.721	93.7804	91.7085	75.8334	75.1329	77.4236	77.2145	74.548	71.396
23	75.4031	74.7244	72.6138	73.7784	76.5837	88.2319	94.6941	95.4447	94.0185	93.983	92.0829	77.3007	76.6856	78.739	78.5083	75.9794	73.0205
24	76.9673	76.2404	74.2404	75.3636	77.9753	88.8056	94.7489	95.482	94.2484	94.1343	92.3816	78.6042	78.0517	79.8835	79.6391	77.2571	74.5044
25	78.424	77.6566	75.763	76.8407	79.2648	89.3304	94.7988	95.516	94.4588	94.2731	92.6567	79.8124	79.3187	80.9488	80.6934	78.4494	75.8899
26	79.7808	78.9799	77.1887	78.2171	80.4595	89.8099	94.8439	95.5468	94.6512	94.4002	92.9099	80.9321	80.4935	81.9401	81.6761	79.562	77.1838
27	81.0495	80.2287	78.5525	79.4816	81.5045	90.1826	94.8745	95.5681	94.7999	94.4953	93.1118	81.9263	81.5263	82.8012	82.5337	80.5542	78.3654
28	82.231	81.3946	79.827	80.6623	82.4793	90.5299	94.9032	95.5881	94.9386	94.5843	93.3006	82.8526	82.4901	83.6087	83.3389	81.4848	79.4718
29	83.3317	82.4835	81.0183	81.7648	83.3887	90.8535	94.9301	95.6069	95.068	94.6678	93.4773	83.7158	83.3897	84.3661	84.095	82.3579	80.5082
30	84.3571	83.5005	82.132	82.7944	84.2373	91.1551	94.9554	95.6244	95.1887	94.746	93.6427	84.5204	84.2295	85.0765	84.8051	83.1772	81.479

Conditional Prepayment Rates for LTV Category
75-85%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.5671	0.7937	1.1086	1.1921	0.4686	0.7103	0.1716	0.5244	0.4301	0.3431	0.4706	0.738	0.4407	0.7091	0.6526	0.5847	0.0034
2	3.8712	5.8	5.5175	4.856	1.2141	1.4756	0.8092	24.574	1.2436	2.0524	16.5252	5.1423	1.5221	2.2948	2.5023	2.5384	6.2724
3	8.6357	9.9504	7.199	3.2678	0.9162	0.4249	12.2814	13.5607	2.8605	26.4248	29.6337	3.3416	2.2571	3.6029	4.8144	8.747	7.1008
4	10.0396	7.9474	3.5423	1.5425	0.4451	2.4628	7.7201	16.4123	22.872	33.5879	11.9406	3.571	3.0822	4.9204	9.5556	8.4107	5.7028
5	7.5884	5.0459	1.9337	0.8011	2.0361	2.5973	9.1919	34.4673	33.1042	12.811	9.3147	4.5199	3.4373	9.5299	10.3472	7.2448	5.2575
6	4.4545	2.3009	0.7578	2.664	1.9193	3.3514	26.1027	27.594	12.5434	9.4134	10.5899	5.4303	6.4918	8.4641	7.0779	5.2338	3.9008
7	1.8606	1.0556	3.0922	2.4297	2.5282	11.9417	26.6526	12.0895	9.5477	10.1538	13.4571	5.1051	6.6972	6.641	5.7738	4.4281	3.4062
8	0.9639	2.2285	2.7523	3.0821	5.9768	18.1362	11.0382	8.3144	10.1767	10.3805	12.2892	6.5402	6.44	6.1881	5.4039	4.2669	3.5503
9	3.1031	3.119	3.2483	6.3203	9.6097	8.3009	9.1574	5.5627	12.6385	19.8833	15.3619	6.7253	6.3643	6.0695	5.4599	4.7262	4.0081
10	3.3658	3.6521	6.4088	8.4909	6.636	6.9742	7.1708	5.4558	14.8029	23.0838	13.5311	5.7826	5.4892	5.3743	5.2225	4.5379	3.8542
11	4.0404	6.5562	8.652	6.2797	5.7628	7.8518	7.471	36.9502	19.6561	22.7804	13.1277	5.6922	5.5506	5.8614	5.7104	4.9692	4.2272
12	6.2521	8.0931	5.9551	5.2449	5.4875	7.764	37.2991	38.0711	17.3564	18.7516	11.4688	5.552	5.8009	6.0653	5.9212	5.2344	4.5322
13	8.6688	6.2827	5.0976	5.0122	5.9012	19.3146	57.7868	45.0795	20.2695	21.8556	13.8532	7.3111	7.6518	7.9889	7.7997	6.905	5.9882
14	5.5268	5.8925	5.9928	5.5713	8.9613	19.8907	39.503	30.758	15.7417	16.8346	12.2022	7.0509	7.3162	7.5363	7.3736	6.6396	5.869
15	4.5933	7.2736	5.1823	6.9384	10.589	19.0288	33.8695	26.664	14.3233	16.4676	12.0392	7.0208	7.2795	7.4869	7.3254	6.6057	5.8484
16	6.0512	5.6269	6.1197	8.0621	10.3311	16.7695	29.2371	23.8084	14.0639	16.124	11.8646	6.9881	7.2397	7.4335	7.2736	6.5694	5.8267
17	5.791	6.5789	6.6114	7.8514	8.7943	13.0321	20.5232	18.4215	12.0958	13.3806	10.4178	6.726	6.9051	6.9909	6.8562	6.304	5.7048
18	6.9753	7.0452	6.6731	7.0204	7.8576	11.8782	19.9382	17.9698	11.9272	13.1431	10.2837	6.6968	6.87	6.9449	6.8116	6.2717	5.6847
19	7.3399	7.1642	6.0896	6.2178	6.8725	10.1582	15.0059	13.7782	10.1559	10.7891	8.9539	6.4274	6.5296	6.5028	6.3938	6.0006	5.5576
20	7.5497	6.4203	5.4713	5.7307	6.8233	10.0471	14.7048	13.5171	10.0366	10.6327	8.8565	6.4023	6.5001	6.4652	6.3571	5.9731	5.5394
21	6.7621	5.7656	5.0544	5.7038	6.7869	9.92	14.3683	13.2256	9.901	10.4567	8.7469	6.3743	6.467	6.4232	6.3162	5.9428	5.5199
22	6.089	5.369	5.1397	5.6182	6.4065	8.4338	10.6971	10.0357	8.3603	8.5077	7.5634	6.1033	6.1285	5.9922	5.908	5.6719	5.3898
23	5.6175	5.3524	5.1389	5.6067	6.3781	8.3502	10.5171	9.876	8.2722	8.4005	7.49	6.0808	6.1026	5.9603	5.8767	5.6475	5.3729
24	5.6186	5.4018	5.2501	5.5143	5.9857	6.9917	7.6428	7.3241	6.8765	6.7142	6.3919	5.7972	5.7527	5.5232	5.4618	5.3658	5.2345
25	5.6117	5.397	5.2468	5.5046	5.9671	6.9492	7.5699	7.2576	6.8321	6.6639	6.3529	5.7816	5.7355	5.5029	5.4416	5.3487	5.2209
26	5.6049	5.3927	5.2446	5.4942	5.9451	6.8956	7.4763	7.1725	6.7764	6.6006	6.305	5.7635	5.7152	5.4788	5.4178	5.3292	5.2062
27	5.6224	5.4494	5.3731	5.3935	5.5388	5.6648	5.2685	5.1664	5.5239	5.1598	5.2933	5.4655	5.3521	5.0349	4.9952	5.0351	5.0579
28	5.6148	5.4431	5.3666	5.386	5.5301	5.6551	5.2599	5.1579	5.5136	5.1503	5.2823	5.457	5.3437	5.0259	4.9858	5.0254	5.0479
29	5.6072	5.4367	5.3601	5.3785	5.5213	5.6453	5.2513	5.1495	5.5033	5.1408	5.2713	5.4484	5.3353	5.0168	4.9765	5.0157	5.0379
30	5.5996	5.4303	5.3536	5.371	5.5126	5.6355	5.2428	5.1411	5.493	5.1314	5.2604	5.4398	5.3269	5.0078	4.9671	5.006	5.0279

Cumulative Prepayment Rates for LTV Category
75-85%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.5671	0.7937	1.1086	1.1921	0.4686	0.7103	0.1716	0.5244	0.4301	0.3431	0.4706	0.738	0.4407	0.7091	0.6526	0.5847	0.0034
2	4.4156	6.5476	6.5649	5.9902	1.6769	2.1754	0.9791	24.9571	1.6682	2.3883	16.9149	5.8423	1.9558	2.9875	3.1384	3.1082	6.2756
3	12.6595	15.8289	13.2882	9.0598	2.5771	2.5897	13.0312	34.8997	4.4732	28.053	41.393	8.9801	4.1612	6.4705	7.7897	11.5686	12.9095
4	21.3895	22.4868	16.3547	10.4604	3.0086	4.9649	19.5115	44.9834	26.0834	51.5537	48.1614	12.1828	7.0816	11.0216	16.5174	18.9138	17.8057
5	27.304	26.3668	17.9672	11.1757	4.9692	7.3844	26.4459	62.045	49.8274	57.2607	52.6176	16.0355	10.2078	19.3155	24.9279	24.6285	22.0054
6	30.5044	28.0423	18.5862	13.53	6.7694	10.4033	43.8882	70.6262	55.6703	60.7442	57.0427	20.3975	15.8556	25.8673	30.0025	28.3984	24.9223
7	31.7804	28.7919	21.0913	15.6162	9.0875	20.7103	56.667	73.1875	59.4231	64.01	61.9227	24.2303	21.228	30.5035	33.7921	31.3801	27.3435
8	32.4286	30.3571	23.2508	18.194	14.4143	34.3618	60.4017	74.6597	62.9403	66.9262	65.7011	28.8277	25.9869	34.4862	37.0915	34.0925	29.7568
9	34.4946	32.4956	25.727	23.305	22.4291	39.4155	63.0564	75.537	66.7835	71.8361	69.7902	33.1972	30.3468	38.1177	40.2142	36.9409	32.3636
10	36.6619	34.9206	30.4492	29.7273	27.4106	43.2408	64.9036	76.3336	70.6504	76.3276	72.7996	36.6678	33.8409	41.1136	43.0123	39.523	34.7522
11	39.1736	39.1093	36.4094	34.0635	31.4303	47.192	66.6599	81.3568	74.9693	79.6821	75.2981	39.8641	37.1594	44.184	45.8892	42.2012	37.2563
12	42.9005	43.9374	40.1526	37.446	35.0185	50.7658	74.6401	84.5618	77.994	81.787	77.1802	42.7874	40.4173	47.1568	48.6824	44.8651	39.8154
13	47.7415	47.3765	43.1615	40.5007	38.6436	58.8999	82.2711	86.863	80.8792	83.7602	79.1797	46.4024	44.4434	50.8118	52.1212	48.1754	43.0289
14	50.557	50.3968	46.516	43.7193	43.7998	65.6144	84.4328	87.7123	82.6536	84.9405	80.6901	49.6211	47.9845	53.9711	55.1055	51.127	45.9811
15	52.7648	53.9021	49.237	47.5023	49.3244	70.7231	85.5405	88.217	84.0067	85.8957	81.993	52.5883	51.2385	56.8622	57.8408	53.8588	48.7428
16	55.5398	56.4153	52.2819	51.5818	54.1211	74.345	86.1672	88.545	85.1398	86.6733	83.1178	55.3248	54.2295	59.5085	60.3486	56.3878	51.3269
17	58.0312	59.1871	55.3647	55.2226	57.7677	76.676	86.4763	88.7371	85.9739	87.2123	83.9851	57.7667	56.868	61.8049	62.5332	58.6485	53.7041
18	60.8557	61.9559	58.2648	58.2139	60.7301	78.5165	86.7137	88.8891	86.6943	87.6692	84.7493	60.0279	59.3054	63.9206	64.5486	60.7502	55.9332
19	63.6172	64.5688	60.7303	60.6721	63.1115	79.8989	86.856	88.9842	87.2328	87.9938	85.3445	62.0474	61.4577	65.7591	66.3068	62.6303	57.9848
20	66.2459	66.7396	62.8078	62.793	65.3088	81.1237	86.9741	89.0644	87.7096	88.2782	85.8789	63.9253	63.4562	67.4641	67.9389	64.3856	59.9126
21	68.4202	68.562	64.6201	64.7802	67.3417	82.2089	87.0722	89.132	88.1316	88.5275	86.3587	65.6716	65.3117	69.0452	69.4541	66.0244	61.7244
22	70.2442	70.1597	66.3681	66.6235	69.1277	83.0381	87.1345	89.1763	88.4519	88.7087	86.7364	67.234	66.9535	70.4227	70.7792	67.4929	63.3936
23	71.8233	71.6659	68.0247	68.3579	70.7896	83.7883	87.1891	89.2154	88.7417	88.8719	87.0815	68.6931	68.4859	71.7086	72.0172	68.8698	64.9657
24	73.3132	73.1037	69.6292	69.9664	72.248	84.363	87.2244	89.2415	88.9622	88.9912	87.3533	69.9976	69.8403	72.8274	73.0984	70.1025	66.4135
25	74.7169	74.4619	71.1474	71.4822	73.6133	84.8933	87.2567	89.2654	89.1659	89.1014	87.6059	71.2215	71.1115	73.8791	74.1153	71.2637	67.7804
26	76.0397	75.7451	72.5846	72.9107	74.8912	85.3823	87.2861	89.2873	89.3538	89.2031	87.8402	72.3696	72.3042	74.8674	75.0714	72.3576	69.0711
27	77.2916	76.9713	73.979	74.2349	76.0099	85.7559	87.3053	89.3019	89.4965	89.2773	88.0243	73.3945	73.3564	75.7249	75.9042	73.335	70.2588
28	78.4712	78.1289	75.2962	75.4852	77.0641	86.1072	87.3234	89.3156	89.6308	89.3474	88.198	74.3609	74.3498	76.537	76.6932	74.2605	71.3834
29	79.5826	79.2217	76.5407	76.6657	78.0578	86.4379	87.3404	89.3287	89.7574	89.4137	88.3621	75.2724	75.288	77.3062	77.4408	75.1372	72.4484
30	80.63	80.2535	77.7166	77.7805	78.9945	86.749	87.3566	89.341	89.8766	89.4764	88.5171	76.1323	76.1741	78.0351	78.1493	75.9676	73.4571

Conditional Prepayment Rates for LTV Category
85-90%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.2854	0.4007	0.3734	0.5924	0.1888	0.1957	0.1466	0.1091	0.2278	0.1323	0.2404	0.5346	0.1966	0.2605	0.3255	0.2865	0.0034
2	2.5002	3.8971	3.4211	3.1102	0.8513	0.4364	0.3615	20.0486	0.888	1.5903	14.0979	3.8563	1.0232	1.4106	1.8533	1.7879	5.3291
3	7.5512	8.1198	6.0025	2.098	0.5734	0.2932	9.8234	9.8295	2.4831	23.2167	26.8811	2.6859	1.7758	3.0523	4.2881	7.629	6.2835
4	10.2883	7.9633	3.3439	1.1335	0.351	1.798	5.1906	14.8012	21.9765	28.516	10.5802	3.1948	2.9339	4.5288	8.7768	7.8198	5.6913
5	8.3591	3.633	1.4822	0.6303	1.6444	2.3311	7.5802	37.3718	30.5668	11.8826	9.2192	4.5543	3.3774	8.9825	9.5466	7.2608	5.5193
6	3.8958	1.8366	0.5206	2.0692	1.8228	2.9239	23.4245	28.6438	11.9624	9.121	11.1349	5.2331	5.8141	7.381	6.5581	5.1684	3.9956
7	1.9158	0.6855	2.752	2.1804	2.2593	10.8227	22.4287	11.329	9.3487	11.1839	13.4992	4.9734	6.1488	6.4913	5.9201	4.7896	3.7923
8	0.6937	2.976	2.7368	2.7854	5.7966	15.4274	9.9142	7.2445	10.0724	11.9079	11.4662	6.0811	6.2423	6.4305	5.8797	4.8456	4.0333
9	2.8955	2.7806	3.2239	6.3523	8.533	7.8749	7.0418	6.9986	12.6789	16.9805	12.968	6.1807	6.1415	6.2771	5.8506	5.1295	4.3395
10	3.7203	3.4173	6.0519	8.2486	6.179	6.2982	6.4171	5.384	13.0418	19.0898	12.1779	5.6792	5.652	5.8734	5.7487	5.0528	4.2801
11	3.5698	6.3694	8.6377	6.2316	5.7819	6.7022	7.2685	28.6311	15.5996	18.8885	11.847	5.5727	5.6406	6.1488	6.028	5.3041	4.4988
12	5.7579	8.4413	6.3144	5.7327	5.8921	8.0055	28.4358	28.4912	14.2996	16.3654	10.7583	5.5293	5.835	6.3014	6.1889	5.522	4.7578
13	8.4737	5.6655	5.9042	5.3574	5.2351	13.5775	35.6409	30.2338	14.786	16.9109	11.3565	6.1654	6.5129	7.0267	6.9018	6.1645	5.3182
14	5.9758	5.1465	5.2223	4.5805	6.8809	13.403	27.3724	22.7956	12.1972	13.7796	10.1854	5.9763	6.2653	6.6804	6.5742	5.9604	5.2299
15	5.3057	5.5736	5.6084	5.4135	7.6513	13.2903	25.0525	20.94	11.4901	13.5989	10.1007	5.9602	6.2452	6.6527	6.5473	5.9418	5.22
16	5.0396	5.3063	4.6446	5.9804	7.6947	12.2786	22.9388	19.5468	11.3521	13.4209	10.0058	5.9423	6.2227	6.6216	6.5171	5.9213	5.2092
17	5.4008	4.9443	4.9913	6.002	6.871	10.1208	17.232	15.6644	9.954	11.4085	8.9345	5.7494	5.9723	6.2766	6.1903	5.714	5.1178
18	5.1554	5.2717	5.1689	5.5972	6.3963	9.5384	16.9168	15.4169	9.8587	11.2736	8.858	5.7334	5.9524	6.2496	6.1641	5.6957	5.1078
19	5.4124	5.4956	4.9061	5.1685	5.8	8.3225	13.1631	12.1932	8.5605	9.4735	7.844	5.533	5.6946	5.8996	5.8318	5.4813	5.0114
20	5.7021	5.1326	4.5866	4.9095	5.7721	8.2592	12.9789	12.0322	8.4904	9.3785	7.7865	5.5195	5.6781	5.8775	5.8103	5.4658	5.0026
21	5.3241	4.7961	4.3643	4.896	5.7502	8.1837	12.7616	11.8423	8.4073	9.2662	7.7188	5.5037	5.6588	5.8517	5.7852	5.448	4.9928
22	4.988	4.596	4.4347	4.8344	5.4669	7.0941	9.8002	9.2504	7.2401	7.7128	6.7879	5.2997	5.399	5.5047	5.4551	5.2306	4.8928
23	4.7412	4.5883	4.4364	4.8294	5.4502	7.0437	9.6744	9.1385	7.1851	7.6415	6.7419	5.2876	5.3843	5.4855	5.4363	5.2168	4.8846
24	4.748	4.6282	4.5241	4.7622	5.1545	6.0202	7.255	6.98	6.0977	6.2529	5.8557	5.0717	5.1124	5.1283	5.0956	4.9879	4.777
25	4.7458	4.6267	4.5239	4.7586	5.1445	5.9958	7.2028	6.9326	6.0711	6.2201	5.8327	5.0643	5.1038	5.1173	5.0847	4.9792	4.7711
26	4.7437	4.6257	4.5246	4.7544	5.1319	5.9628	7.132	6.8683	6.0354	6.176	5.8022	5.055	5.0928	5.1032	5.0708	4.9685	4.7643
27	4.7599	4.6712	4.6258	4.6804	4.8216	5.0078	5.1945	5.103	5.0299	4.9492	4.963	4.8252	4.8066	4.7344	4.7181	4.726	4.6474
28	4.7573	4.6687	4.6234	4.6784	4.8185	5.0055	5.1911	5.0997	5.027	4.9461	4.9598	4.8228	4.8044	4.7317	4.7151	4.7228	4.6441
29	4.7547	4.6662	4.6211	4.6763	4.8154	5.0033	5.1877	5.0964	5.0241	4.943	4.9566	4.8205	4.8021	4.7289	4.7122	4.7195	4.6408
30	4.7521	4.6637	4.6187	4.6743	4.8123	5.001	5.1843	5.0931	5.0211	4.9399	4.9533	4.8181	4.7998	4.7262	4.7092	4.7163	4.6375

Cumulative Prepayment Rates for LTV Category
85-90%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.2854	0.4007	0.3734	0.5924	0.1888	0.1957	0.1466	0.1091	0.2278	0.1323	0.2404	0.5346	0.1966	0.2605	0.3255	0.2865	0.0034
2	2.778	4.2813	3.7817	3.6838	1.0384	0.6313	0.5075	20.1237	1.1137	1.7204	14.3021	4.3702	1.2177	1.6674	2.1727	2.0691	5.3324
3	10.1037	12.0321	9.5495	5.7016	1.6049	0.9217	10.2289	27.8822	3.5625	24.3967	37.1756	6.9313	2.9679	4.6615	6.3588	9.5243	11.2665
4	19.3036	18.9919	12.5606	6.766	1.9482	2.6829	14.7739	38.1258	24.4661	44.979	43.5018	9.8572	5.7869	8.9342	14.5073	16.516	16.2557
5	25.9823	21.9024	13.8476	7.3491	3.5445	4.905	20.9315	59.3284	46.7333	50.7473	48.1399	13.8192	8.9056	16.9371	22.4651	22.4224	20.7597
6	28.8269	23.3154	14.2925	9.2466	5.2781	7.6005	38.1189	68.9296	52.577	54.3905	52.9746	18.0857	14.0357	22.8187	27.3313	26.2608	23.8017
7	30.1684	23.8321	16.6283	11.1996	7.3807	17.2085	50.3665	71.4511	56.4464	58.2438	57.9842	21.867	19.076	27.5436	31.3783	29.5891	26.543
8	30.6441	26.0572	18.8846	13.6338	12.633	29.2848	54.404	72.8088	60.0974	61.7468	61.561	26.1917	23.8198	31.8678	35.1113	32.7549	29.3187
9	32.6135	28.0713	21.4666	19.0207	19.8764	34.417	56.8738	73.9847	64.1345	66.0246	65.086	30.2666	28.1555	35.7801	38.5708	35.9109	32.1604
10	35.068	30.4756	26.154	25.5553	24.6395	38.1289	58.9038	74.8091	67.7017	69.9438	67.9284	33.7432	31.8736	39.1843	41.7428	38.8344	34.8218
11	37.3323	34.7991	32.4303	30.0722	28.7933	41.7777	61.0015	78.8914	71.3548	73.0239	70.3281	36.934	35.3517	42.5146	44.852	41.7247	37.483
12	40.8524	40.1561	36.6171	33.9504	32.7497	45.7863	68.4689	81.7195	74.1306	75.1495	72.2284	39.8982	38.7236	45.6929	47.8251	44.5511	40.1544
13	45.733	43.4462	40.2797	37.3565	36.0367	51.9835	75.087	83.8244	76.5614	76.9671	74.0063	43.002	42.2502	48.9949	50.9169	47.5162	42.9867
14	48.8821	46.2617	43.3225	40.1055	40.1068	57.2396	78.3211	84.916	78.2571	78.1888	75.4125	45.812	45.4095	51.9014	53.6468	50.1958	45.6158
15	51.5079	49.1511	46.413	43.2008	44.3055	61.7252	80.451	85.6819	79.6508	79.222	76.6588	48.4349	48.3509	54.5923	56.1766	52.699	48.0959
16	53.8674	51.7452	48.8257	46.4271	48.1885	65.2986	81.9018	86.2421	80.8629	80.0982	77.7636	50.8841	51.09	57.0839	58.5214	55.0378	50.4359
17	56.2649	54.0306	51.2941	49.4628	51.3773	67.8709	82.7366	86.6006	81.8007	80.7398	78.6476	53.1048	53.5484	59.2824	60.5966	57.155	52.61
18	58.4294	56.3438	53.7186	52.1173	54.1339	70.0419	83.4116	86.8964	82.6337	81.299	79.4426	55.1851	55.8463	61.3282	62.5293	59.1395	54.6647
19	60.5824	58.6249	55.8976	54.4268	56.4679	71.7501	83.8461	87.0931	83.2832	81.7142	80.082	57.0719	57.9091	63.1341	64.2405	60.9363	56.5739
20	62.7257	60.6359	57.8325	56.5038	58.6517	73.3001	84.2168	87.2628	83.8703	82.0849	80.665	58.8453	59.8449	64.8233	65.842	62.6262	58.3812
21	64.6112	62.4168	59.5874	58.4708	60.6981	74.7059	84.533	87.409	84.4006	82.4157	81.1964	60.5121	61.6613	66.4028	67.3407	64.2156	60.0921
22	66.2824	64.0404	61.2913	60.3159	62.5293	75.8226	84.7441	87.5093	84.8177	82.6648	81.6265	62.0256	63.2935	67.7992	68.6695	65.6559	61.6827
23	67.7908	65.5856	62.9191	62.0682	64.2529	76.8507	84.9316	87.5989	85.2008	82.8919	82.0237	63.4528	64.8312	69.1119	69.9194	67.0151	63.1911
24	69.2289	67.072	64.5045	63.7113	65.7923	77.6661	85.0584	87.6609	85.5018	83.0631	82.3448	64.7473	66.2109	70.2702	71.0255	68.2452	64.5926
25	70.5976	68.4884	66.0173	65.2736	67.248	78.4283	85.1748	87.718	85.7827	83.2223	82.6454	65.9725	67.5164	71.3652	72.0716	69.4105	65.9242
26	71.9003	69.8383	67.4611	66.7592	68.6241	79.1398	85.2816	87.7705	86.0446	83.3703	82.9264	67.132	68.7514	72.4002	73.0605	70.5142	67.1893
27	73.145	71.138	68.8697	68.1512	69.8497	79.7012	85.3537	87.8067	86.2493	83.4814	83.1525	68.1816	69.8566	73.3104	73.9331	71.5109	68.3635
28	74.3294	72.3758	70.2119	69.4766	71.0145	80.2336	85.4219	87.841	86.4433	83.5868	83.367	69.1792	70.9075	74.1763	74.7632	72.4591	69.4816
29	75.4565	73.5548	71.4909	70.7388	72.1217	80.7387	85.4864	87.8735	86.6273	83.6867	83.5705	70.1273	71.9067	75.0001	75.553	73.3611	70.5463
30	76.5291	74.6778	72.7097	71.9408	73.1743	81.2179	85.5475	87.9042	86.8018	83.7816	83.7636	71.0285	72.857	75.784	76.3046	74.2195	71.5603

Conditional Prepayment Rates for LTV Category
90-93%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.2241	0.2935	0.3668	0.4376	0.2594	0.1552	0.0696	0.1033	0.1348	0.1565	0.1905	0.3804	0.1651	0.2603	0.3033	0.241	0.0027
2	2.1199	3.6836	3.2427	2.8823	0.6819	0.6164	0.189	16.5094	0.6474	1.4335	12.2429	3.1902	0.8106	1.1896	1.6658	1.5547	4.4953
3	6.7592	7.8683	6.0163	2.2477	0.553	0.2867	8.0653	8.5768	1.9222	22.4951	25.7527	2.4111	1.5822	2.8625	4.1344	7.2425	6.1637
4	10.1179	8.7665	3.1445	1.1102	0.3876	1.7138	5.0901	13.0505	19.5228	29.3877	11.2446	3.1022	2.794	4.6173	8.3409	7.6782	5.5147
5	8.7349	4.2423	1.4011	0.6604	1.3242	1.9721	6.3101	34.6112	28.0109	12.4102	8.4885	4.3178	3.1701	8.268	9.2352	6.9161	5.1718
6	4.3279	1.9497	0.6502	2.0332	1.5418	2.8419	20.9299	27.224	11.4875	9.6671	11.1833	5.1602	5.7931	7.8357	6.9645	5.3854	4.1004
7	1.9329	0.809	2.5745	1.9474	1.9311	9.7738	20.9013	11.279	8.5181	10.769	12.243	4.5966	6.0307	6.4554	5.8654	4.6649	3.6434
8	0.798	3.0739	2.7982	2.1549	5.2078	15.8085	9.2472	8.3551	10.0517	10.6367	11.2478	5.9155	6.1343	6.3607	5.7962	4.7008	3.8708
9	2.8816	3.0393	3.1449	5.8399	8.0611	7.4671	6.7044	5.922	12.4663	17.0001	13.1759	5.9618	5.9369	6.1056	5.6779	4.9173	4.1204
10	3.0239	3.5749	6.4499	8.669	5.6716	5.9025	6.8811	4.2834	12.7339	20.1646	12.4266	5.4646	5.4517	5.706	5.588	4.8524	4.0711
11	3.7045	7.1485	9.0764	6.3721	5.2032	6.6275	7.366	28.9285	16.0879	20.0385	12.0652	5.3567	5.4403	5.9899	5.8763	5.1087	4.2921
12	6.5593	8.7959	6.0571	5.401	5.8691	7.4307	28.6844	29.3895	14.407	16.7936	10.6376	5.1924	5.5108	6.007	5.9047	5.2104	4.4517
13	8.215	6.5872	5.7196	5.8367	5.4173	13.3133	39.3341	32.5592	15.4134	17.954	11.6324	6.0178	6.3935	6.9625	6.8445	6.0464	5.173
14	6.4913	5.6712	6.1177	5.5233	6.4671	13.705	29.8041	24.1121	12.5551	14.4251	10.3524	5.8208	6.134	6.5965	6.4981	5.833	5.0815
15	5.3362	5.3522	5.1019	5.0294	7.5613	13.6693	27.1223	22.0503	11.7856	14.2218	10.259	5.8041	6.113	6.5675	6.4701	5.814	5.0715
16	5.6581	5.4604	4.5154	5.7799	7.6557	12.5689	24.6998	20.5084	11.635	14.0216	10.1549	5.7854	6.0894	6.5351	6.4388	5.7929	5.0606
17	5.4566	4.8436	4.8247	5.8398	6.7879	10.2318	18.1991	16.198	10.1095	11.7822	8.9955	5.585	5.828	6.172	6.0945	5.5767	4.966
18	5.0216	5.132	5.039	5.4237	6.2934	9.61	17.8458	15.931	10.0068	11.6332	8.9127	5.5684	5.8072	6.1439	6.0673	5.558	4.9559
19	5.2331	5.3977	4.7686	4.9851	5.672	8.3074	13.6465	12.4054	8.6046	9.6562	7.8255	5.3607	5.5389	5.777	5.7186	5.3348	4.8561
20	5.5673	5.0202	4.4407	4.7216	5.6435	8.2406	13.4443	12.2343	8.53	9.553	7.764	5.3468	5.5218	5.7543	5.6965	5.3191	4.8473
21	5.1768	4.6726	4.2133	4.7082	5.6211	8.1609	13.2055	12.0318	8.4415	9.431	7.6917	5.3305	5.5017	5.7276	5.6706	5.301	4.8374
22	4.8319	4.467	4.2862	4.6453	5.3261	7.0056	9.957	9.2446	7.1948	7.7492	6.7037	5.1196	5.2322	5.3654	5.3255	5.0754	4.7341
23	4.5793	4.4588	4.2878	4.6406	5.3091	6.9529	9.8217	9.1273	7.137	7.6731	6.6553	5.1072	5.2171	5.3457	5.3064	5.0614	4.7259
24	4.5863	4.5002	4.3786	4.572	5.0021	5.879	7.2198	6.8463	5.9885	6.1907	5.7241	4.8847	4.936	4.9745	4.9517	4.8245	4.6148
25	4.5839	4.4984	4.3783	4.5686	4.9922	5.854	7.1651	6.7979	5.961	6.1564	5.7001	4.8772	4.9272	4.9635	4.9408	4.8159	4.609
26	4.5818	4.4971	4.3789	4.5647	4.9795	5.8201	7.0907	6.732	5.9241	6.1101	5.6684	4.8676	4.9159	4.9491	4.9267	4.8051	4.6022
27	4.5984	4.5444	4.4838	4.4891	4.6585	4.8297	5.0516	4.9022	4.8752	4.8206	4.7962	4.6315	4.6213	4.5677	4.5612	4.555	4.4817
28	4.5956	4.5415	4.4812	4.4874	4.6558	4.8277	5.0487	4.8996	4.8726	4.8177	4.793	4.6292	4.6191	4.5652	4.5585	4.5519	4.4785
29	4.5929	4.5387	4.4787	4.4856	4.653	4.8257	5.0456	4.8969	4.8699	4.8147	4.7898	4.6268	4.6168	4.5626	4.5558	4.5489	4.4753
30	4.5902	4.5359	4.4762	4.4839	4.6502	4.8236	5.0426	4.8942	4.8672	4.8118	4.7866	4.6243	4.6145	4.5601	4.553	4.5458	4.4721

Cumulative Prepayment Rates for LTV Category
90-93%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.2241	0.2935	0.3668	0.4376	0.2594	0.1552	0.0696	0.1033	0.1348	0.1565	0.1905	0.3804	0.1651	0.2603	0.3033	0.241	0.0027
2	2.3388	3.966	3.5973	3.3067	0.9396	0.7707	0.2584	16.5849	0.7812	1.5869	12.4079	3.558	0.9743	1.4466	1.9639	1.792	4.4979
3	8.9209	11.4991	9.385	5.4757	1.4865	1.0534	8.2083	23.5932	2.6753	23.5403	34.8217	5.8748	2.5373	4.2598	6.0089	8.8922	10.369
4	18.052	19.1902	12.2186	6.5196	1.8651	2.7223	12.7	32.9633	21.2851	45.1808	41.8545	8.7414	5.2317	8.6272	13.7775	15.7986	15.2419
5	25.0963	22.5692	13.4395	7.1321	3.1482	4.5853	17.8476	53.588	42.2592	51.26	46.309	12.5299	8.1696	15.9915	21.5146	21.4489	19.4917
6	28.2683	24.0518	13.9972	9.0011	4.6137	7.1856	33.3698	63.4228	48.1905	55.1377	51.4055	16.7719	13.3039	22.2599	26.7034	25.4648	22.6393
7	29.6198	24.6538	16.1877	10.7513	6.4086	15.7629	45.2151	66.1203	51.8821	58.8311	56.1739	20.2922	18.2563	26.9358	30.697	28.7033	25.2871
8	30.166	26.919	18.5038	12.6453	11.1275	28.1049	49.1702	67.7723	55.7153	61.9489	59.9004	24.5317	22.9155	31.1798	34.354	31.7685	27.9645
9	32.1196	29.0864	21.0309	17.6585	18.0129	32.912	51.6446	68.7919	59.8666	66.2798	63.6999	28.4846	27.0986	34.9504	37.6868	34.7867	30.6767
10	34.1083	31.5548	26.045	24.6406	22.4302	36.3495	53.9402	69.4631	63.4882	70.4432	66.7545	31.8446	30.678	38.2266	40.7462	37.5876	33.2225
11	36.468	36.311	32.6367	29.3099	26.2095	39.9146	56.1662	73.7555	67.4038	73.6658	69.311	34.9253	34.0284	41.4408	43.753	40.3656	35.7787
12	40.4874	41.7369	36.6308	32.9979	30.2132	43.5851	64.0481	76.7627	70.2815	75.7777	71.2679	37.7238	37.2122	44.4441	46.5679	43.0293	38.2981
13	45.1859	45.4395	40.1628	36.7546	33.6629	49.6082	71.6202	79.0472	72.8724	77.6289	73.1621	40.7737	40.6792	47.6909	49.6134	45.9382	41.0799
14	48.589	48.4121	43.7199	40.0863	37.5344	54.937	75.0366	80.1634	74.6387	78.8371	74.6412	43.5285	43.7764	50.5367	52.2908	48.5608	43.6607
15	51.2009	51.0536	46.4982	42.9462	41.7461	59.4802	77.1876	80.9262	76.0762	79.8479	75.9465	46.0998	46.66	53.1697	54.7702	51.0105	46.0964
16	53.8198	53.5972	48.8293	46.0569	45.6639	63.0565	78.5994	81.4723	77.3191	80.6965	77.0987	48.5008	49.3455	55.6062	57.0666	53.2997	48.396
17	56.2005	55.7279	51.2027	49.0062	48.8551	65.5855	79.3758	81.8116	78.2674	81.3055	78.0103	50.6738	51.75	57.7481	59.0914	55.3677	50.5319
18	58.2703	57.8724	53.5565	51.5765	51.6019	67.7069	79.9942	82.0888	79.1065	81.8327	78.828	52.7104	53.9987	59.741	60.9768	57.3071	52.552
19	60.3162	60.0082	55.6675	53.8051	53.9144	69.3573	80.3803	82.2689	79.7527	82.2173	79.4788	54.5545	56.0129	61.4938	62.6401	59.0597	54.4287
20	62.3761	61.8843	57.5368	55.8064	56.079	70.8529	80.7071	82.4234	80.3356	82.5593	80.0715	56.2892	57.9046	63.1339	64.1972	60.7093	56.2071
21	64.1826	63.5409	59.2295	57.7045	58.1089	72.2076	80.9836	82.556	80.861	82.8634	80.6109	57.9211	59.6812	64.6683	65.6548	62.262	57.8923
22	65.7801	65.0491	60.8772	59.4863	59.9208	73.2726	81.1638	82.645	81.2696	83.0887	81.0433	59.4009	61.2744	66.02	66.9428	63.6666	59.459
23	67.2199	66.4861	62.4536	61.1816	61.6278	74.2531	81.3233	82.7244	81.6446	83.2937	81.4426	60.798	62.7772	67.2918	68.155	64.9936	60.9464
24	68.5949	67.8707	63.9931	62.7724	63.1484	75.0227	81.4286	82.7783	81.9359	83.446	81.7623	62.0632	64.1226	68.41	69.2241	66.1924	62.3282
25	69.9055	69.1918	65.4642	64.2879	64.5882	75.7425	81.5253	82.828	82.2078	83.5876	82.0616	63.2626	65.3975	69.4683	70.2363	67.3295	63.6429
26	71.1549	70.4524	66.8701	65.7314	65.951	76.415	81.614	82.8736	82.4613	83.7191	82.3417	64.3993	66.6054	70.4697	71.1942	68.4079	64.8937
27	72.3508	71.6683	68.2459	67.0851	67.1611	76.9398	81.6725	82.9045	82.6572	83.8163	82.5649	65.4267	67.6838	71.3471	72.0362	69.3799	66.0544
28	73.4907	72.8277	69.5586	68.3766	68.3131	77.4383	81.7279	82.9338	82.8432	83.9086	82.7768	66.4048	68.711	72.183	72.8383	70.306	67.1613
29	74.5771	73.9333	70.8111	69.6087	69.4098	77.912	81.7804	82.9615	83.0197	83.9963	82.9782	67.3361	69.6894	72.9795	73.6026	71.1884	68.217
30	75.6126	74.9876	72.0063	70.7844	70.4541	78.3621	81.8301	82.9879	83.1873	84.0795	83.1695	68.223	70.6215	73.7386	74.331	72.0295	69.224

Conditional Prepayment Rates for LTV Category
93-95%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1459	0.1593	0.3064	0.3748	0.1369	0.1504	0.0607	0.0448	0.1183	0.115	0.1144	0.3447	0.0896	0.2004	0.2295	0.1736	0.0018
2	1.8341	3.5704	3.2049	2.4106	0.569	0.3085	0.2918	13.4679	0.5883	1.1517	10.5513	2.9851	0.6054	1.0761	1.4274	1.3233	4.0693
3	7.2127	8.1949	6.1888	1.9446	0.553	0.2607	7.2792	7.5233	1.6814	19.8251	23.7516	2.3056	1.4315	2.6616	3.4897	6.8292	6.1365
4	9.9012	9.0756	3.2949	1.2679	0.322	1.5865	4.3991	11.2391	17.3978	26.9874	10.7608	2.9063	2.65	4.197	7.866	7.5779	5.5264
5	9.086	4.5306	1.523	0.694	1.0762	1.7511	5.6651	32.9787	25.6248	11.8552	8.381	4.2258	2.94	7.8228	9.0545	6.8375	5.1889
6	4.3213	2.0475	0.635	1.8268	1.5799	2.3156	20.638	26.575	10.232	8.9797	10.0206	4.8581	5.4347	7.6085	6.761	5.2716	4.0705
7	1.9622	0.6635	2.6307	1.9807	1.9498	9.1397	21.7133	11.554	8.1986	10.8722	12.505	4.5424	6.1469	6.5752	5.9778	4.791	3.7923
8	0.7298	3.2154	2.7754	2.2225	5.1973	14.0782	8.8626	6.8843	9.8763	10.9837	10.6927	5.8286	6.0264	6.262	5.7107	4.6619	3.8784
9	3.3012	3.5565	2.9786	5.7598	8.465	7.3642	6.9347	6.506	10.9968	16.3191	13.0086	5.8996	5.8745	6.0553	5.6298	4.8925	4.1415
10	3.0823	3.7371	6.3553	8.3205	5.8547	5.9321	6.038	5.7881	12.3093	20.3659	12.4843	5.5193	5.5068	5.7711	5.6333	4.9079	4.1596
11	3.8212	7.0193	8.1199	6.0637	5.3058	6.47	5.8632	27.559	15.6365	19.6488	11.8146	5.2759	5.3531	5.8838	5.753	5.0177	4.2583
12	6.4835	9.5839	6.4512	5.3435	5.5573	6.962	26.9969	28.9887	14.0482	16.5512	10.4821	5.1428	5.4363	5.9155	5.7956	5.1306	4.4278
13	8.4291	6.6316	5.4783	5.6964	5.2277	12.2191	37.3868	31.2974	14.7175	17.3227	11.2151	5.8148	6.1527	6.689	6.5543	5.8084	5.0193
14	6.2977	5.9617	5.7751	5.2309	5.9278	13.0195	28.3375	23.2117	12.0305	13.9439	9.9759	5.6228	5.9016	6.3363	6.2221	5.6026	4.9297
15	5.6578	5.9098	5.2716	4.665	7.1768	13.0033	25.8875	21.2968	11.3258	13.7415	9.884	5.6059	5.8808	6.3085	6.1955	5.5843	4.9196
16	5.9417	5.5199	4.2096	5.5053	7.2765	12.003	23.6713	19.8544	11.1793	13.5413	9.7819	5.5872	5.8576	6.2773	6.1657	5.5639	4.9086
17	5.3349	4.657	4.4544	5.5704	6.4759	9.8069	17.483	15.6601	9.7075	11.367	8.6604	5.3922	5.6048	5.9276	5.8354	5.3556	4.816
18	4.8835	4.8864	4.6638	5.1945	6.0286	9.2385	17.1433	15.3953	9.607	11.2195	8.5794	5.3755	5.5844	5.9006	5.8096	5.3375	4.8059
19	5.0391	5.1477	4.433	4.7942	5.4486	7.9825	13.0994	11.9736	8.256	9.3043	7.5288	5.1737	5.3251	5.5472	5.4751	5.1226	4.7083
20	5.3683	4.8071	4.147	4.555	5.4209	7.9173	12.9044	11.8054	8.1832	9.2027	7.4689	5.1596	5.3082	5.5254	5.4541	5.1075	4.6994
21	5.0113	4.493	3.9481	4.5422	5.3984	7.8396	12.6744	11.607	8.0972	9.0831	7.3986	5.1434	5.2886	5.4997	5.4296	5.09	4.6895
22	4.6966	4.3088	4.0177	4.481	5.1134	6.7261	9.5493	8.9085	6.8975	7.4571	6.4449	4.9386	5.0283	5.151	5.0985	4.8728	4.5886
23	4.4643	4.3011	4.0202	4.4761	5.0963	6.6749	9.4191	8.7941	6.8413	7.3826	6.3979	4.9261	5.0135	5.1321	5.0803	4.8593	4.5804
24	4.4708	4.3409	4.1062	4.4095	4.8	5.6407	6.9181	6.5892	5.7372	5.9514	5.4997	4.7103	4.7422	4.7748	4.7402	4.6313	4.4719
25	4.4677	4.339	4.107	4.406	4.7898	5.6163	6.8656	6.5421	5.7105	5.9178	5.4764	4.7026	4.7335	4.7642	4.7299	4.623	4.4661
26	4.4648	4.3375	4.1087	4.4019	4.777	5.5833	6.794	6.4779	5.6746	5.8726	5.4456	4.6929	4.7224	4.7505	4.7165	4.6126	4.4592
27	4.4803	4.383	4.2081	4.3285	4.4676	4.6304	4.836	4.7119	4.6671	4.6293	4.6051	4.4641	4.4383	4.3834	4.3659	4.3719	4.3417
28	4.4768	4.3801	4.2068	4.3266	4.4644	4.6283	4.8331	4.7092	4.6644	4.6262	4.6019	4.4614	4.4359	4.381	4.3635	4.369	4.3384
29	4.4733	4.3771	4.2056	4.3247	4.4613	4.6262	4.8302	4.7064	4.6617	4.6231	4.5987	4.4588	4.4336	4.3786	4.361	4.366	4.3351
30	4.4699	4.3742	4.2043	4.3228	4.4581	4.624	4.8272	4.7036	4.6589	4.62	4.5954	4.4561	4.4312	4.3762	4.3585	4.3631	4.3318

Cumulative Prepayment Rates for LTV Category
93-95%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1459	0.1593	0.3064	0.3748	0.1369	0.1504	0.0607	0.0448	0.1183	0.115	0.1144	0.3447	0.0896	0.2004	0.2295	0.1736	0.0018
2	1.9767	3.7227	3.5012	2.7755	0.7051	0.4584	0.3522	13.4946	0.7058	1.2649	10.6515	3.3195	0.6944	1.2742	1.6536	1.4945	4.071
3	9.0226	11.5811	9.4613	4.6603	1.2528	0.7163	7.5307	19.8836	2.3663	20.6734	31.7052	5.5405	2.1113	3.8925	5.0766	8.2074	9.9381
4	17.9358	19.5339	12.4254	5.8606	1.5677	2.2634	11.4296	28.3326	18.9833	41.2764	38.7354	8.2335	4.6721	7.8728	12.4548	15.0589	14.8303
5	25.2589	23.1268	13.7463	6.507	2.6083	3.9181	16.1059	49.1566	38.6439	47.5308	43.3459	11.9508	7.4037	14.8804	20.1168	20.6667	19.0936
6	28.4099	24.6726	14.2874	8.1908	4.1076	6.0382	31.6652	59.5462	44.2046	51.4215	48.1158	15.9532	12.2452	21.0231	25.2052	24.6101	22.2142
7	29.7739	25.1622	16.5115	9.9777	5.915	14.0964	44.103	62.5317	47.9907	55.459	53.2167	19.4383	17.3255	25.8268	29.3133	27.9423	24.9627
8	30.2699	27.5162	18.7913	11.9385	10.6045	25.2059	47.8319	63.9797	51.9971	58.9472	56.8979	23.6047	21.9135	30.0242	32.9364	30.9767	27.6296
9	32.4945	30.0295	21.1665	16.8921	17.7928	30.091	50.3462	65.1888	55.877	63.4012	60.8	27.4904	26.0578	33.7776	36.2555	33.9698	30.3357
10	34.5004	32.5723	26.0762	23.6163	22.3044	33.658	52.3139	66.1591	59.6413	67.93	63.9892	30.8557	29.678	37.1032	39.3531	36.793	32.9171
11	36.9074	37.1681	31.9408	28.0919	26.1108	37.2395	54.0629	70.4302	63.7416	71.3116	66.5817	33.8564	32.9743	40.2675	42.3061	39.5088	35.43
12	40.8315	42.9971	36.2139	31.7799	29.8487	40.785	61.4869	73.5866	66.7774	73.5471	68.5821	36.5975	36.1178	43.2354	45.0822	42.1227	37.915
13	45.5945	46.6372	39.5997	35.4897	33.1416	46.4998	68.8516	75.9288	69.4586	75.4666	70.4767	39.509	39.4581	46.3674	48.0145	44.9087	40.5917
14	48.8476	49.6873	42.9657	38.6888	36.6604	51.7978	72.2819	77.0951	71.3059	76.7301	71.9611	42.142	42.4487	49.1201	50.6003	47.4265	43.0786
15	51.5828	52.5251	45.8542	41.3835	40.6464	56.356	74.4949	77.9034	72.8216	77.7917	73.2753	44.6026	45.2396	51.6739	53.0018	49.7841	45.4295
16	54.2888	55.0147	48.0348	44.4049	44.3744	59.9853	75.978	78.4887	74.1378	78.6868	74.4391	46.9036	47.8447	54.0439	55.2329	51.9925	47.6525
17	56.5718	56.9972	50.2406	47.2823	47.4345	62.5776	76.8065	78.8545	75.1459	79.3316	75.3628	48.989	50.1826	56.1326	57.2057	53.9923	49.7204
18	58.5478	58.9772	52.4422	49.8074	50.0878	64.7686	77.4721	79.155	76.0413	79.892	76.1938	50.9464	52.3739	58.0813	59.0479	55.8722	51.6795
19	60.4846	60.9576	54.4333	52.0112	52.334	66.4792	77.8908	79.3511	76.7331	80.3021	76.8571	52.7216	54.3409	59.7996	60.6776	57.5749	53.5022
20	62.4412	62.7092	56.2108	54.0005	54.4413	68.0345	78.2475	79.5201	77.3591	80.6679	77.4627	54.394	56.1925	61.4114	62.2074	59.1813	55.2322
21	64.1675	64.2659	57.8309	55.8906	56.4216	69.448	78.5511	79.6657	77.9254	80.9942	78.0154	55.97	57.9352	62.9231	63.6433	60.6968	56.8742
22	65.703	65.6903	59.4128	57.6678	58.1926	70.5624	78.75	79.7639	78.367	81.2367	78.4596	57.4012	59.5014	64.258	64.9154	62.0708	58.403
23	67.0929	67.0499	60.9308	59.3615	59.8646	71.5912	78.9267	79.8517	78.7734	81.458	78.8708	58.7547	60.9817	65.5169	66.1157	63.3719	59.8568
24	68.4219	68.3621	62.4179	60.9535	61.3568	72.4007	79.0439	79.9114	79.0899	81.6226	79.2007	59.9824	62.3097	66.6262	67.1768	64.5497	61.2094
25	69.6899	69.6162	63.8433	62.4725	62.7724	73.1597	79.1519	79.9665	79.3861	81.7761	79.5103	61.1481	63.5707	67.6784	68.1838	65.6692	62.4983
26	70.8998	70.8147	65.2098	63.9219	64.115	73.8706	79.2511	80.0174	79.6629	81.9189	79.8006	62.2548	64.7678	68.6763	69.139	66.7333	63.7265
27	72.0593	71.9728	66.5511	65.2832	65.3093	74.4264	79.3168	80.0518	79.8773	82.0247	80.0323	63.2566	65.8386	69.5523	69.9805	67.6943	64.8679
28	73.1654	73.0789	67.835	66.5841	66.4483	74.9555	79.3791	80.0846	80.0811	82.1253	80.2528	64.2119	66.8604	70.3886	70.7839	68.6117	65.958
29	74.2209	74.1355	69.0639	67.8273	67.5348	75.4593	79.4383	80.1156	80.275	82.221	80.4626	65.1231	67.8357	71.1871	71.5512	69.4877	66.9993
30	75.228	75.1447	70.2403	69.0155	68.5713	75.939	79.4945	80.1452	80.4595	82.3121	80.6625	65.9922	68.7666	71.9496	72.2839	70.3243	67.994

Conditional Prepayment Rates for LTV Category
95-97%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1607	0.1373	0.3133	0.3395	0.1654	0.0979	0.1065	0.1587	0.1207	0.0918	0.126	0.2693	0.1321	0.196	0.2537	0.1883	0.0016
2	1.691	3.2592	3.3444	2.4043	0.5232	0.3338	0.2455	11.849	0.456	0.7619	8.9724	2.6527	0.5828	1.0688	1.5646	1.4572	3.6145
3	7.3218	8.9381	6.3728	1.9116	0.4516	0.2445	5.5646	6.3018	1.3294	16.8135	20.8918	2.0789	1.3186	2.5588	3.6166	6.1613	5.4932
4	11.22	9.8404	3.559	1.1611	0.2733	1.3627	3.8218	9.739	14.5142	24.336	9.7899	2.7138	2.4526	4.0418	7.1589	6.7368	5.1065
5	10.0574	4.602	1.6735	0.6318	1.1316	1.5594	5.0914	30.3475	22.6556	10.4405	8.005	4.0849	2.988	7.1663	7.9934	6.1858	4.8483
6	4.4496	2.2872	0.655	1.8885	1.359	2.0947	18.2906	24.6709	9.1454	8.4392	10.1258	4.841	5.2635	6.9626	6.2574	4.9658	3.9591
7	2.2281	0.7914	2.6152	2.0921	1.7589	8.2909	19.1009	11.1111	7.4529	9.2578	11.4827	4.3789	5.4931	5.8256	5.3178	4.3341	3.5406
8	1.1213	3.3298	2.7077	2.3446	4.6885	12.5223	8.2287	8.3891	8.8199	9.9213	10.0347	5.4897	5.5149	5.6476	5.1691	4.2907	3.6828
9	3.2094	3.3134	3.1885	5.2706	7.0132	6.3966	6.2183	6.2551	9.5195	14.3802	11.4	5.4323	5.2335	5.3166	4.9596	4.3782	3.8214
10	3.4906	3.7182	6.1464	7.8939	5.1867	5.2094	6.3618	5.6907	11.4581	17.8759	11.4306	5.2959	5.1118	5.2787	5.1673	4.5729	3.9964
11	3.6365	6.6438	8.0025	5.5453	4.7804	6.0072	6.3178	24.9128	14.0856	17.4619	10.9078	5.1154	5.022	5.4363	5.3301	4.7221	4.1323
12	5.8546	8.5516	5.8267	5.1967	5.3359	6.4975	24.5041	25.5097	12.978	15.0034	9.8619	5.0783	5.1953	5.5699	5.4712	4.9164	4.3723
13	8.147	6.0137	5.4093	5.3591	5.0316	11.5062	31.939	27.0802	13.3851	15.4454	10.3854	5.659	5.7964	6.2084	6.0985	5.4856	4.8848
14	6.1579	5.6692	5.664	4.8125	5.8242	11.8225	24.4509	20.1112	10.9699	12.4766	9.2503	5.4725	5.5641	5.8883	5.7954	5.2928	4.7956
15	5	5.9269	5.151	4.6162	6.7725	11.8503	22.278	18.3811	10.3104	12.2684	9.1448	5.4509	5.5407	5.8582	5.7658	5.2706	4.7811
16	5.6648	5.3071	4.0106	5.2795	6.8899	10.9333	20.3253	17.0849	10.1587	12.0658	9.0318	5.4277	5.5152	5.8251	5.7335	5.2466	4.7659
17	5.2652	4.31	4.2692	5.3619	6.1413	8.973	15.1407	13.5704	8.8538	10.1802	8.0163	5.2396	5.2824	5.509	5.4337	5.0528	4.6746
18	4.5695	4.551	4.485	5.0003	5.7152	8.4491	14.8262	13.3176	8.7506	10.0352	7.929	5.2189	5.26	5.4805	5.4058	5.0316	4.6606
19	4.7472	4.8127	4.263	4.6161	5.1729	7.3359	11.4447	10.4537	7.5555	8.3757	6.982	5.0252	5.0218	5.1617	5.1029	4.8325	4.5651
20	5.071	4.4988	3.9893	4.3845	5.1427	7.2712	11.2653	10.2969	7.4818	8.2773	6.9182	5.0075	5.0032	5.1385	5.0801	4.8145	4.5525
21	4.7365	4.2077	3.7987	4.3691	5.1176	7.1958	11.0576	10.1161	7.397	8.1639	6.8456	4.9879	4.9821	5.112	5.0543	4.7946	4.5391
22	4.4398	4.0356	3.8617	4.3091	4.8535	6.2079	8.4293	7.8495	6.3364	6.7529	5.9887	4.7923	4.7436	4.7979	4.7551	4.5942	4.441
23	4.2209	4.0285	3.863	4.3014	4.834	6.1578	8.3117	7.7456	6.2808	6.6823	5.9399	4.7767	4.7272	4.778	4.7356	4.5784	4.4295
24	4.2252	4.064	3.9412	4.2367	4.5603	5.2372	6.1875	5.8777	5.3021	5.434	5.1325	4.5712	4.479	4.4563	4.4285	4.3687	4.3248
25	4.221	4.0623	3.9409	4.2304	4.5476	5.2124	6.1388	5.8338	5.2746	5.4011	5.107	4.5605	4.4686	4.4443	4.4165	4.358	4.3158
26	4.217	4.0608	3.9413	4.2236	4.5326	5.1799	6.0739	5.7756	5.239	5.3582	5.0749	4.548	4.456	4.4294	4.4019	4.3455	4.3059
27	4.2297	4.1015	4.0316	4.153	4.2475	4.328	4.3904	4.2627	4.3424	4.2665	4.3182	4.3311	4.1963	4.099	4.0857	4.1248	4.1933
28	4.2252	4.0987	4.0292	4.1483	4.2418	4.3241	4.3862	4.2586	4.3376	4.2618	4.3123	4.3256	4.192	4.0948	4.0812	4.1194	4.1869
29	4.2207	4.096	4.0268	4.1437	4.2362	4.3201	4.3819	4.2545	4.3328	4.2571	4.3064	4.32	4.1877	4.0906	4.0767	4.114	4.1806
30	4.2162	4.0932	4.0244	4.1391	4.2305	4.3161	4.3775	4.2503	4.3279	4.2523	4.3004	4.3145	4.1834	4.0863	4.0722	4.1086	4.1743

Cumulative Prepayment Rates for LTV Category
95-97%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1607	0.1373	0.3133	0.3395	0.1654	0.0979	0.1065	0.1587	0.1207	0.0918	0.126	0.2693	0.1321	0.196	0.2537	0.1883	0.0016
2	1.8485	3.3916	3.6466	2.7349	0.6876	0.4312	0.3516	11.971	0.5761	0.8525	9.0846	2.9142	0.7141	1.2626	1.8142	1.6428	3.6161
3	9.0014	11.9875	9.7668	4.5876	1.1345	0.6728	5.8172	17.3745	1.8891	17.3055	27.8732	4.9213	2.0171	3.7765	5.3518	7.6842	8.8862
4	19.0757	20.5491	12.9494	5.6864	1.4014	1.997	9.2318	24.8186	15.7271	36.352	34.5245	7.4357	4.3766	7.5945	12.0205	13.776	13.4311
5	27.0283	24.1373	14.3863	6.2746	2.4952	3.4649	13.4456	44.3546	33.5275	42.0866	39.0972	11.0226	7.1352	13.9815	18.7538	18.871	17.4352
6	30.1748	25.8315	14.9376	8.015	3.7834	5.3733	27.2853	54.27	38.7628	45.8999	44.0815	14.989	11.7717	19.5872	23.4738	22.61	20.4875
7	31.6737	26.4025	17.119	9.8971	5.414	12.6426	38.5574	57.2551	42.3737	49.4869	48.8831	18.32	16.2512	23.8433	27.1412	25.6431	23.0645
8	32.4091	28.78	19.3121	11.9529	9.6472	22.5114	42.2597	59.0538	46.1138	52.7952	52.4423	22.1982	20.4054	27.6449	30.4434	28.4572	25.6078
9	34.4866	31.0608	21.8186	16.447	15.6241	26.8143	44.6729	60.2025	49.6378	56.9569	55.9755	25.7311	24.0673	30.9671	33.3964	31.1593	28.1155
10	36.6687	33.5289	26.4853	22.7991	19.6861	29.9979	46.889	61.1397	53.3459	61.2348	59.0265	28.9172	27.411	34.0471	36.2752	33.8169	30.6073
11	38.8588	37.766	32.1743	26.8868	23.191	33.3986	48.876	64.9112	57.2704	64.5495	61.5462	31.786	30.4941	37.0158	39.0534	36.4012	33.057
12	42.2504	42.8487	35.9741	30.4826	26.8758	36.7901	55.922	67.7029	60.2838	66.8314	63.5403	34.4514	33.4926	39.8597	41.7187	38.9352	35.521
13	46.6868	46.1092	39.2839	33.9794	30.1311	42.3271	62.7079	69.824	62.9218	68.7867	65.4069	37.2366	36.6348	42.8221	44.4967	41.5973	38.1345
14	49.7609	48.9891	42.5512	36.9362	33.6775	47.3064	66.1675	70.9392	64.7652	70.1033	66.8811	39.7536	39.4555	45.437	46.9555	44.0074	40.562
15	52.0997	51.8222	45.3475	39.6242	37.5347	51.6537	68.5075	71.7364	66.2884	71.2229	68.1907	42.1018	42.0905	47.8683	49.2433	46.2655	42.8552
16	54.6112	54.2028	47.4081	42.5434	41.1638	55.1514	70.1449	72.331	67.6202	72.1787	69.3549	44.2947	44.5536	50.13	51.373	48.3826	45.0224
17	56.8093	56.03	49.5077	45.3369	44.1552	57.6871	71.1064	72.7169	68.6532	72.881	70.2868	46.2822	46.7708	52.133	53.2642	50.3045	47.0389
18	58.6143	57.872	51.6125	47.7913	46.7545	59.8463	71.8984	73.0402	69.5763	73.4974	71.1282	48.146	48.8521	54.0062	55.0341	52.113	48.9487
19	60.4004	59.7267	53.5181	49.9365	48.9636	61.553	72.4152	73.2579	70.2982	73.9566	71.8055	49.8371	50.7269	55.6661	56.6069	53.7557	50.7267
20	62.2143	61.3734	55.2218	51.8747	51.0391	63.1131	72.8628	73.4481	70.9546	74.3695	72.4259	51.4295	52.4943	57.2269	58.0864	55.3074	52.4141
21	63.8199	62.8418	56.7767	53.7172	52.9927	64.5389	73.2504	73.6142	71.5515	74.7405	72.994	52.9294	54.1607	58.6945	59.4783	56.7733	54.0159
22	65.2518	64.1892	58.2953	55.4517	54.7463	65.6762	73.5118	73.7292	72.0224	75.0208	73.4547	54.2931	55.6639	59.9973	60.7175	58.1067	55.5086
23	66.5513	65.4785	59.7539	57.1057	56.4045	66.7308	73.7468	73.8329	72.4575	75.278	73.8822	55.5826	57.0873	61.2288	61.8893	59.3711	56.9284
24	67.7961	66.7257	61.1832	58.6625	57.8902	67.57	73.9064	73.9051	72.8002	75.4722	74.2283	56.754	58.3692	62.3199	62.9305	60.5196	58.251
25	68.9862	67.9206	62.5546	60.149	59.3017	68.3594	74.0545	73.9722	73.1218	75.6541	74.5537	57.8663	59.5885	63.3572	63.9207	61.613	59.5117
26	70.1242	69.0658	63.871	61.5685	60.6424	69.1013	74.1915	74.0344	73.4234	75.8241	74.8597	58.9223	60.748	64.3431	64.862	62.6539	60.7136
27	71.2169	70.1747	65.1635	62.9039	61.8402	69.6878	74.2843	74.0774	73.6596	75.9518	75.1061	59.8802	61.7897	65.2136	65.6958	63.5975	61.8322
28	72.2616	71.2368	66.4022	64.1811	62.9842	70.2475	74.3727	74.1185	73.8847	76.0736	75.341	60.7938	62.7853	66.0464	66.4933	64.4997	62.9012
29	73.2606	72.254	67.5895	65.4028	64.0769	70.7816	74.457	74.1576	74.0994	76.1898	75.565	61.6654	63.7372	66.8431	67.2565	65.3625	63.9229
30	74.2159	73.2285	68.7276	66.5717	65.121	71.2915	74.5373	74.1949	74.3041	76.3007	75.7787	62.4971	64.6474	67.6057	67.9869	66.1879	64.8996

Conditional Prepayment Rates for LTV Category
97-100%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1411	0.1692	0.284	0.2129	0.1646	0.179	0.0949	0.0999	0.1149	0.1054	0.1326	0.2381	0.1226	0.2648	0.3447	0.2976	0.0019
2	1.5501	2.88	3.1734	2.216	0.6584	0.4813	0.2647	10.9345	0.3688	0.7605	7.8724	2.4761	0.6379	1.2384	1.872	1.6853	3.3261
3	6.7664	8.7005	6.5978	2.059	0.6093	0.2792	5.4974	6.0852	1.2936	14.7945	19.2255	2.1221	1.3924	3.0757	3.9265	6.0709	5.36
4	10.4768	9.6928	3.9041	1.4413	0.3294	1.3504	3.4248	8.7136	13.4108	22.5789	10.0589	2.8955	2.799	4.5356	7.1366	6.7295	5.1761
5	9.9339	5.36	2.1067	0.7779	1.1557	1.5608	4.6799	22.371	21.3	10.9694	8.611	4.4998	3.2837	7.2211	7.9404	6.3435	4.9804
6	5.1532	2.6522	0.83	1.9171	1.4202	2.0184	16.3008	25.0892	9.4972	9.5399	10.5691	5.3103	5.6991	7.2891	6.6829	5.418	4.3103
7	2.7003	1.0101	2.6472	1.9558	1.7738	7.1609	18.034	11.6221	7.6483	9.9318	11.868	4.6427	5.6942	6.0564	5.596	4.6396	3.7705
8	1.29	3.4016	2.6334	2.2515	4.1738	11.1315	8.6019	8.1424	8.9474	9.7544	9.9321	5.4541	5.5869	5.7433	5.3165	4.4688	3.7682
9	3.4777	3.2852	3.1429	4.9509	6.7635	6.0129	6.6863	6.9297	10.1956	14.4584	11.427	5.6863	5.5948	5.7028	5.3555	4.7243	4.0474
10	3.3621	3.5603	5.3763	6.9847	4.998	5.1518	6.419	5.409	11.3272	16.8994	11.2477	5.4559	5.3755	5.5434	5.3939	4.7679	4.0901
11	3.4718	5.6366	6.98	5.2581	4.7731	5.8056	6.0335	22.9307	13.7097	16.9384	11.0386	5.4206	5.4083	5.7719	5.6227	4.9752	4.274
12	5.72	7.2877	5.2105	4.8911	5.2929	5.8599	22.6971	22.7426	12.6878	14.656	10.0356	5.3759	5.5216	5.8358	5.6951	5.1079	4.4569
13	7.3686	5.5547	4.8365	5.1374	4.6753	10.9226	27.8736	23.7921	12.885	14.8448	10.3592	5.8024	5.9655	6.298	6.1462	5.5176	4.8208
14	5.4497	4.8649	5.1451	4.9371	5.6846	11.0177	21.8965	18.1825	10.786	12.2117	9.2643	5.6168	5.7348	5.9846	5.8513	5.3296	4.7347
15	4.9976	5.1685	4.8232	4.5592	6.4565	11.21	20.2919	16.9103	10.2573	11.9989	9.1517	5.593	5.7099	5.9522	5.8197	5.3051	4.7188
16	5.1312	4.962	3.727	5.1108	6.6667	10.5304	18.8191	15.9211	10.0983	11.7892	9.0328	5.5677	5.6829	5.9172	5.7856	5.2792	4.7022
17	5.148	4.0081	3.952	5.2654	6.0631	8.841	14.3429	12.782	8.8411	10.0099	8.0515	5.3809	5.4517	5.6077	5.4941	5.0905	4.6144
18	4.2043	4.2177	4.2122	4.9975	5.7417	8.432	14.0416	12.5434	8.7306	9.8614	7.96	5.3584	5.4279	5.5775	5.4646	5.0675	4.5991
19	4.3576	4.5229	4.0735	4.6945	5.2753	7.3659	10.9633	9.9597	7.579	8.2913	7.0436	5.1661	5.1913	5.2652	5.17	4.8739	4.5076
20	4.7199	4.3051	3.879	4.5144	5.2455	7.2993	10.7887	9.8112	7.5002	8.1907	6.9767	5.1467	5.1713	5.2404	5.1458	4.8543	4.4938
21	4.4908	4.0972	3.7415	4.4973	5.219	7.2225	10.5891	9.6415	7.4112	8.0765	6.9015	5.1254	5.1489	5.2124	5.1185	4.8328	4.4792
22	4.2841	3.9788	3.8009	4.4351	4.96	6.2701	8.1755	7.5753	6.3878	6.7356	6.0704	4.9314	4.9117	4.9046	4.8275	4.6382	4.3855
23	4.1269	3.9726	3.8015	4.4242	4.9392	6.2187	8.0618	7.4769	6.3291	6.6639	6.0194	4.9141	4.8941	4.8832	4.8066	4.6209	4.3728
24	4.1323	4.0048	3.8736	4.3575	4.6704	5.3266	6.0879	5.753	5.381	5.4695	5.2334	4.7105	4.647	4.5675	4.5076	4.4174	4.273
25	4.1285	4.0022	3.8726	4.3482	4.6565	5.3003	6.0398	5.7106	5.3509	5.4352	5.2059	4.6982	4.6354	4.5541	4.4942	4.4052	4.2627
26	4.1248	3.9999	3.8723	4.3385	4.6402	5.2666	5.9767	5.6548	5.3131	5.3914	5.172	4.6842	4.6217	4.538	4.4783	4.3913	4.2517
27	4.1366	4.0368	3.9554	4.2662	4.3601	4.436	4.3902	4.2388	4.4401	4.3383	4.432	4.4692	4.363	4.2133	4.17	4.1772	4.1445
28	4.1324	4.0333	3.9524	4.2588	4.3532	4.4307	4.385	4.2341	4.4332	4.3322	4.4243	4.4622	4.3575	4.2077	4.1642	4.1703	4.137
29	4.1282	4.0297	3.9495	4.2514	4.3463	4.4253	4.3797	4.2293	4.4262	4.326	4.4167	4.4552	4.3521	4.2021	4.1583	4.1635	4.1294
30	4.1239	4.0261	3.9465	4.244	4.3394	4.4199	4.3744	4.2244	4.4192	4.3197	4.409	4.4482	4.3466	4.1966	4.1525	4.1566	4.1219

Cumulative Prepayment Rates for LTV Category
97-100%

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.1411	0.1692	0.284	0.2129	0.1646	0.179	0.0949	0.0999	0.1149	0.1054	0.1326	0.2381	0.1226	0.2648	0.3447	0.2976	0.0015
2	1.6879	3.0421	3.4466	2.4234	0.8217	0.6592	0.3588	10.9943	0.483	0.8645	7.9917	2.7078	0.7597	1.4997	2.21	1.9777	3.328
3	8.2742	11.3882	9.7744	4.422	1.4226	0.9328	5.6873	16.1539	1.7553	15.2653	25.4463	4.757	2.1341	4.5123	6.0324	7.9058	8.4796
4	17.6347	19.7745	13.2431	5.7818	1.7418	2.2236	8.6348	22.5831	14.3661	33.0913	32.4383	7.4282	4.8174	8.7535	12.6153	13.9492	13.0788
5	25.48	23.9225	15.0313	6.5006	2.8462	3.6585	12.3236	36.3308	30.9218	39.2402	37.4083	11.3347	7.8208	15.0749	19.199	19.1048	17.1568
6	29.1158	25.8559	15.7179	8.2495	4.1716	5.4441	23.9266	47.0303	36.3481	43.5596	42.5948	15.6058	12.7737	20.8019	24.1293	23.0973	20.4326
7	30.9151	26.5702	17.8818	9.9887	5.7863	11.5153	34.0885	50.3353	40.0074	47.3273	47.5139	19.0498	17.3185	25.0851	27.87	26.2497	23.1218
8	31.7488	28.9439	19.9687	11.9418	9.4797	20.0838	37.8158	52.1946	43.7388	50.4726	50.992	22.7929	21.4178	28.8096	31.147	29.0827	25.6625
9	33.9622	31.1513	22.386	16.1206	15.1489	24.0828	40.3036	53.5641	47.4466	54.5195	54.4929	26.3831	25.2237	32.2374	34.2178	31.8943	28.2517
10	36.0215	33.4576	26.3772	21.6927	19.0046	27.2043	42.4297	54.5199	51.0267	58.4314	57.4599	29.5607	28.6287	35.3361	37.0996	34.5564	30.7312
11	38.0715	36.9702	31.2632	25.571	22.4484	30.4553	44.2326	58.2425	54.761	61.5744	59.9828	32.4976	31.8336	38.346	39.9018	37.1652	33.1905
12	41.3228	41.2444	34.6425	28.9607	26.0335	33.4779	50.4298	60.9718	57.6415	63.7593	61.9844	35.2115	34.8931	41.1771	42.5416	39.6766	35.621
13	45.2631	44.255	37.6008	32.3191	28.9979	38.6863	56.1556	63.0757	60.1209	65.6031	63.814	37.9445	37.9818	44.0187	45.1934	42.2204	38.1105
14	47.9556	46.7363	40.5787	35.3597	32.397	43.2951	59.3035	64.2555	61.8934	66.8723	65.2616	40.4068	40.7473	46.5234	47.5377	44.5197	40.4207
15	50.2822	49.2348	43.2126	38.0135	36.004	47.3957	61.5269	65.1298	63.374	67.9509	66.5434	42.6943	43.3206	48.8444	49.7119	46.6678	42.5998
16	52.5439	51.4995	45.1408	40.8352	39.4487	50.7646	63.1412	65.7995	64.6649	68.8714	67.6795	44.8224	45.7173	50.9967	51.7301	48.6765	44.6566
17	54.6886	53.233	47.1008	43.573	42.3447	53.2671	64.1259	66.2436	65.6693	69.5528	68.5912	46.7469	47.8711	52.9018	53.5219	50.4986	46.5695
18	56.3464	54.9778	49.0972	46.0188	44.903	55.4238	64.942	66.618	66.5645	70.1506	69.4121	48.5457	49.8866	54.6787	55.1945	52.2096	48.3802
19	57.9877	56.7628	50.9386	48.1914	47.1065	57.1363	65.4843	66.8746	67.2674	70.5993	70.0751	50.1753	51.6999	56.2534	56.6813	53.7633	50.0656
20	59.6826	58.3796	52.6155	50.1754	49.1726	58.6986	65.9554	67.0996	67.9051	71.0024	70.6808	51.7053	53.4045	57.7304	58.0769	55.2281	51.664
21	61.2151	59.8485	54.1662	52.0568	51.1132	60.1239	66.3648	67.2969	68.4838	71.3645	71.2345	53.1425	55.0075	59.1163	59.3873	56.6097	53.1804
22	62.6086	61.2137	55.6795	53.8242	52.8556	61.2664	66.6455	67.4357	68.9426	71.6401	71.6851	54.448	56.4526	60.3473	60.555	57.8668	54.5942
23	63.8915	62.5204	57.1328	55.5053	54.5	62.3239	66.898	67.5612	69.3657	71.8929	72.1025	55.6794	57.8175	61.5087	61.6574	59.057	55.9384
24	65.1214	63.7836	58.5552	57.0847	55.9744	63.1702	67.0724	67.6498	69.7009	72.0855	72.442	56.7976	59.0467	62.5388	62.6382	60.139	57.1915
25	66.298	64.9939	59.9202	58.5893	57.3725	63.9647	67.2341	67.7322	70.0149	72.2655	72.7606	57.8568	60.2131	63.5163	63.5694	61.1676	58.3855
26	67.4238	66.1539	61.2306	60.0228	58.6982	64.7102	67.3838	67.8087	70.3088	72.4336	73.0596	58.8604	61.3198	64.4437	64.4533	62.1455	59.5235
27	68.5053	67.2765	62.5157	61.3693	59.884	65.3035	67.4868	67.8625	70.5406	72.5612	73.3018	59.7708	62.3145	65.2641	65.2378	63.0331	60.5839
28	69.5401	68.3519	63.7478	62.6545	61.0146	65.8686	67.5849	67.9137	70.7611	72.6826	73.5322	60.6372	63.2631	66.0475	65.9871	63.8808	61.597
29	70.5304	69.3821	64.929	63.8812	62.0927	66.4069	67.6783	67.9625	70.9709	72.7984	73.7515	61.4622	64.168	66.7957	66.7031	64.6905	62.5651
30	71.478	70.3692	66.0618	65.0525	63.121	66.92	67.7673	68.009	71.1708	72.9086	73.9603	62.2479	65.0315	67.5107	67.3873	65.4642	63.4905

Conditional Prepayment Rates for LTV Category

Investor Loans

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.4212	0.3278	0.4309	0.5465	0.4374	1.5331	0.1548	0.7523	0.4082	0.292	0.3451	0.6951	0.3224	0.8467	1.0131	0.5008	0
2	1.9554	2.8994	2.8958	2.6257	1.1129	4.1018	0.4809	19.3639	1.2387	1.8234	10.0219	4.3722	1.3107	2.5825	2.8242	3.7165	0
3	5.1053	6.311	5.0134	2.193	0.8669	0.4995	8.2716	11.3559	2.433	16.6079	22.5841	2.9237	1.8723	3.7516	4.9944	7.3179	0
4	7.3196	6.1632	2.4585	1.5201	0.4463	1.8901	6.2003	12.3818	13.7304	25.7432	10.4773	3.1176	2.7112	4.3958	7.6154	7.154	0
5	6.5227	3.3482	1.8851	0.9667	1.7314	2.4675	6.8015	22.9349	24.2922	11.6362	7.9664	4.2584	3.789	7.6779	8.691	6.3203	0
6	3.4317	1.931	1.0134	1.9151	2.1625	2.9659	17.7278	22.6524	10.4697	9.4494	9.5592	2.8759	5.7305	7.6485	6.5269	5.0612	0
7	2.1117	1.1269	2.3836	2.4106	2.7658	9.0069	22.2492	12.4791	7.721	9.7592	5.7163	4.6504	6.1507	6.1321	5.5062	4.4057	0
8	1.2686	2.837	3.0109	2.909	4.6079	14.1535	11.9742	8.6578	9.2304	8.9302	9.9867	5.9864	5.8637	5.7985	5.2284	4.2845	0
9	2.8363	3.6934	3.3577	4.6672	7.3589	8.4475	8.6255	6.7622	7.2788	14.8781	12.4686	5.9978	5.7845	5.6837	5.2499	4.6413	0
10	3.2006	3.3129	5.3402	7.3872	5.7438	6.1469	7.8345	14.3022	11.9164	18.34	11.4929	5.5167	5.3371	5.3565	5.2679	4.6725	0
11	3.5366	5.9528	7.4581	5.8476	5.5323	6.8809	17.7231	25.7686	15.9527	18.0573	11.363	5.5262	5.4642	5.8312	5.7461	5.1037	0
12	5.0072	7.3946	5.6495	4.9527	5.3149	7.6323	25.7329	27.5229	14.0678	15.282	10.1308	5.4167	5.6626	5.9883	5.9106	5.3236	0
13	6.9139	6.3517	5.0578	5.3185	4.6562	13.2912	34.4016	27.8389	14.2139	15.4323	10.5386	6.0494	6.3326	6.6875	6.6003	5.953	0
14	5.4498	5.7363	5.5613	4.4055	6.7728	14.1464	25.0477	20.3977	11.4723	12.3631	9.4383	5.8606	6.0889	6.354	6.2819	5.7512	0
15	5.8312	5.4581	5.9468	5.6062	8.1227	13.4437	22.1622	18.224	10.6107	12.136	9.3314	5.8386	6.0623	6.3175	6.2453	5.7251	0
16	4.9147	6.4494	5.1365	6.5677	7.8505	12.1182	19.6937	16.6506	10.4403	11.9207	9.2163	5.8148	6.0334	6.278	6.2059	5.6972	0
17	6.9579	5.5621	5.4349	6.3333	6.8629	9.7903	14.5671	13.3492	9.1509	10.1335	8.2285	5.6235	5.7887	5.9487	5.8912	5.4941	0
18	5.8162	5.8396	5.4085	5.7781	6.26	9.0729	14.2147	13.0799	9.036	9.9777	8.1375	5.602	5.763	5.9143	5.8568	5.4691	0
19	6.0141	5.846	5.0224	5.2296	5.5957	7.9172	11.0989	10.3839	7.8514	8.3988	7.2107	5.4043	5.5123	5.5823	5.5393	5.2603	0
20	6.0829	5.3421	4.6027	4.8926	5.5614	7.8415	10.904	10.2159	7.768	8.2919	7.1428	5.3857	5.4905	5.5538	5.5106	5.2387	0
21	5.557	4.8925	4.3147	4.8728	5.5352	7.7549	10.6853	10.0265	7.6736	8.1713	7.0661	5.365	5.4661	5.5219	5.4788	5.215	0
22	5.1021	4.6175	4.3782	4.8083	5.2636	6.7312	8.2595	7.8806	6.6195	6.8236	6.2229	5.1648	5.2149	5.1951	5.1657	5.0049	0
23	4.7769	4.6042	4.377	4.7992	5.243	6.6727	8.1358	7.7706	6.5565	6.7472	6.1701	5.148	5.1955	5.1704	5.1409	4.9856	0
24	4.7774	4.6398	4.4589	4.7295	4.9604	5.7151	6.1565	5.9845	5.5795	5.547	5.3712	4.9373	4.9338	4.8358	4.8198	4.7658	0
25	4.7713	4.6346	4.4559	4.7218	4.9467	5.6843	6.1032	5.9359	5.5463	5.5094	5.3422	4.9254	4.9208	4.8197	4.8033	4.752	0
26	4.7653	4.6298	4.4536	4.7136	4.9305	5.6457	6.0353	5.8739	5.5052	5.4625	5.3067	4.9117	4.9055	4.8008	4.7842	4.7362	0
27	4.7773	4.6708	4.5481	4.6375	4.6352	4.7557	4.4463	4.4098	4.6059	4.4045	4.5537	4.6887	4.6315	4.4573	4.4539	4.5052	0
28	4.7707	4.6645	4.5427	4.6315	4.6286	4.7482	4.4387	4.4025	4.5972	4.3965	4.545	4.6821	4.625	4.4498	4.4458	4.497	0
29	4.7641	4.6581	4.5374	4.6255	4.6219	4.7406	4.4311	4.3952	4.5885	4.3884	4.5363	4.6755	4.6186	4.4423	4.4377	4.4888	0
30	4.7575	4.6518	4.532	4.6195	4.6152	4.733	4.4235	4.388	4.5797	4.3803	4.5276	4.6688	4.612	4.4348	4.4297	4.4806	0

Cumulative Prepayment Rates for LTV Category

Investor Loans

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	0.4212	0.3278	0.4309	0.5465	0.4374	1.5331	0.1548	0.7523	0.4082	0.292	0.3451	0.6951	0.3224	0.8467	1.0131	0.5008	0
2	2.3682	3.2177	3.3137	3.1575	1.5455	5.5714	0.6348	19.944	1.6417	2.1097	10.3287	5.0363	1.6287	3.407	3.8081	4.1986	0
3	7.3388	9.2995	8.1473	5.2759	2.3969	6.0405	8.6963	28.6913	4.0183	18.1624	30.237	7.791	3.463	7.0131	8.5972	11.1855	0
4	14.041	14.8119	10.3878	6.7062	2.8285	7.7864	13.9657	36.5869	16.841	38.0548	36.9355	10.5636	6.0353	11.0247	15.4437	17.4189	0
5	19.5264	17.5983	12.0564	7.5968	4.4847	9.9869	19.1371	48.48	35.8114	44.2744	41.0826	14.1201	9.4812	17.6185	22.5064	22.435	0
6	22.2035	19.1425	12.9338	9.3375	6.5026	12.526	31.1365	56.7734	41.7185	48.3964	45.3247	16.366	14.4163	23.5424	27.2422	26.1165	0
7	23.7855	20.0224	14.9706	11.4762	9.0103	19.882	42.95	60.0249	45.419	51.9175	47.5097	19.8213	19.3115	27.8399	30.9014	29.103	0
8	24.7122	22.205	17.4775	13.986	13.0402	30.2365	47.6363	61.8775	49.2431	54.7009	51.0026	23.9545	23.6038	31.5819	34.1217	31.8281	0
9	26.7528	24.9569	20.1802	17.8788	19.1404	35.4549	50.48	63.1396	51.8975	58.819	54.8554	27.7834	27.5448	35.0001	37.1509	34.6211	0
10	28.9806	27.3292	24.3243	23.735	23.5201	38.8596	52.7766	65.566	55.8436	63.0512	57.9121	31.0508	30.9414	38.0119	40.0028	37.2761	0
11	31.3582	31.4441	29.7924	28.0124	27.4509	42.3708	57.4574	69.2152	60.4071	66.3751	60.5454	34.1101	34.2074	41.0887	42.9215	40.014	0
12	34.597	36.2405	33.6154	31.406	30.985	45.9506	62.9367	72.0301	63.7143	68.6322	62.6006	36.9149	37.382	44.0388	45.7237	42.6999	0
13	38.8374	40.0449	36.8351	34.8536	33.8942	51.6369	68.2793	74.0363	66.5355	70.5359	64.5037	39.8522	40.7081	47.1124	48.6446	45.5228	0
14	41.9451	43.254	40.188	37.5479	37.9028	56.8377	70.7868	75.077	68.4685	71.8141	66.0181	42.5084	43.6881	49.8229	51.2266	48.0745	0
15	45.081	46.1266	43.5677	40.8103	42.3572	61.0376	72.4266	75.807	70.038	72.9053	67.3653	44.9837	46.4611	52.3342	53.62	50.4575	0
16	47.5615	49.3289	46.3045	44.4024	46.2837	64.2847	73.5489	76.3464	71.4083	73.8406	68.5642	47.2915	49.0422	54.6615	55.8392	52.6835	0
17	50.8934	51.9056	49.0432	47.622	49.4269	66.5739	74.2099	76.7035	72.4772	74.5366	69.5303	49.3823	51.3598	56.7196	57.8065	54.6999	0
18	53.4791	54.4541	51.6118	50.361	52.0841	68.4767	74.7571	77.0043	73.4306	75.1489	70.4024	51.3384	53.5256	58.6368	59.6397	56.5901	0
19	55.9921	56.8498	53.8613	52.6888	54.302	69.9792	75.1214	77.2104	74.1802	75.6103	71.1088	53.1118	55.4713	60.3333	61.2661	58.303	0
20	58.3758	58.9063	55.8148	54.747	56.3761	71.3438	75.438	77.391	74.8603	76.0257	71.7551	54.7767	57.297	61.9218	62.7893	59.9143	0
21	60.4171	60.6858	57.5586	56.6919	58.3201	72.5829	75.713	77.5492	75.4772	76.3993	72.3463	56.3402	59.01	63.4092	64.2159	61.4301	0
22	62.1847	62.2809	59.249	58.5139	60.0622	73.5717	75.902	77.6605	75.9666	76.6847	72.8283	57.7597	60.551	64.7277	65.4838	62.8057	0
23	63.7532	63.7959	60.8628	60.242	61.7025	74.4831	76.0722	77.761	76.4175	76.9466	73.2749	59.0974	62.003	65.9689	66.6775	64.1043	0
24	65.2455	65.2509	62.4329	61.8607	63.17	75.2096	76.1901	77.8322	76.7749	77.1467	73.6386	60.311	63.3076	67.0673	67.7367	65.2815	0
25	66.6634	66.6356	63.9305	63.3981	64.5583	75.8892	76.2993	77.8982	77.1093	77.3339	73.9799	61.459	64.5423	68.1071	68.7394	66.3972	0
26	68.0108	67.9535	65.3591	64.8582	65.8714	76.5243	76.4005	77.9595	77.422	77.5088	74.2999	62.545	65.7106	69.0913	69.6884	67.4547	0
27	69.2964	69.2206	66.7517	66.2254	67.0432	77.0281	76.4704	78.0027	77.6686	77.6417	74.5594	63.5287	66.7581	69.9598	70.5283	68.4115	0
28	70.518	70.426	68.0783	67.526	68.1575	77.5063	76.5369	78.0438	77.9029	77.7683	74.8061	64.4634	67.7543	70.787	71.3282	69.3223	0
29	71.679	71.5728	69.342	68.7633	69.2174	77.9604	76.6002	78.0829	78.1256	77.8889	75.0408	65.3516	68.702	71.5752	72.0902	70.1896	0
30	72.7825	72.664	70.5461	69.9408	70.2257	78.3916	76.6604	78.1201	78.3373	78.0038	75.264	66.1959	69.6038	72.3262	72.8162	71.0155	0

Appendix F: Summary of Conditional and Cumulative Claim and Prepayment Rates by Sensitivity Analysis Scenario

- **Superior Termination Performance**
- **Prior Termination Performance**
- **Optimistic Economic Growth Forecasts**
- **Pessimistic Economic Growth Forecasts**
- **No Change in Closing Costs Policy**
- **No NAHA Reforms**

Conditional Claim Rates for Superior Termination Performance Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.114	0.106	0.103	0.103
2	0.794	0.945	0.519	0.432	0.487	0.796	1.587	2.343	0.563	1.194	0.984	0.503	0.397	0.459	0.39	0.336	0.472	0.524	0.532	0.497	0.484	0.484
3	1.152	0.994	0.643	0.605	0.936	1.413	3.568	4.534	1.715	3.129	3.508	1.875	1.142	1.261	1.214	1.591	1.728	1.424	1.177	1.266	1.292	1.292
4	0.877	0.752	0.453	0.551	0.817	1.725	3.295	5.275	2.323	5.013	6.098	2.339	1.378	1.656	2.333	2.127	2.106	1.48	1.417	1.599	1.634	1.634
5	0.589	0.451	0.351	0.428	0.908	1.534	3.383	5.632	3.363	6.748	5.512	2.183	1.393	1.948	1.94	1.918	1.476	1.158	1.169	1.31	1.312	1.312
6	0.367	0.32	0.269	0.498	0.812	1.539	3.214	6.382	4.704	5.899	4.22	1.985	1.495	1.726	1.762	1.599	1.278	1.051	1.052	1.178	1.177	1.177
7	0.271	0.271	0.294	0.411	0.813	1.513	3.874	6.113	4.074	4.153	3.535	2.156	1.437	1.492	1.51	1.446	1.193	0.975	0.972	1.086	1.086	1.086
8	0.196	0.281	0.236	0.426	0.841	1.832	4.322	4.132	2.904	3.174	1.942	1.787	1.022	1.069	1.161	1.163	0.966	0.79	0.789	0.875	0.875	0.875
9	0.249	0.238	0.248	0.423	0.961	2.261	3.174	2.689	2.41	2.085	1.796	1.457	0.795	0.894	1.023	1.023	0.849	0.688	0.69	0.762	0.764	0.764
10	0.198	0.193	0.247	0.47	1.188	1.914	2.512	1.993	1.662	2.101	1.556	1.103	0.674	0.8	0.918	0.918	0.699	0.568	0.571	0.627	0.627	0.627
11	0.201	0.211	0.285	0.636	1.067	1.566	1.969	1.976	1.795	1.878	1.23	0.996	0.652	0.79	0.91	0.839	0.645	0.52	0.525	0.575	0.576	0.576
12	0.177	0.235	0.383	0.615	0.904	1.322	1.224	2.07	1.506	1.367	0.995	0.895	0.597	0.734	0.783	0.722	0.556	0.445	0.452	0.494	0.494	0.494
13	0.192	0.324	0.388	0.548	0.808	0.895	1.166	1.586	0.994	0.955	0.765	0.709	0.483	0.566	0.605	0.554	0.434	0.353	0.356	0.386	0.386	0.386
14	0.243	0.339	0.382	0.471	0.653	1.009	1.055	1.282	0.837	0.843	0.726	0.689	0.439	0.516	0.552	0.504	0.396	0.323	0.325	0.351	0.351	0.351
15	0.256	0.34	0.309	0.481	0.766	0.901	0.831	1.08	0.734	0.755	0.7	0.617	0.395	0.47	0.502	0.455	0.36	0.297	0.298	0.319	0.319	0.319
16	0.258	0.251	0.331	0.569	0.667	0.702	0.695	0.952	0.656	0.692	0.644	0.558	0.358	0.428	0.457	0.414	0.328	0.272	0.272	0.29	0.29	0.29
17	0.205	0.302	0.379	0.498	0.521	0.578	0.608	0.847	0.596	0.646	0.592	0.504	0.324	0.389	0.416	0.377	0.299	0.249	0.249	0.264	0.264	0.264
18	0.248	0.333	0.328	0.383	0.423	0.498	0.536	0.759	0.559	0.601	0.542	0.45	0.29	0.354	0.377	0.34	0.272	0.229	0.228	0.24	0.24	0.24
19	0.265	0.286	0.256	0.316	0.363	0.434	0.481	0.726	0.526	0.559	0.496	0.405	0.262	0.321	0.342	0.309	0.248	0.21	0.208	0.219	0.218	0.218
20	0.226	0.227	0.212	0.271	0.311	0.38	0.457	0.692	0.493	0.519	0.452	0.362	0.234	0.287	0.306	0.279	0.225	0.193	0.191	0.199	0.198	0.198
21	0.182	0.19	0.182	0.235	0.272	0.351	0.435	0.662	0.463	0.482	0.411	0.325	0.211	0.26	0.278	0.254	0.205	0.176	0.174	0.181	0.18	0.18
22	0.154	0.164	0.157	0.205	0.255	0.323	0.415	0.633	0.436	0.446	0.373	0.291	0.19	0.236	0.251	0.231	0.186	0.161	0.159	0.164	0.164	0.164
23	0.135	0.142	0.136	0.193	0.236	0.296	0.395	0.603	0.409	0.412	0.337	0.258	0.169	0.211	0.225	0.208	0.169	0.148	0.146	0.149	0.149	0.149
24	0.119	0.124	0.129	0.181	0.221	0.271	0.377	0.576	0.384	0.38	0.303	0.231	0.152	0.19	0.203	0.189	0.153	0.135	0.133	0.135	0.135	0.135
25	0.107	0.118	0.122	0.171	0.206	0.247	0.358	0.548	0.359	0.349	0.269	0.204	0.135	0.17	0.182	0.17	0.139	0.124	0.122	0.123	0.122	0.122
26	0.103	0.114	0.116	0.161	0.193	0.225	0.341	0.522	0.337	0.319	0.24	0.181	0.121	0.153	0.164	0.154	0.126	0.113	0.111	0.111	0.111	0.111
27	0.099	0.109	0.11	0.152	0.181	0.205	0.325	0.497	0.316	0.292	0.213	0.16	0.108	0.138	0.148	0.14	0.114	0.103	0.102	0.101	0.101	0.101
28	0.095	0.105	0.104	0.143	0.17	0.184	0.307	0.469	0.293	0.263	0.185	0.141	0.096	0.123	0.132	0.126	0.104	0.094	0.093	0.091	0.091	0.091
29	0.091	0.1	0.099	0.135	0.16	0.167	0.292	0.446	0.275	0.24	0.163	0.124	0.085	0.111	0.119	0.114	0.094	0.086	0.085	0.083	0.083	0.083
30	0.088	0.096	0.094	0.128	0.15	0.152	0.278	0.424	0.258	0.218	0.143	0.108	0.076	0.099	0.107	0.103	0.085	0.079	0.078	0.075	0.075	0.075

Conditional Prepayment Rates for
Superior Termination Performance Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0 289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.066
2	1.877	3.396	3.258	2.454	0.811	0.924	0.409	17.488	0.903	1 389	11.2	3.722	1.025	1.513	2.003	1.974	4.171	2.733	2.681	2.383	2.377	2.377
3	6.797	8.442	6.209	2.054	0.67	0.336	7.103	9.337	2.138	18.682	23.394	2.663	1.743	3.058	4.017	6.711	5.861	3.721	3.37	2.988	2.98	2.98
4	10.065	9.046	3.53	1.307	0.348	1.738	4.693	12.267	17.566	25.842	10.595	3.165	2.849	4.435	7.707	7.182	5.422	3.678	3.345	2.936	2.929	2.929
5	9.041	4.745	1.806	0.732	1.393	1.995	5.943	28.888	26.406	11.34	8.484	4.461	3.26	7.788	8.564	6.578	5.183	3.529	3.213	2.82	2.813	2.813
6	4.514	2.407	0.779	1.969	1.607	2.599	19.269	24.929	10.659	9.193	10.319	5.225	5.847	7.418	6.586	5.234	4.183	2.853	2.599	2.278	2.273	2.273
7	2.327	0.977	2.663	2.047	1.998	9.172	20.711	11.321	8.284	9.903	11.827	4.765	6.044	6.128	5.58	4.554	3.729	2.614	2.395	2.074	2.07	2.07
8	1.111	3.228	2.731	2.355	4.761	13.882	9.533	7.857	9.612	9.98	10.525	5.937	5.912	5.878	5.374	4.466	3.83	2.697	2.47	2.138	2.134	2.134
9	3.289	3.3	3.104	5.248	7.437	7.116	7.017	6.186	11.18	15.193	12.494	6.015	5.798	5.716	5.322	4.692	4.082	2.958	2.729	2.328	2.323	2.323
10	3.344	3.542	5.743	7.565	5.419	5.767	6.838	5.318	11.924	17.958	11.773	5.556	5.388	5.475	5.349	4.727	4.112	2.988	2.758	2.351	2.345	2.345
11	3.55	6.053	7.578	5.549	5.09	6.441	6.778	24.917	14.786	17.577	11.467	5.48	5.407	5.733	5.6	4.952	4.299	3.134	2.894	2.463	2.456	2.456
12	5.82	7.834	5.654	5.079	5.424	6.787	23.411	25.222	13.402	15.093	10.343	5.432	5.617	5.862	5.732	5.138	4.528	3.406	3.17	2.658	2.649	2.649
13	7.678	5.774	5.133	5.302	4.943	12.531	29.222	25.767	13.912	15.611	11.095	6.254	6.462	6.594	6.43	5.758	5.06	3.816	3.554	2.972	2.961	2.961
14	5.655	5.247	5.399	4.942	6.133	12.704	21.056	18.592	11.382	12.591	9.887	6.046	6.199	6.256	6.113	5.558	4.969	3.876	3.64	2.998	2.986	2.986
15	5.135	5.348	4.886	4.93	6.982	12.399	18 817	16.685	10.649	12.327	9.761	6.018	6.165	6.219	6.078	5.532	4.952	3.874	3.641	2.996	2.984	2.984
16	5.261	4.981	4.233	5.542	6.976	11.372	17 018	15.323	10.455	12.072	9 627	5.987	6.129	6 178	6 04	5.504	4.934	3.873	3.643	2.995	2.982	2.982
17	5.098	4.499	4.48	5.548	6.29	9.368	13.015	12.297	9.175	10.236	8.555	5.778	5.867	5.846	5.728	5.304	4.841	3.938	3.737	3.022	3.009	3.009
18	4.81	4.717	4.633	5.219	5.908	8.821	12.653	11.972	9.046	10.061	8.453	5.751	5.835	5.811	5.695	5.279	4.824	3 936	3.738	3.02	3.007	3 007
19	4.972	4.893	4.426	4.869	5.412	7.701	10.077	9.594	7.886	8.464	7.457	5.536	5.568	5.477	5.38	5.073	4.727	4.008	3.843	3.051	3.036	3.036
20	5.194	4.616	4.171	4.659	5.379	7.623	9.883	9.409	7.796	8.349	7.382	5.512	5.542	5.449	5.353	5.052	4.712	4.006	3.842	3.049	3.034	3.034
21	4.889	4.362	3.993	4.641	5.351	7.534	9.672	9.208	7.695	8.221	7.298	5.487	5.512	5.417	5.323	5.029	4.696	4.004	3.843	3.047	3.032	3.032
22	4.622	4.212	4.052	4.579	5.097	6.546	7.69	7.363	6.674	6.874	6.4	5.271	5.247	5.089	5.013	4.823	4.596	4.082	3.959	3.08	3.064	3.064
23	4.425	4.203	4.05	4.568	5.075	6.487	7.575	7.253	6.608	6.795	6.343	5.249	5.223	5.065	4.99	4.804	4.583	4.079	3.958	3.077	3.061	3.061
24	4.426	4.232	4.123	4.501	4.812	5.567	5.94	5.721	5.664	5.602	5.498	5 023	4.948	4.73	4.673	4.588	4.476	4.168	4.091	3.115	3.097	3.097
25	4.419	4.227	4.12	4.491	4.796	5.536	5.89	5.673	5.629	5.564	5.467	5.008	4.932	4.715	4.658	4.575	4.465	4.163	4.087	3.111	3.094	3.094
26	4.412	4.222	4.117	4.481	4.778	5.498	5.827	5.613	5.587	5.516	5.429	4.991	4.914	4.696	4.641	4.56	4.453	4.158	4.084	3.108	3.091	3.091
27	4.421	4.256	4.202	4.409	4.504	4.645	4.484	4.346	4.717	4.468	4.638	4.753	4.628	4.353	4.315	4.334	4.339	4.262	4.24	3.151	3.132	3.132
28	4.414	4.25	4.197	4.401	4.495	4.637	4.475	4.337	4.707	4.46	4.629	4.744	4.619	4.346	4.308	4.326	4.331	4.254	4.231	3.147	3.128	3.128
29	4.406	4.244	4.191	4.393	4.487	4.629	4.465	4.328	4.697	4.451	4.62	4.734	4.611	4.34	4.301	4.319	4.323	4.246	4.223	3.142	3.123	3.123
30	4.399	4.237	4.186	4.385	4.478	4.621	4.455	4.319	4.686	4.443	4.61	4.725	4.602	4.333	4.294	4.311	4.315	4.238	4.215	3.138	3.119	3.119

Cumulative Claim Rates for
Superior Termination Performance Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.114	0.106	0.103	0.103
2	0.851	1.053	0.565	0.464	0.511	0.819	1.683	2.481	0.584	1.234	1.011	0.513	0.408	0.47	0.404	0.342	0.472	0.63	0.639	0.597	0.581	0.581
3	1.969	2	1.181	1.049	1.432	2.203	5.171	6.098	2.268	4.274	4.082	2.3	1.531	1.702	1.583	1.891	2.12	1.992	1.765	1.812	1.822	1.822
4	2.753	2.649	1.586	1.568	2.222	3.863	8.048	9.722	4.463	8.083	7.984	4.427	2.846	3.249	3.733	3.789	3.976	3.334	3.058	3.282	3.323	3.323
5	3.222	3	1.886	1.964	3.091	5.287	10.765	12.912	7.008	11.628	10.922	6.303	4.12	4.959	5.341	5.342	5.178	4.33	4.075	4.431	4.474	4.474
6	3.486	3.236	2.112	2.419	3.85	6.666	13.107	15.28	9.508	14.167	12.857	7.896	5.425	6.327	6.647	6.526	6.15	5.192	4.95	5.422	5.463	5.463
7	3.671	3.431	2.356	2.785	4.591	7.965	15.294	16.837	11.34	15.685	14.242	9.503	6.586	7.401	7.674	7.524	7.008	5.96	5.728	6 304	6.346	6.346
8	3.802	3.63	2.546	3.154	5.337	9.37	17.135	17.706	12.485	16.681	14.889	10.743	7.351	8.113	8.407	8.278	7.669	6.56	6.339	6.991	7.033	7.033
9	3.966	3.792	2.74	3.512	6.141	10.832	18.299	18.204	13.316	17.252	15.412	11.676	7.904	8.666	9.011	8.905	8.221	7.064	6.856	7.573	7.616	7.616
10	4.091	3.92	2.927	3.886	7.052	11.953	19.127	18.541	13.813	17.728	15.801	12.329	8.342	9.129	9.519	9.434	8.654	7.465	7.269	8.036	8.079	8.079
11	4.214	4.054	3.129	4.352	7.816	12.8	19.715	18.85	14.276	18.068	16.068	12.88	8.74	9.557	9.99	9.891	9.034	7.819	7.636	8.449	8.492	8.492
12	4.318	4.194	3.379	4.775	8.424	13.458	20.049	19.087	14.601	18.267	16.256	13.343	9.082	9.929	10.369	10.262	9.345	8.111	7.941	8.792	8.836	8.836
13	4.424	4.371	3.618	5.13	8.932	13.868	20.289	19.219	14.783	18.383	16.384	13.686	9.342	10.197	10.643	10.529	9.576	8.334	8.173	9.052	9.096	9.096
14	4.548	4.546	3.839	5.418	9.319	14.268	20 44	19.297	14.913	18.469	16 492	13.996	9.562	10.423	10.876	10.737	9.775	8.529	8.376	9.28	9.324	9.324
15	4.671	4.711	4.009	5.696	9.743	14.576	20.533	19.349	15.014	18.535	16 584	14.256	9.746	10.616	11.073	10.951	9.946	8.702	8.555	9 481	9.525	9.525
16	4.788	4.826	4.18	6.007	10.083	14.784	20.595	19.387	15.094	18.588	16.66	14.474	9.903	10.779	11.241	11.116	10.093	8.853	8.712	9.658	9.702	9.702
17	4.876	4.957	4.368	6.263	10.329	14.934	20.64	19.415	15.158	18.631	16.723	14.659	10.035	10.918	11.383	11.258	10.221	8.985	8.849	9.813	9.857	9.857
18	4.977	5.094	4.522	6.447	10.514	15.051	20.674	19.437	15.212	18.667	16.775	14.814	10.146	11.036	11.505	11.378	10.331	9.102	8.971	9.95	9.994	9.994
19	5.079	5.206	4.637	6.591	10.664	15.143	20.701	19.455	15.258	18.697	16.819	14.944	10.24	11.137	11.608	11.482	10.426	9.204	9.077	10.07	10.114	10.114
20	5.162	5.291	4.727	6.708	10.784	15.218	20.723	19.471	15.298	18.722	16.855	15.054	10.319	11.222	11.696	11.57	10.508	9.295	9.171	10.175	10.219	10.219
21	5.225	5.358	4.802	6.804	10.884	15.281	20.743	19.485	15.332	18.743	16.886	15.147	10.387	11.294	11.771	11.646	10.579	9.374	9.253	10.268	10.312	10.312
22	5.276	5.413	4.863	6.884	10.972	15.334	20.759	19.496	15.362	18.761	16.912	15.225	10.444	11.356	11.834	11.712	10.64	9.443	9.325	10.35	10.394	10.394
23	5.318	5.459	4.914	6.956	11.049	15.38	20.774	19.506	15.388	18.776	16.933	15.291	10 492	11.409	11.889	11.768	10.693	9.504	9.388	10.422	10.466	10.466
24	5.354	5.497	4.96	7.02	11.117	15.419	20.786	19.515	15 41	18.789	16 951	15.346	10 533	11.454	11.935	11.816	10.739	9.557	9.443	10.485	10.529	10.529
25	5.384	5.532	5.002	7.077	11.178	15.452	20.798	19.523	15 43	18.801	16 966	15.392	10.567	11.492	11.974	11.857	10.779	9.603	9.492	10.541	10.584	10.584
26	5.412	5.565	5.04	7.129	11.231	15.481	20.808	19.531	15.447	18.81	16.979	15.431	10.596	11.524	12.008	11.893	10.813	9.644	9.534	10.589	10.633	10.633
27	5.438	5.594	5.075	7.176	11.28	15.506	20.817	19.537	15.463	18.819	16.99	15.464	10.621	11.552	12.037	11.924	10.843	9.68	9.571	10.632	10.676	10.676
28	5.461	5.621	5.107	7.217	11.322	15.527	20.825	19.543	15.476	18.826	16.999	15.491	10.642	11.576	12.062	11.951	10.869	9.711	9.604	10.669	10.713	10.713
29	5.483	5.646	5.135	7.255	11.361	15.545	20.832	19.548	15.488	18.832	17.006	15.514	10.66	11.597	12.084	11.974	10.891	9.738	9.632	10.702	10.746	10.746
30	5.503	5.669	5.161	7.289	11.395	15.561	20.839	19.553	15.499	18.838	17.012	15.533	10.675	11.614	12.102	11.994	10.91	9.762	9.657	10.73	10.774	10.774

Cumulative Prepayment Rates for
Superior Termination Performance Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.307	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.066
2	2.075	3.662	3.603	2.794	1.098	1.279	0.574	17.753	1.176	1.588	11.454	4.21	1.279	1.882	2.439	2.341	4.173	3.765	3.713	3.421	3.414	3.414
3	8.673	11.707	9.553	4.781	1.756	1.607	7.517	25.2	3.276	19.743	31.932	6.748	2.993	4.867	6.341	8.873	9.762	7.323	6.936	6.288	6.275	6.275
4	17.667	19.513	12.704	6.012	2.093	3.28	11.614	33.628	19.868	39.378	38.711	9.627	5.713	9.011	13.441	15.282	14.54	10.658	9.991	8.987	8.967	8.967
5	24.862	23.206	14.252	6.689	3.427	5.132	16.389	49.993	39.849	45.336	43.233	13.461	8.694	15.849	20.537	20.607	18.763	13.693	12.785	11.461	11.435	11.435
6	28.108	24.983	14.906	8.488	4.929	7.46	30.425	59.241	45.514	49.292	47.964	17.653	13.794	21.729	25.422	24.483	21.945	16.032	14.945	13.377	13.346	13.346
7	29.7	25.684	17.116	10.311	6.752	15.337	42.121	62.125	49.24	52.911	52.598	21.204	18.679	26.141	29.215	27.625	24.626	18.091	16.864	15.061	15.026	15.026
8	30.44	27.972	19.315	12.358	10.973	25.984	46.18	63.778	53.029	56.045	56.104	25.323	23.1	30.051	32.609	30.521	27.245	20.139	18.776	16.742	16.704	16.704
9	32.603	30.229	21.74	16.792	17.197	30.584	48.754	64.924	56.885	60.203	59.748	29.174	27.135	33.589	35.751	33.393	29.901	22.308	20.819	18.518	18.475	18.475
10	34.724	32.566	26.078	22.821	21.351	33.962	51.007	65.821	60.448	64.269	62.691	32.464	30.637	36.754	38.708	36.121	32.445	24.418	22.814	20.256	20.208	20.208
11	36.896	36.411	31.458	26.888	24.996	37.446	53.032	69.722	64.267	67.45	65.175	35.494	33.938	39.86	41.61	38.818	34.978	26.552	24.838	22.022	21.97	21.97
12	40.324	41.074	35.156	30.38	28.64	40.823	59.421	72.609	67.154	69.65	67.132	38.302	37.16	42.829	44.386	41.454	37.513	28.787	26.978	23.87	23.811	23.811
13	44.574	44.235	38.311	33.818	31.751	46.557	65.431	74.753	69.705	71.551	68.992	41.332	40.637	45.948	47.298	44.234	40.202	31.196	29.291	25.872	25.806	25.806
14	47.458	46.931	41.447	36.835	35.39	51.59	68.446	75.877	71.48	72.831	70.453	44.056	43.74	48.696	49.872	46.749	42.698	33.54	31.568	27.823	27.75	27.75
15	49.923	49.526	44.12	39.683	39.252	55.829	70.544	76.686	72.939	73.915	71.743	46.585	46.621	51.242	52.26	49.101	45.051	35.784	33.754	29.707	29.628	29.628
16	52.312	51.806	46.316	42.711	42.812	59.199	72.069	77.296	74.207	74.838	72.882	48.935	49.298	53.602	54.477	51.3	47.272	37.934	35.856	31.528	31.443	31.443
17	54.499	53.757	48.534	45.557	45.777	61.64	73.029	77.706	75.197	75.52	73.79	51.054	51.694	55.688	56.443	53.294	49.336	40.03	37.927	33.306	33.214	33.214
18	56.453	55.705	50.716	48.072	48.372	63.71	73.834	78.053	76.077	76.118	74.605	53.03	53.929	57.633	58.278	55.165	51.287	42.037	39.916	35.024	34.925	34.925
19	58.371	57.623	52.698	50.287	50.598	65.349	74.392	78.296	76.771	76.568	75.26	54.815	55.932	59.352	59.906	56.863	53.101	43.995	41.881	36.702	36.598	36.598
20	60.269	59.339	54.478	52.297	52.683	66.839	74.88	78.509	77.399	76.971	75.856	56.486	57.809	60.964	61.433	58.463	54.82	45.87	43.765	38.325	38.215	38.215
21	61.96	60.882	56.107	54.2	54.639	68.194	75.309	78.696	77.968	77.333	76.399	58.052	59.568	62.474	62.866	59.97	56.448	47.665	45.574	39.894	39.778	39.778
22	63.477	62.305	57.692	55.986	56.397	69.278	75.616	78.832	78.421	77.609	76.839	59.469	61.146	63.812	64.139	61.339	57.964	49.419	47.362	41.429	41.307	41.307
23	64.859	63.661	59.208	57.683	58.054	70.279	75.893	78.954	78.838	77.862	77.246	60.802	62.632	65.073	65.34	62.634	59.402	51.097	49.077	42.913	42.786	42.786
24	66.179	64.969	60.688	59.275	59.542	71.08	76.093	79.043	79.17	78.056	77.574	62.007	63.964	66.189	66.407	63.809	60.741	52.739	50.776	44.366	44.234	44.234
25	67.438	66.217	62.104	60.789	60.95	71.829	76.279	79.126	79.48	78.237	77.882	63.145	65.224	67.246	67.417	64.925	62.015	54.309	52.402	45.771	45.633	45.633
26	68.637	67.41	63.458	62.23	62.283	72.531	76.452	79.203	79.769	78.405	78.17	64.22	66.415	68.247	68.376	65.984	63.226	55.809	53.958	47.129	46.987	46.987
27	69.784	68.56	64.782	63.581	63.477	73.09	76.576	79.259	79.999	78.534	78.403	65.191	67.481	69.131	69.224	66.943	64.353	57.282	54.506	48.461	48.314	48.314
28	70.878	69.659	66.048	64.869	64.613	73.62	76.695	79.312	80.216	78.656	78.623	66.112	68.495	69.973	70.033	67.857	65.427	58.687	56.983	49.749	49.597	49.597
29	71.921	70.708	67.257	66.095	65.694	74.125	76.807	79.362	80.423	78.773	78.833	66.987	69.458	70.776	70.805	68.73	66.452	60.029	58.395	50.992	50.836	50.836
30	72.915	71.711	68.413	67.265	66.722	74.604	76.914	79.41	80.619	78.883	79.032	67.818	70.375	71.543	71.542	69.562	67.429	61.31	59.742	52.194	52.035	52.035

Policy Year	Conditional Claim Rates for Prior Termination Performance Scenario																					
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	.0	0.112	0.114	0.106	0.103	0.103
2	0.794	0.945	0.519	0.432	0.487	0.796	1.587	2.343	0.563	1.194	0.984	0.503	0.397	0.459	0.39	0.336	0.472	0.524	0.532	0.497	0.484	0.484
3	1.152	0.994	0.643	0.605	0.936	1.413	3.568	4.534	1.715	3.129	3.508	1.875	1.142	1.261	1.214	1.591	1.728	1.424	1.177	1.266	1.292	1.292
4	0.877	0.752	0.453	0.551	0.817	1.725	3.295	5.275	2.323	5.013	6.098	2.339	1.378	1.656	2.333	2.127	2.106	1.48	1.417	1.599	1.634	1.634
5	0.589	0.451	0.351	0.428	0.908	1.534	3.383	5.632	3.363	6.748	5.512	2.183	1.393	2.861	2.848	2.798	2.122	1.652	1.668	1.88	1.882	1.882
6	0.367	0.32	0.269	0.498	0.812	1.539	3.214	6.382	4.704	5.899	4.22	1.985	2.244	2.544	2.583	2.329	1.839	1.504	1.506	1.693	1.691	1.691
7	0.271	0.271	0.294	0.411	0.813	1.513	3.874	6.113	4.074	4.153	3.535	2.156	2.164	2.199	2.212	2.107	1.719	1.397	1.394	1.563	1.564	1.564
8	0.196	0.281	0.236	0.426	0.841	1.832	4.322	4.132	2.904	3.174	1.942	1.787	1.528	1.564	1.688	1.684	1.386	1.127	1.126	1.253	1.254	1.254
9	0.249	0.238	0.248	0.423	0.961	2.261	3.174	2.689	2.41	2.085	1.796	1.457	1.185	1.305	1.486	1.479	1.217	0.98	0.983	1.092	1.093	1.093
10	0.198	0.193	0.247	0.47	1.188	1.914	2.512	1.993	1.662	2.101	1.556	1.103	1.008	1.171	1.337	1.33	1.005	0.812	0.817	0.901	0.902	0.902
11	0.201	0.211	0.285	0.636	1.067	1.566	1.969	1.976	1.795	1.878	1.23	0.996	0.972	1.154	1.322	1.215	0.927	0 744	0.752	0.827	0.828	0.828
12	0.177	0.235	0.383	0.615	0.904	1.322	1.224	2.07	1.506	1.367	0.995	0.895	0.89	1.071	1.137	1.045	0.799	0.638	0.647	0.71	0.711	0.711
13	0.192	0.324	0.388	0.548	0.808	0.895	1.166	1.586	0.994	0.955	0.765	0.709	0.716	0.821	0.873	0.796	0.62	0.502	0.507	0.552	0.552	0.552
14	0.243	0.339	0.382	0.471	0.653	1.009	1.055	1.282	0.837	0.843	0.726	0.689	0.649	0.745	0.793	0.722	0.564	0.458	0.461	0.499	0.5	0.5
15	0.256	0.34	0.309	0.481	0.766	0.901	0.831	1.08	0.734	0.755	0.7	0.617	0.583	0.676	0.719	0.647	0.51	0.42	0.42	0.452	0.452	0.452
16	0.258	0.251	0.331	0.569	0.667	0.702	0.695	0.952	0.656	0.692	0.644	0.558	0.526	0.613	0.651	0.586	0.463	0.382	0.382	0.41	0.41	0.41
17	0.205	0.302	0.379	0.498	0.521	0.578	0.608	0.847	0.596	0.646	0.592	0.504	0.475	0.555	0.59	0.531	0.42	0.348	0.348	0.371	0.371	0.371
18	0.248	0.333	0.328	0.383	0.423	0.498	0.536	0.759	0.559	0.601	0.542	0.45	0.423	0.502	0.533	0.476	0.379	0.319	0.317	0.336	0.336	0.336
19	0.265	0.286	0.256	0.316	0.363	0.434	0.481	0.726	0.526	0.559	0.496	0.405	0.381	0.453	0.481	0.431	0.344	0.29	0.288	0.304	0.304	0.304
20	0.226	0.227	0.212	0.271	0.311	0.38	0.457	0.692	0.493	0.519	0.452	0.362	0.339	0.403	0.427	0.386	0.31	0.265	0.263	0.275	0.275	0.275
21	0.182	0.19	0.182	0.235	0.272	0.351	0.435	0.662	0.463	0.482	0.411	0.325	0 304	0.363	0.385	0.348	0.28	0.241	0.238	0.249	0.248	0.248
22	0.154	0.164	0.157	0.205	0.255	0.323	0.415	0.633	0.436	0.446	0.373	0.291	0.273	0.326	0.346	0.314	0.253	0.219	0.216	0.224	0.224	0.224
23	0.135	0.142	0.136	0.193	0.236	0.296	0.395	0.603	0.409	0.412	0.337	0.258	0.242	0.289	0.307	0.281	0.228	0.199	0.197	0.202	0.202	0.202
24	0.119	0.124	0.129	0.181	0.221	0.271	0.377	0.576	0.384	0.38	0.303	0.231	0.216	0.259	0.275	0.252	0.205	0.181	0.178	0.182	0.182	0.182
25	0.107	0.118	0.122	0.171	0.206	0.247	0.358	0.548	0.359	0.349	0.269	0.204	0.19	0.229	0.243	0.225	0.184	0.164	0.162	0.164	0.164	0.164
26	0.103	0.114	0.116	0.161	0.193	0.225	0.341	0.522	0.337	0.319	0.24	0.181	0.169	0.204	0.217	0.202	0.165	0.148	0.146	0.147	0.147	0.147
27	0.099	0.109	0.11	0.152	0.181	0.205	0.325	0.497	0.316	0.292	0.213	0.16	0.15	0.182	0.193	0.181	0.148	0.134	0.132	0.132	0.132	0.132
28	0.095	0.105	0.104	0.143	0.17	0.184	0.307	0.469	0.293	0.263	0.185	0.141	0.131	0.16	0.171	0.161	0.132	0.121	0.119	0.119	0.118	0.118
29	0.091	0.1	0.099	0.135	0.16	0.167	0.292	0.446	0.275	0.24	0.163	0.124	0.116	0.142	0.151	0.143	0.118	0.109	0.108	0.106	0.106	0.106
30	0.088	0 096	0.094	0.128	0.15	0.152	0.278	0.424	0.258	0.218	0.143	0.108	0.101	0.125	0.134	0.128	0.106	0.098	0.097	0.095	0.095	0.095

Conditional Prepayment Rates for
Prior Termination Performance Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.066
2	1.877	3.396	3.258	2.454	0.811	0.924	0.409	17.488	0.903	1.389	11.2	3.722	1.025	1.513	2.003	1.974	4.171	2.733	2.681	2.383	2.377	2.377
3	6.797	8.442	6 209	2.054	0.67	0.336	7.103	9.337	2.138	18.682	23 394	2.663	1.743	3.058	4.017	6.711	5.861	3.721	3.37	2.988	2.98	2.98
4	10.065	9.046	3.53	1.307	0.348	1.738	4.693	12.267	17.566	25.842	10.595	3.165	2.849	4.435	7.707	7.182	5.422	3.678	3.345	2.936	2.929	2.929
5	9.041	4.745	1.806	0.732	1.393	1.995	5.943	28.888	26.406	11.34	8.484	4.461	3.26	7.788	8.564	6.578	5.183	3.529	3.213	2.82	2.813	2.813
6	4.514	2.407	0.779	1.969	1.607	2.599	19.269	24.929	10.659	9.193	10.319	5.225	5.847	7.418	6.586	5.234	4.184	2.853	2.6	2.279	2.274	2.274
7	2.327	0.977	2.663	2.047	1.998	9.172	20.711	11.321	8.284	9.903	11.827	4.765	6.045	6.128	5.58	4.554	3.73	2.615	2.396	2.076	2.071	2.071
8	1.111	3.228	2.731	2.355	4.761	13.882	9.533	7.857	9.612	9.98	10.525	5.937	5.915	5.879	5.375	4.468	3.833	2.699	2.472	2.141	2.136	2.136
9	3.289	3.3	3.104	5.248	7.437	7.116	7.017	6.186	11.18	15.193	12.494	6.015	5.801	5.718	5.323	4.693	4.085	2.961	2.732	2.332	2.326	2.326
10	3.344	3.542	5.743	7.565	5.419	5.767	6.838	5.318	11.924	17.958	11.773	5.556	5.39	5.476	5.35	4.729	4.115	2.991	2.761	2.354	2.348	2.348
11	3.55	6.053	7.578	5.549	5.09	6.441	6.778	24.917	14.786	17.577	11.467	5.48	5.41	5.734	5.601	4.954	4.304	3.137	2.898	2.467	2.46	2.46
12	5.82	7.834	5.654	5.079	5.424	6.787	23.411	25.222	13.402	15.093	10.343	5.432	5.621	5.865	5.735	5.142	4.534	3.411	3.175	2.664	2.654	2.654
13	7.678	5.774	5.133	5.302	4.943	12.531	29.222	25.767	13.912	15.611	11.095	6.254	6.471	6.599	6.435	5.764	5.068	3.822	3.56	2.978	2.967	2.967
14	5.655	5.247	5.399	4.942	6.133	12.704	21.056	18.592	11.382	12.591	9.887	6.046	6.207	6.261	6.118	5.564	4.976	3.883	3.646	3.004	2.992	2.992
15	5.135	5.348	4.886	4.93	6.982	12.399	18.817	16.685	10.649	12.327	9.761	6.018	6.174	6.224	6.083	5.538	4.96	3.881	3.647	3.003	2.991	2.991
16	5.261	4.981	4 233	5.542	6.976	11.372	17.018	15.323	10.455	12.072	9.627	5.987	6.139	6.185	6.046	5.511	4.943	3.88	3.65	3.002	2.99	2.99
17	5.098	4.499	4.48	5.548	6.29	9.368	13.015	12.297	9.175	10.236	8.555	5.778	5.876	5.852	5.734	5.31	4.85	3.946	3.744	3.03	3.016	3.016
18	4.81	4.717	4.633	5.219	5.908	8.821	12.653	11.972	9.046	10.061	8.453	5.751	5.845	5.818	5.701	5.286	4.834	3.944	3.745	3.028	3.015	3.015
19	4.972	4.893	4.426	4.869	5.412	7.701	10.077	9.594	7.886	8.464	7.457	5.536	5.578	5.484	5.387	5.081	4.736	4.017	3.851	3.059	3.044	3.044
20	5.194	4.616	4.171	4.659	5.379	7.623	9.883	9.409	7.796	8.349	7.382	5.512	5.552	5.456	5.361	5.06	4.722	4.014	3.851	3.057	3.042	3.042
21	4.889	4.362	3.993	4.641	5.351	7.534	9.672	9.208	7.695	8.221	7.298	5.487	5.523	5.424	5.331	5.037	4.707	4.012	3.852	3.055	3.041	3.041
22	4.622	4.212	4.052	4.579	5.097	6.546	7.69	7.363	6.674	6.874	6.4	5.271	5.257	5.097	5.021	4.831	4.607	4.091	3.968	3.089	3.073	3.073
23	4.425	4.203	4.05	4.568	5.075	6.487	7.575	7.253	6.608	6.795	6.343	5.249	5.234	5.073	4.998	4.812	4.593	4.088	3.967	3.086	3.07	3.07
24	4.426	4.232	4.123	4.501	4.812	5.567	5.94	5.721	5.664	5.602	5.498	5.023	4.958	4.738	4.681	4.597	4.487	4.178	4.101	3.124	3.107	3.107
25	4.419	4.227	4.12	4.491	4.796	5.536	5.89	5.673	5.629	5.564	6.487	5.008	4.942	4.722	4.666	4.584	4.476	4.173	4.097	3.121	3.103	3.103
26	4.412	4.222	4.117	4.481	4.778	5.498	5.827	5.613	5.587	5.516	5.429	4.991	4.924	4.704	4.649	4.569	4.465	4.168	4.094	3.118	3.1	3.1
27	4.421	4.256	4.202	4.409	4.504	4.645	4.484	4.346	4.717	4.468	4.638	4.753	4.638	4.361	4.323	4.343	4.35	4.272	4.25	3.161	3.142	3.142
28	4.414	4.25	4.197	4.401	4.495	4.637	4.475	4.337	4.707	4.46	4.629	4.744	4.629	4.354	4.316	4.335	4.342	4.264	4.242	3.157	3.138	3.138
29	4.406	4.244	4.191	4.393	4.487	4.629	4.465	4.328	4.697	4.451	4.62	4.734	4.621	4.347	4.31	4.328	4.334	4.256	4.234	3.152	3.133	3.133
30	4.399	4.237	4.186	4.385	4.478	4.621	4.455	4.319	4.686	4.443	4.61	4.725	4.612	4.341	4.303	4.32	4.326	4.248	4.226	3.148	3.129	3.129

Cumulative Claim Rates for
Prior Termination Performance Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.114	0.106	0.103	0.103
2	0.851	1.053	0 565	0.464	0.511	0.819	1.683	2.481	0.584	1.234	1.011	0.513	0.408	0.47	0.404	0 342	0.472	0.63	0.639	0.597	0.581	0.581
3	1.969	2	1.181	1.049	1.432	2.203	5.171	6.098	2.268	4.274	4.082	2.3	1.531	1.702	1.583	1.891	2.12	1.992	1.765	1.812	1.822	1.822
4	2.753	2.649	1.586	1.568	2.222	3.863	8.048	9.722	4.463	8.083	7.984	4.427	2.846	3.249	3.733	3.789	3.976	3.334	3.058	3.282	3.323	3.323
5	3.222	3	1.886	1.964	3.091	5.287	10.765	12.912	7.008	11.628	10.922	6.303	4.12	5.761	6.093	6.054	5.705	4.755	4.509	4.931	4.974	4.974
6	3.486	3.236	2.112	2.419	3.85	6.666	13.107	15.28	9.508	14.167	12.857	7.896	6.077	7.757	7.989	7.763	7.094	5.982	5.754	6.347	6.388	6.388
7	3.671	3.431	2.356	2.785	4.591	7.965	15.294	16.837	11.34	15.685	14.242	9.503	7.812	9.311	9.464	9.191	8.314	7.071	6.86	7.602	7.643	7.643
8	3.802	3.63	2.546	3.154	5.337	9.37	17.135	17.706	12.485	16.681	14.889	10.743	8.936	10.323	10.502	10.256	9.244	7.915	7.719	8.572	8.613	8.613
9	3.966	3.792	2.74	3.512	6.141	10.832	18.299	18.204	13.316	17.252	15.412	11.676	9.743	11.106	11.351	11.135	10.018	8.621	8.442	9.387	9.43	9.43
10	4.091	3.92	2.927	3.886	7.052	11.953	19.127	18.541	13.813	17.728	15.801	12.329	10.382	11.758	12.063	11.876	10.624	9.183	9.021	10.038	10.081	10.081
11	4.214	4.054	3.129	4.352	7.816	12.8	19.715	18.85	14.276	18.068	16.068	12.88	10.958	12.358	12.72	12.512	11.154	9.678	9.535	10.615	10.659	10.659
12	4.318	4.194	3.379	4.775	8.424	13.458	20.049	19.087	14.601	18.267	16.256	13.343	11.452	12.877	13.246	13.025	11.586	10.086	9.96	11.094	11.139	11.139
13	4.424	4.371	3.618	5.13	8.932	13.868	20.289	19.219	14.783	18.383	16.384	13.686	11.824	13.247	13.622	13.392	11.904	10.394	10.281	11.454	11.499	11.499
14	4.548	4.546	3.839	5.418	9.319	14.268	20.44	19.297	14.913	18.469	16.492	13.996	12.137	13 558	13.938	13.703	12.177	10.663	10.561	11.769	11.814	11.814
15	4.671	4.713	4.009	5.696	9.743	14.576	20.533	19.349	15.014	18.535	16.584	14.256	12.398	13 82	14.206	13.964	12.41	10.898	10 806	12.044	12.089	12.089
16	4.788	4.826	4.18	6.007	10.083	14.784	20.595	19.387	15.094	18.588	16.66	14.474	12.618	14.042	14.431	14.186	12.61	11.104	11.019	12.284	12.329	12.329
17	4.876	4.957	4.368	6.263	10.329	14.934	20.64	19.415	15.158	18.631	16.723	14.659	12.804	14.229	14.622	14 375	12.781	11.283	11.205	12.494	12.54	12.54
18	4.977	5.094	4.522	6.447	10.514	15.051	20.674	19.437	15.212	18.667	16.775	14.814	12.959	14.387	14.783	14.534	12.928	11.44	11.368	12.678	12.724	12.724
19	5.079	5.206	4.637	6.591	10.664	15.143	20.701	19.455	15.258	18.697	16.819	14.944	13.089	14.521	14.92	14.67	13.054	11.577	11 511	12.839	12.885	12.885
20	5.162	5.291	4.727	6.708	10.784	15.218	20.723	19.471	15.298	18.722	16.855	15.054	13.198	14.633	15.034	14.785	13.162	11.696	11.635	12.98	13.025	13.025
21	5.225	5.358	4.802	6.804	10.884	15.281	20.743	19.485	15.332	18.743	16.886	15.147	13.291	14.728	15.131	14.883	13.255	11.8	11.743	13.103	13.148	13.148
22	5.276	5.413	4.863	6.884	10.972	15.334	20.759	19.496	15.362	18.761	16.912	15.225	13.369	14.808	15.213	14.967	13.334	11.891	11.837	13.21	13.255	13.255
23	5.318	5.459	4.914	6.956	11.049	15.38	20.774	19.506	15.388	18.776	16.933	15.291	13.434	14.876	15.282	15.038	13.402	11.97	11.919	13.303	13.349	13.349
24	5.354	5.497	4.96	7.02	11.117	15.419	20.786	19.515	15.41	18.789	16.951	15.346	13.489	14.933	15.34	15.098	13.461	12.038	11.99	13.385	13.43	13.43
25	5.384	5.532	5.002	7.077	11.178	15.452	20.798	19.523	15.43	18.801	16.966	15.392	13.535	14.981	15.389	15.15	13.511	12.097	12.051	13.456	13.501	13.501
26	5.412	5.565	5.04	7.129	11.231	15.481	20.808	19.531	15.447	18.81	16.979	15.431	13.574	15.021	15.431	15.193	13.553	12.149	12.105	13.517	13.563	13.563
27	5.438	5.594	5.075	7.176	11.28	15.506	20.817	19.537	15.463	18.819	16.99	15.464	13.606	15.056	15.466	15.231	13.59	12.193	12.151	13.571	13.616	13.616
28	5.461	5.621	5.107	7.217	11.322	15.527	20.825	19.543	15.476	18.826	16.999	15.491	13.633	15.085	15.496	15 263	13.621	12.232	12.191	13.617	13.662	13.662
29	5.483	5.646	5.135	7.255	11.361	15.545	20.832	19.548	15.488	18.832	17.006	15.514	13.656	15.109	15.521	15.29	13.648	12.265	12.226	13.657	13.703	13.703
30	5.503	5.669	5.161	7.289	11.395	15.561	20.839	19.553	15.499	18.838	17.012	15.533	13.675	15.13	15.543	15.313	13.67	12.293	12.255	13.692	13.737	13.737

Cumulative Prepayment Rates for
Prior Termination Performance Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.066
2	2.075	3.662	3.603	2.794	1.098	1.279	0.574	17.753	1.176	1.588	11.454	4.21	1.279	1.882	2.439	2.341	4.173	3.765	3.713	3.421	3.414	3.414
3	8.673	11.707	9.553	4.781	1.756	1.607	7.317	25.2	3.276	19.743	31.932	6.748	2.993	4.867	6.341	8.873	9.762	7.323	6.936	6.288	6.275	6.275
4	17.667	19.513	12.704	6.012	2.093	3.28	11.614	33.628	19.868	39.378	38.711	9.627	5.713	9.011	13.441	15.282	14.54	10.658	9.991	8.987	8.967	8.967
5	24.862	23.206	14.252	6.689	3.427	5.132	16.389	49.993	39.849	45.336	43.233	13.461	8.694	15.849	20.537	20.607	18.763	13.693	12.785	11.461	11.435	11.435
6	28.108	24.983	14.906	8.488	4.929	7.46	30.425	59.241	45.514	49.292	47.964	17.653	13.794	21.669	25.372	24.445	21.923	16.02	14.935	13.366	13.335	13.335
7	29.7	25.684	17.116	10.311	6.752	15.337	42.121	62.125	49.24	52.911	52.598	21.204	18.64	25.997	29.093	27.533	24.571	18.06	16.835	15.032	14.998	14.998
8	30.44	27.972	19.315	12.358	10.973	25.984	46.18	63.778	53.029	56.045	56.104	25.323	22.993	29.805	32.398	30.36	27.143	20.081	18.722	16.688	16.65	16.65
9	32.603	30.229	21.74	16.792	17.197	30.584	48.754	64.924	56.885	60.203	59.748	29.174	26.944	33.231	35.44	33.148	29.742	22.213	20.731	18.431	18.389	18.389
10	34.724	32.566	26.078	22.821	21.351	33.962	51.007	65.821	60.448	64.269	62.691	32.464	30.359	36.283	38.289	35.783	32.221	24.282	22.687	20.13	20.084	20.084
11	36.896	36.411	31.458	26.888	24.996	37.446	53.032	69.722	64.267	67.45	65.175	35.494	33.566	39.266	41.072	38.377	34.681	26.369	24.666	21.853	21.802	21.802
12	40.324	41.074	35.156	30.38	28.64	40.823	59.421	72.609	67.154	69.65	67.132	38.302	36.687	42.106	43.725	40.903	37.137	28.551	26.755	23.652	23.594	23.594
13	44.574	44.235	38.311	33.818	31.751	46.557	65.431	74.753	69.705	71.551	68.992	41.332	40.045	45.081	46.496	43.558	39.735	30.896	29.008	25.596	25.531	25.531
14	47.458	46.931	41.447	36.835	35.39	51.59	68.446	75.877	71.48	72.831	70.453	44.036	43.035	47.694	48.939	45.954	42.142	33.176	31.221	27.487	27.415	27.415
15	49.923	49.526	44.12	39.683	39.252	55.829	70.544	76.686	72.939	73.915	71.743	46.585	45.806	50.11	51.2	48.189	44.408	35.355	33.345	29.311	29.233	29.233
16	52.312	51.806	46.316	42.711	42.812	59.199	72.069	77.296	74.207	74.838	72.882	48.935	48.374	52.345	53.294	50.275	46.542	37.441	35.383	31.071	30.987	30.987
17	54.499	53.757	48.534	45.557	45.777	61.64	73.029	77.706	75.197	75.52	73.79	51.054	50.668	54.316	55.147	52.162	48.523	39.471	37.39	32.787	32.697	32.697
18	56.453	55.705	50.716	48.072	48.372	63.71	73.834	78.053	76.077	76.118	74.605	53.03	52.806	56.149	56.873	53.932	50.394	41.413	39.315	34.444	34.348	34.348
19	58.371	57.623	52.698	50.287	50.598	65.349	74.392	78.296	76.771	76.568	75.26	54.815	54.718	57.769	58.402	55.534	52.131	43.307	41.214	36.062	35.959	35.959
20	60.269	59.339	54.478	52.297	52.683	66.839	74.88	78.509	77.399	76.971	75.856	56.486	56.507	59.284	59.835	57.042	53.775	45.118	43.035	37.624	37.516	37.516
21	61.96	60.882	56.107	54.2	54.639	68.194	75.309	78.696	77.968	77.333	76.399	58.052	58.182	60.702	61.177	58.462	55.331	46.851	44.781	39.133	39.02	39.02
22	63.477	62.305	57.692	55.986	56.397	69.278	75.616	78.832	78.421	77.609	76.839	59.469	59.684	61.958	62.368	59.75	56.778	48.543	46.506	40.608	40.489	40.489
23	64.859	63.661	59.208	57.683	58.054	70.279	75.893	78.954	78.838	77.862	77.246	60.802	61.096	63.14	63.491	60.967	58.151	50.16	48.159	42.034	41.909	41.909
24	66.179	64.969	60.688	59.275	59.542	71.08	76.093	79.043	79.17	78.056	77.574	62.007	62.361	64.184	64.487	62.07	59.427	51.742	49.796	43.429	43.299	43.299
25	67.438	66.217	62.104	60.789	60.95	71.829	76.279	79.126	79.48	78.237	77.882	63.145	63.557	65.173	65.43	63.117	60.641	53.254	51.361	44.777	44.642	44.642
26	68.637	67.41	63.458	62.23	62.283	72.531	76.452	79.203	79.769	78.405	78.17	64.22	64.687	66.11	66.324	64.11	61.795	54.698	52.859	46.079	45.94	45.94
27	69.784	68.56	64.782	63.581	63.477	73.09	76.576	79.259	79.999	78.534	78.403	65.191	65.697	66.935	67.114	65.009	62.868	56.114	54.348	47.356	47.212	47.212
28	70.878	69.659	66.048	64.869	64.613	73.62	76.695	79.312	80.216	78.656	78.623	66.112	66.657	67.722	67.868	65.866	63.89	57.466	55.769	48.59	48.441	48.441
29	71.921	70.708	67.257	66.095	65.694	74.125	76.807	79.362	80.423	78.773	78.833	66.987	67.569	68.472	68.587	66.683	64.865	58.755	57.125	49.781	49.629	49.629
30	72.915	71.711	68.413	67.265	66.722	74.604	76.914	79.41	80.619	78.883	79.032	67.818	68.437	69.188	69.273	67.462	65.794	59.987	58.421	50.932	50.776	50.776

Conditional Claim Rates for
Optimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.111	0.111	0.108	0.093	0.093
2	0.794	0.945	0.519	0.432	0.487	0.796	1.587	2.343	0.563	1.194	0.984	0.503	0.397	0.459	0.39	0.336	0.472	0.52	0.518	0.505	0.432	0.433
3	1.152	0.994	0.643	0.605	0.936	1.413	3.568	4.534	1.715	3.129	3.508	1.875	1.142	1.261	1.214	1.591	1.699	1.258	1.084	1.094	1.14	1.14
4	0.877	0.752	0.453	0.551	0.817	1.725	3.295	5.275	2.323	5.013	6.098	2.339	1.378	1.656	2.333	2.106	1.928	1.248	1.114	1.366	1.424	1.424
5	0.589	0.451	0.351	0.428	0.908	1.534	3.383	5.632	3.363	6.748	5.512	2.183	1.393	2.353	2.32	2.202	1.468	0.997	1.084	1.32	1.349	1.349
6	0.367	0.32	0.269	0.498	0.812	1.539	3.214	6.382	4.704	5.899	4.22	1.985	1.827	2.07	2.029	1.655	1.088	0.903	0.972	1.18	1.203	1.203
7	0.271	0.271	0.294	0.411	0.813	1.513	3.874	6.113	4.074	4.153	3.535	2.156	1.743	1.726	1.701	1.277	1.012	0.836	0.896	1.083	1.105	1.105
8	0.196	0.281	0.236	0.426	0.841	1.832	4.322	4.132	2.904	3.174	1.942	1.77	1.193	1.212	1.103	1.019	0.826	0.682	0.729	0.868	0.884	0.884
9	0.249	0.238	0.248	0.423	0.961	2.261	3.174	2.689	2.41	2.085	1.78	1.395	0.862	0.863	0.963	0.891	0.723	0.593	0.635	0.753	0.767	0.767
10	0.198	0.193	0.247	0.47	1.188	1.914	2.512	1.993	1.662	2.084	1.489	0.959	0.631	0.763	0.855	0.798	0.602	0.495	0.528	0.619	0.629	0.629
11	0.201	0.211	0.285	0.636	1.067	1.566	1.969	1.976	1.782	1.8	1.217	0.751	0.605	0.746	0.84	0.726	0.554	0.453	0.485	0.566	0.575	0.575
12	0.177	0.235	0.383	0.615	0.904	1.322	1.224	2.055	1.452	1.353	0.859	0.671	0.551	0.688	0.718	0.623	0.477	0.388	0.417	0.484	0.492	0.492
13	0.192	0.324	0.388	0.548	0.808	0.895	1.159	1.523	0.985	0.829	0.653	0.536	0.443	0.524	0.549	0.482	0.376	0.31	0.33	0.377	0.382	0.382
14	0.243	0.339	0.382	0.471	0.653	1.003	1.018	1.262	0.744	0.727	0.616	0.522	0.401	0.476	0.499	0.439	0.344	0.284	0.301	0.342	0.347	0.347
15	0.256	0.34	0.309	0.481	0.762	0.867	0.827	0.958	0.651	0.649	0.591	0.474	0.364	0.43	0.452	0.401	0.316	0.264	0.278	0.311	0.315	0.315
16	0.258	0.251	0.331	0.566	0.646	0.699	0.623	0.846	0.581	0.594	0.542	0.429	0.33	0.391	0.412	0.366	0.289	0.243	0.254	0.283	0.286	0.286
17	0.205	0.302	0.377	0.475	0.498	0.507	0.544	0.754	0.529	0.554	0.497	0.389	0.3	0.356	0.375	0.334	0.265	0.223	0.233	0.258	0.26	0.26
18	0.248	0.332	0.315	0.373	0.364	0.435	0.48	0.679	0.497	0.516	0.455	0.353	0.272	0.323	0.341	0.306	0.244	0.208	0.215	0.235	0.237	0.237
19	0.264	0.277	0.252	0.277	0.313	0.379	0.431	0.653	0.47	0.482	0.417	0.32	0.247	0.294	0.31	0.28	0.224	0.191	0.188	0.214	0.215	0.215
20	0.22	0.226	0.188	0.239	0.271	0.333	0.41	0.626	0.444	0.449	0.381	0.29	0.224	0.267	0.282	0.256	0.206	0.178	0.183	0.195	0.196	0.196
21	0.182	0.172	0.162	0.208	0.239	0.307	0.393	0.603	0.421	0.419	0.347	0.262	0.203	0.244	0.258	0.235	0.189	0.164	0.168	0.178	0.178	0.178
22	0.141	0.15	0.141	0.183	0.225	0.284	0.377	0.583	0.4	0.391	0.317	0.237	0.184	0.222	0.235	0.215	0.173	0.152	0.154	0.162	0.162	0.162
23	0.124	0.13	0.123	0.173	0.212	0.262	0.362	0.561	0.38	0.365	0.285	0.214	0.167	0.202	0.214	0.197	0.16	0.141	0.143	0.147	0.148	0.148
24	0.11	0.114	0.117	0.165	0.201	0.242	0.349	0.542	0.362	0.341	0.259	0.193	0.151	0.184	0.195	0.181	0.147	0.13	0.132	0.134	0.134	0.134
25	0.1	0.11	0.112	0.157	0.19	0.221	0.335	0.523	0.341	0.316	0.231	0.174	0.137	0.168	0.178	0.166	0.135	0.121	0.122	0.122	0.122	0.122
26	0.097	0.107	0.107	0.15	0.18	0.204	0.323	0.505	0.326	0.295	0.209	0.157	0.124	0.153	0.163	0.153	0.124	0.112	0.112	0.111	0.111	0.111
27	0.094	0.103	0.103	0.143	0.171	0.189	0.312	0.488	0.312	0.275	0.189	0.141	0.112	0.139	0.149	0.14	0.114	0.103	0.103	0.101	0.101	0.101
28	0.092	0.1	0.099	0.136	0.163	0.174	0.299	0.488	0.296	0.254	0.168	0.126	0.101	0.127	0.135	0.129	0.105	0.096	0.096	0.092	0.091	0.091
29	0.089	0.097	0.095	0.131	0.156	0.161	0.289	0.452	0.284	0.237	0.151	0.113	0.091	0.116	0.124	0.118	0.097	0.089	0.088	0.083	0.083	0.083
30	0.087	0.095	0.091	0.125	0.149	0.15	0.279	0.438	0.273	0.221	0.135	0.101	0.083	0.106	0.113	0.109	0.089	0.082	0.081	0.076	0.075	0.075

Conditional Prepayment Rates for
Optimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.065	1.065	1.07	1.071	1.071
2	1.877	3.396	3.258	2.454	0.811	0.924	0.409	17.488	0.903	1.389	11.2	3.722	1.025	1.513	2.003	1.974	4.098	2.453	2.909	2.455	2.387	2.387
3	6.797	8.442	6.209	2.054	0.67	0.336	7.103	9.337	2.138	18.682	23.394	2.663	1.743	3.058	4.017	6.59	4.962	3.743	3.733	3.079	2.993	2.993
4	10.065	9.046	3.53	1.307	0.348	1.738	4.693	12.267	17.566	25.842	10.595	3.165	2.849	4.435	7.571	6.082	5.358	3.846	3.744	3.032	2.94	2.94
5	9.041	4.745	1.806	0.732	1.393	1.995	5.943	28.888	26.406	11.34	8.484	4.461	3.26	7.65	7.198	6.047	5.25	3.691	3.596	2.911	2.823	2.823
6	4.514	2.407	0.779	1.969	1.607	2.599	19.269	24.929	10.659	9.193	10.319	5.225	5.739	6.214	5.666	5.006	4.248	2.986	2.913	2.353	2.282	2.282
7	2.327	0.977	2.663	2.047	1.998	9.172	20.711	11.321	8.284	9.903	11.827	4.681	5.084	5.162	5.174	4.524	3.89	2.801	2.719	2.149	2.077	2.077
8	1.111	3.228	2.731	2.355	4.761	13.882	9.533	7.857	9.612	9.98	10.333	4.997	4.96	5.458	5.33	4.663	4.012	2.896	2.806	2.215	2.141	2.141
9	3.289	3.3	3.104	5.248	7.437	7.116	7.017	6.186	11.18	14.933	10.558	5.186	5.584	5.857	5.719	5.061	4.404	3.262	3.149	2.42	2.329	2.329
10	3.344	3.542	5.743	7.565	5.419	5.767	6.838	5.318	11.729	15.175	9.95	5.368	5.595	5.9	5.766	5.108	4.445	3.301	3.186	2.444	2.352	2.352
11	3.55	6.053	7.578	5.549	5.09	6.441	6.778	24.48	12.579	14.757	10.816	5.721	5.948	6.208	6.055	5.368	4.662	3.472	3.35	2.562	2.463	2.463
12	5.82	7.834	5.654	5.079	5.424	6.787	23.054	21.618	11.721	14.624	10.916	6.197	6.403	6.568	6.41	5.754	5.066	3.88	3.73	2.774	2.655	2.655
13	7.678	5.774	5.133	5.302	4.943	12.341	25.228	22.432	13.569	16.308	12.422	7.183	7.404	7.42	7.22	6.473	5.682	4.364	4.192	3.103	2.968	2.968
14	5.655	5.247	5.399	4.942	6.059	11.218	19.233	18.912	12.334	14.384	11.515	7.185	7.349	7.289	7.108	6.464	5.766	4.567	4.371	3.142	2.991	2.991
15	5.135	5.348	4.886	4.873	6.284	11.37	18.896	18.043	12.097	14.066	11.366	7.157	7.314	7.253	7.075	6.441	5.755	4.572	4.375	3.141	2.989	2.989
16	5.261	4.981	4.183	5.014	6.51	11.635	17.993	17.223	11.861	13.747	11.214	7.13	7.28	7.217	7.042	6.42	5.745	4.58	4.382	3.14	2.987	2.987
17	5.098	4.451	4.111	5.37	6.678	10.634	14.749	14.251	10.771	12.107	10.367	7.134	7.226	7.085	6 928	6.412	5.837	4.809	4.583	3.182	3.013	3.013
18	4.758	4.343	4.517	5.588	6.648	10.492	14.248	13.771	10.593	11.879	10.245	7.107	7.193	7.051	6.897	6.391	5.826	4.814	4.588	3.181	3.011	3.011
19	4.632	4.902	4.959	5.717	6.581	9.541	11.713	11.406	9.581	10.404	9.427	7.114	7.138	6.915	6.778	6.385	5.93	5.078	4.819	3.228	3.039	3.039
20	5.199	5.131	4.963	5.709	6.552	9.433	11.429	11.123	9.451	10.245	9.332	7.088	7.107	6.884	6.75	6.364	5.918	5.081	4.821	3.226	3.037	3.037
21	5.445	5.134	4.971	5.702	6.523	9.32	11.137	10.835	9.315	10.076	9.231	7.062	7.076	6.853	6.721	6.343	5.907	5.087	4.826	3.225	3.035	3.035
22	5.659	5.361	5.246	5.845	6.455	8.44	9.175	8.985	8.401	8.788	8.46	7.073	7.022	6.714	6.6	6.339	6.021	5.389	5.088	3.276	3.066	3.066
23	5.654	5.359	5.248	5.835	6.428	8.359	9.011	8.82	8.306	8.676	8.385	7.047	6.993	6.686	6.574	6.319	6.009	5.389	5.089	3.274	3.063	3.063
24	5.905	5.626	5.576	6	6.357	7.505	7.35	7.243	7.432	7.487	7.624	7.062	6.938	6.539	6.447	6.317	6.14	5.749	5.401	3.333	3.099	3.099
25	5.893	5.618	5.571	5.986	6.332	7.455	7.273	7.163	7.373	7.425	7.576	7.036	6.91	6.515	6.424	6.297	6.124	5.741	5.394	3.33	3.095	3.095
26	5.883	5.612	5.569	5.974	6.308	7.398	7.184	7.072	7.309	7.354	7.522	7.011	6.883	6.491	6.401	6.277	6.11	5.736	5.39	3.327	3.092	3.092
27	6.182	5.931	5.966	6.167	6.234	6.57	5.774	5.727	6.472	6.26	6.772	7.033	6.827	6.334	6.265	6.278	6.264	6.174	5.767	3.395	3.133	3.133
28	6.161	5.914	5.95	6.148	6.211	6.547	5.752	5.702	6.445	6.237	6.748	7.007	6.802	6.315	6.247	6.258	6.244	6.154	5.75	3.39	3.129	3.129
29	6.141	5.896	5.935	6.129	6.19	6.525	5.73	5.678	6.419	6.214	6.724	6.981	6.777	6.296	6.229	6.239	6.224	6.134	5.733	3.385	3.124	3.124
30	6.12	5.878	5.92	6.11	6.168	6.503	5.709	5.655	6.392	6.191	6.701	6.955	6.753	6.278	6.21	6.219	6.204	6.114	5.717	3.38	3.12	3.12

Cumulative Claim Rates for
Optimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.111	0.111	0.108	0.093	0.093
2	0.851	1.053	0.565	0.464	0.511	0.819	1.683	2.481	0.584	1.234	1.011	0.513	0.408	0.47	0.404	0.342	0.472	0.625	0.622	0.607	0.52	0.52
3	1.969	2	1.181	1.049	1.432	2.203	5.171	6.098	2.268	4.274	4.082	2.3	1.531	1.702	1.583	1.891	2.094	1.831	1.657	1.655	1.614	1.614
4	2.753	2.649	1.586	1.568	2.222	3.863	8.048	9.722	4.463	8.083	7.984	4.427	2.846	3.249	3.733	3.773	3.811	2.968	2.669	2.91	2.926	2.926
5	3.222	3	1.886	1.964	3.091	5.287	10.765	12.912	7.008	11.628	10.922	6.303	4.12	5.315	5 658	5.579	5.023	3.83	3.606	4.07	4.114	4.114
6	3.486	3.236	2.112	2.419	3.85	6.666	13.107	15.28	9.508	14.167	12.857	7.896	5.714	6.951	7.182	6.825	5.861	4.574	4.407	5 063	5.128	5.128
7	3.671	3.431	2.356	2.785	4.591	7.965	15.294	16.837	11.34	15.685	14.242	9.503	7.119	8.202	8.361	7.722	6.599	5.236	5.117	5.942	6.028	6.028
8	3.802	3.63	2.546	3.154	5.337	9.37	17.135	17.706	12.485	16.681	14.889	10.732	8.016	9.019	9.073	8.396	7.172	5.756	5.673	6.624	6.725	6.725
9	3.966	3.792	2.74	3.512	6.141	10.832	18.299	18.204	13.316	17.252	15.409	11.635	8.623	9.563	9.655	8.953	7.649	6.193	6.14	7.197	7.312	7.312
10	4.091	3.92	2.927	3.886	7.052	11.953	19.127	18.541	13.813	17.725	15.79	12.215	9.04	10.011	10.137	9.421	8.026	6.543	6.514	7.653	7.778	7.778
11	4.214	4.054	3.129	4.352	7.816	12.8	19.715	18.85	14.274	18.064	16.067	12.641	9.414	10.42	10.579	9.822	8.355	6.851	6.845	8.057	8.192	8.192
12	4.318	4.194	3.379	4.775	8.424	13.458	20.049	19.087	14.596	18.276	16.238	12.996	9.732	10.771	10.931	10.146	8.624	7.105	7.119	8.392	8.535	8.535
13	4.424	4.371	3.618	5.13	8.932	13.868	20.289	19.221	14.785	18.385	16.353	13.261	9.97	11.019	11.181	10.38	8.824	7.299	7.326	8.644	8.793	8.793
14	4.548	4.546	3.839	5.418	9.319	14.266	20.444	19.305	14.908	18.464	16.447	13.498	10.169	11.226	11.39	10.578	8.996	7.468	7.507	8.865	9.019	9.019
15	4.671	4.711	4.009	5.696	9.741	14.568	20.544	19.356	15.001	18.525	16.527	13.697	10.335	11.399	11.566	10.747	9.144	7.619	7.665	9.059	9.217	9.217
16	4.788	4.826	4.18	6.005	10.073	14.782	20.605	19.393	15 073	18.571	16.591	13.864	10.474	11.545	11.713	10.89	9.271	7.75	7.804	9.23	9.392	9 392
17	4.876	4.957	4.367	6.251	10.311	14.918	20.648	19.419	15.131	18.609	16.643	14.004	10.591	11.667	11.838	11.012	9.381	7.865	7.926	9.38	9.546	9.546
18	4.977	5.094	4.516	6.432	10.472	15.021	20.68	19.44	15.179	18.639	16.686	14.121	10.689	11.769	11.942	11.116	9.476	7.966	8.032	9.511	9.681	9.681
19	5.079	5.203	4.63	6.558	10.602	15.102	20.705	19.457	15.22	18.664	16.72	14.219	10.771	11.856	12.031	11.205	9.558	8.055	8.125	9.627	9.8	9.8
20	5.16	5.287	4.71	6.661	10.706	15.166	20.725	19.471	15.254	18.685	16.749	14.301	10.84	11.929	12.106	11.282	9.628	8.133	8.207	9.73	9.904	9.904
21	5.223	5.348	4.776	6.745	10.791	15.219	20.743	19.483	15.283	18.702	16.772	14.37	10.899	11.99	12.169	11.347	9.689	8.202	8.279	9.819	9.996	9.996
22	5.269	5.398	4.83	6.814	10.866	15.263	20.757	19.483	15.309	18.717	16.792	14.428	10.947	12.043	12.223	11.402	9.742	8.262	8.341	9.898	10.078	10.078
23	5.308	5.439	4.874	6.876	10.932	15.3	20.77	19.502	15.33	18.729	16.808	14.477	10.989	12.087	12.269	11.45	9.787	8.314	8.396	9.968	10.149	10.149
24	5.34	5.473	4.915	6.932	10.991	15.332	20.781	19.51	15.349	18.739	16.821	14.517	11.023	12.124	12.308	11.491	9.826	8.36	8.444	10.029	10.212	10.212
25	5.367	5.504	4.951	6.981	11.042	15.358	20.791	19.517	15.366	18.748	16.832	14.551	11.052	12.156	12.341	11.526	9.86	8.4	8.485	10.083	10.267	10.267
26	5.392	5.533	4.984	7.025	11.088	15.381	20.8	19.523	15.38	18.756	16.841	14.579	11.077	12.183	12.369	11.556	9.889	8.435	8.522	10.13	10.316	10.316
27	5.415	5.559	5.014	7.065	11.129	15.4	20.808	19.529	15.393	18.763	16.848	14.603	11.097	12.206	12.393	11 582	9.914	8.465	8.553	10.172	10.359	10.359
28	5.436	5.582	5.04	7.101	11.165	15.417	20.815	19.534	15.405	18.768	16.855	14.623	11.114	12.226	12.414	11.604	9.935	8.492	8.581	10.208	10.396	10.396
29	5.454	5.604	5.064	7.132	11.197	15.431	20.822	19.538	15.415	18.773	16.86	14.639	11.129	12.243	12.432	11.624	9.954	8.515	8.605	10.24	10.429	10.429
30	5.472	5.624	5.086	7.161	11.226	15.443	20.828	19.542	15.424	18.778	16.864	14.653	11.141	12.257	12.447	11.64	9.97	8.535	8.626	10.268	10.458	10.458

Cumulative Prepayment Rates for Optimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.065	1.065	1.07	1.071	1.071
2	2.075	3.662	3.603	2.794	1.098	1.279	0.574	17.753	1.176	1.588	11.454	4.21	1.279	1.882	2.439	2.341	4.101	3.489	3.94	3.497	3.43	3.43
3	8.673	11.707	9.553	4.781	1.756	1.607	7.517	25.2	3.276	19.743	31.932	6.748	2.993	4.867	6.341	8.756	8.836	7.078	7.503	6.449	6.305	6.305
4	17.667	19.513	12.704	6.012	2 093	3.28	11.614	33.628	19.868	39.378	38.711	9 627	5.713	9.011	13.316	14.19	13.609	10.581	10.904	9.235	9.012	9.012
5	24.862	23.206	14.252	6.689	3.427	5.132	16.389	49.993	39.849	45.336	43.233	13.461	8.694	15.727	19.289	19.151	17.944	13.772	14 012	11.792	11.499	11.499
6	28.108	24.983	14.906	8.488	4.929	7.46	30.425	59.241	45.514	49.292	47.964	17.653	13.7	20.638	23.544	22.919	21.216	16.233	16.412	13.772	13.424	13.424
7	29.7	25.684	17.116	10.311	6.752	15.337	42.121	62.125	49.24	52.911	52.598	21.142	17.799	24.379	27.131	26.098	24.053	18.45	18.565	15.516	15.116	15.116
8	30.44	27.972	19.315	12.358	10.973	25.984	46.18	63.778	53.029	56.045	56.04	24.612	21.525	28.062	30.572	29.184	26.835	20.66	20.706	17.255	16.804	16.804
9	32.603	30.229	21.74	16.792	17.197	30.584	48.754	64.924	56.885	60.132	59.126	27.969	25.462	31.751	34.026	32.344	29.742	23.06	23.024	19.097	18.585	18.585
10	34.724	32.566	26.078	22.821	21.351	33.962	51.007	65.821	60.39	63.578	61.676	31.215	29.152	35.218	37.276	35.343	32.525	25.395	25.281	20.899	20.328	20.328
11	36.896	36.411	31.458	26.888	24.996	37.446	53.032	69.653	63.646	66.351	64.13	34.456	32.831	38.622	40.463	38.308	35.297	27.758	27.566	22.729	22.099	22.099
12	40.324	41.074	35.156	30.38	28.64	40.823	59.323	72.143	66.244	68.644	66.309	37.74	36.531	41.973	43.604	41.293	38.152	30.295	30.013	24.649	23.95	23.95
13	44.574	44.235	38.311	33 818	31.751	46.47	64.537	74.114	68.856	70.793	68.496	41.284	40.513	45.484	46.89	44.437	41.176	33.027	32.648	26.727	25.953	25.953
14	47.458	46.931	41.447	36.835	35.347	50.924	67.463	75.378	70.884	72.363	70.259	44.556	44.155	48.659	49.873	47.358	44.059	35.753	35.272	28.758	27.905	27.905
15	49.923	49.526	44.12	39.65	38.825	54.886	69.755	76.341	72.614	73.667	71.788	47.563	47.499	51.573	52.617	50.068	46.76	38.349	37.776	30.717	29.791	29.791
16	52.312	51.806	46.29	42.391	42.175	58.445	71.507	77.085	74.093	74.753	73.116	50 331	50.571	54.25	55.142	52.584	49.293	40.823	40.167	32.608	31.613	31.613
17	54.499	53.736	48.326	45.163	45.365	61.297	72.676	77.59	75.27	75.573	74.199	52.891	53.389	56.678	57.441	54.927	51.712	43.296	42.551	34.459	33.39	33.39
18	56.432	55.531	50.463	47.879	48.313	63.797	73.633	78.004	76.296	76.275	75.153	55.249	55.983	58.915	59.562	57.104	53.979	45.647	44.823	36.245	35.108	35.108
19	58.219	57.461	52.696	50.491	51.027	65.821	74.303	78.298	77.121	76.814	75.938	57.434	58.364	60.946	61.497	59.133	56.146	48.003	47.095	37.996	36.786	36.786
20	60.128	59.377	54.814	52.944	53.543	67.625	74.878	78.549	77.853	77.287	76.637	59.449	60.561	62.823	63.287	61.022	58.176	50.236	49.254	39.686	38.408	38.408
21	62.018	61.191	56.827	55.248	55.876	69.232	75.372	78.766	78.503	77.703	77.262	61.308	62.587	64.557	64.943	62.779	60.077	52.353	51.307	41.317	39.977	39.977
22	63.872	62.985	58.841	57.47	58.029	70.548	75.732	78.925	79.033	78.027	77.78	63.034	64.452	66.136	66.457	64.42	61.898	54.479	53.363	42.918	41.51	41.51
23	65.617	64.68	60.748	59.555	60.03	71.738	76.052	79.066	79.51	78.318	78.249	64.628	66.175	67.599	67.861	65.948	63.602	56.487	55.312	44.463	42.993	42.993
24	67.334	66.361	62.666	61.57	61.878	72.713	76.288	79.171	79.9	78.546	78.637	66.109	67.762	68.932	69.145	67.376	65.236	58.511	57.272	45.982	44.445	44.445
25	68.945	67.944	64.472	63.456	63.597	73.608	76.504	79.267	80.257	78.754	78.993	67.478	69.231	70.17	70.339	68.708	66.763	60.412	59.121	47.446	45.849	45.849
26	70.456	69.434	66.175	65.223	65.198	74.427	76.701	79.354	80.583	78.945	79.319	68.744	70.59	71.321	71.451	69.949	68.192	62.201	60.867	48.859	47.206	47.206
27	71.95	70.919	67.896	66.935	66.678	75.099	76.847	79.419	80.85	79.095	79.59	69.922	71.845	72.37	72 467	71.11	69.565	64.014	62.633	50.252	48.536	48.536
28	73.345	72.31	69.509	68.534	68.058	75.724	76.984	79.48	81.098	79.234	79.841	71.012	73.008	73.348	73.415	72.194	70.846	65.708	64.289	51.593	49.822	49.822
29	74.648	73.614	71.02	70.028	69.345	76.305	77.113	79.537	81.328	79.364	80.074	72.02	74.086	74.26	74.301	73.205	72.042	67.291	65.845	52.887	51.065	51.065
30	75.866	74.836	72.436	71.425	70.547	76.845	77.233	79.591	81.542	79.486	80.29	72.954	75.087	75.112	75.127	74.149	73.159	68.77	67.305	54.133	52.266	52.266

Conditional Claim Rates for Pessimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.013	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.118	0.117	0.118	0.118
2	0.794	0.945	0.519	0.432	0.487	0.796	1.587	2.343	0.563	1.194	0.984	0.503	0.397	0.459	0.39	0.336	0.472	0.524	0.553	0.547	0.554	0.554
3	1.152	0.994	0.643	0.605	0.936	1.413	3.568	4.534	1.715	3.129	3.508	1.875	1.142	1.261	1.214	1.591	1.739	1.616	1.486	1.551	1.526	1.526
4	0.877	0.752	0.453	0.551	0.817	1.725	3.295	5.275	2.323	5.013	6.098	2.339	1.378	1.656	2.333	2.128	2.201	2.038	1.991	2.021	1.989	1.989
5	0.589	0.451	0.351	0.428	0.908	1.534	3.383	5.632	3.363	6.748	5.512	2.183	1.393	2.353	2.344	2.413	2.16	2.094	2.004	2.034	1.961	1.961
6	0.367	0.32	0.269	0.498	0.812	1.539	3.214	6.382	4.704	5.899	4.22	1.985	1.827	2.091	2.223	2.212	2.031	1.949	1.846	1.873	1.802	1.802
7	0.271	0.271	0.294	0.411	0.813	1.513	3.874	6.113	4.074	4.153	3.535	2.156	1.76	1.885	2.092	2.165	1.953	1.845	1.74	1.765	1.7	1.7
8	0.196	0.281	0.236	0.426	0.841	1.832	4.322	4.132	2.904	3.174	1.942	1.787	1.3	1.477	1.735	1.79	1.629	1.496	1.421	1.44	1.391	1.391
9	0.249	0.238	0.248	0.423	0.961	2.261	3.174	2.689	2.41	2.085	1.796	1.519	1.105	1.334	1.576	1.62	1.468	1.323	1.261	1.277	1.235	1.235
10	0.198	0.193	0.247	0.47	1.188	1.914	2.512	1.993	1.662	2.101	1.625	1.262	1.011	1.231	1.457	1.494	1.247	1.097	1.054	1.067	1.033	1.033
11	0.201	0.211	0.285	0.636	1.067	1.566	1.969	1.976	1.796	1.96	1.407	1.231	1.007	1.249	1.482	1.402	1.176	1.019	0.982	0.993	0.962	0.962
12	0.177	0.235	0.383	0.615	0.904	1.322	1.224	2.072	1.563	1.558	1.23	1.139	0.947	1.191	1.307	1.234	1.034	0.882	0.854	0.864	0.837	0.837
13	0.192	0.324	0.388	0.548	0.808	0.895	1.166	1.664	1.112	1.174	0.975	0.937	0.784	0.937	1.03	0.972	0.822	0.694	0.67	0.678	0.657	0.657
14	0.243	0.339	0.382	0.471	0.653	1.01	1.095	1.45	0.995	1.06	0.947	0.929	0.725	0.868	0.952	0.896	0.756	0.636	0.611	0.618	0.6	0.6
15	0.256	0.34	0.309	0.481	0.766	0.938	0.916	1.284	0.888	0.967	0.929	0.855	0.667	0.8	0.877	0.824	0.693	0.578	0.555	0.561	0.546	0.546
16	0.258	0.251	0.331	0.57	0.687	0.79	0.8	1.143	0.804	0.899	0.869	0.784	0.612	0.736	0.805	0.755	0.634	0.528	0.505	0.51	0.496	0.496
17	0.205	0.302	0.379	0.523	0.574	0.693	0.705	1.024	0.738	0.848	0.809	0.716	0.56	0.675	0.737	0.69	0.578	0.48	0.458	0.462	0.45	0.45
18	0.248	0.333	0.341	0.433	0.495	0.606	0.628	0.923	0.696	0.797	0.749	0.651	0.509	0.615	0.671	0.627	0.524	0.433	0.414	0.417	0.406	0.406
19	0.265	0.296	0.286	0.376	0.429	0.535	0.567	0.886	0.658	0.746	0.691	0.589	0.461	0.559	0.609	0.568	0.474	0.392	0.373	0.376	0.367	0.367
20	0.233	0.248	0.246	0.321	0.373	0.474	0.541	0.847	0.617	0.696	0.633	0.531	0.416	0.505	0.55	0.513	0.422	0.352	0.335	0.338	0.329	0.329
21	0.198	0.215	0.212	0.279	0.327	0.439	0.517	0.81	0.58	0.646	0.577	0.476	0.373	0.455	0.494	0.46	0.378	0.316	0.301	0.303	0.296	0.296
22	0.173	0.187	0.183	0.244	0.306	0.406	0.494	0.773	0.543	0.597	0.523	0.424	0.332	0.407	0.441	0.411	0.337	0.283	0.269	0.271	0.265	0.265
23	0.151	0.161	0.158	0.227	0.284	0.371	0.469	0.735	0.506	0.549	0.471	0.371	0.293	0.362	0.392	0.361	0.295	0.252	0.24	0.241	0.236	0.236
24	0.133	0.14	0.149	0.213	0.264	0.339	0.446	0.698	0.471	0.502	0.42	0.326	0.258	0.32	0.346	0.319	0.261	0.224	0.213	0.214	0.21	0.21
25	0.119	0.133	0.14	0.197	0.242	0.307	0.422	0.659	0.435	0.456	0.372	0.28	0.221	0.275	0.298	0.276	0.227	0.198	0.189	0.189	0.186	0.186
26	0.114	0.127	0.132	0.185	0.224	0.277	0.399	0.622	0.402	0.411	0.326	0.244	0.192	0.241	0.26	0.242	0.199	0.175	0.167	0.167	0.165	0.165
27	0.109	0.121	0.124	0.172	0.208	0.249	0.376	0.586	0.371	0.369	0.283	0.21	0.166	0.209	0.225	0.211	0.173	0.153	0.147	0.147	0.145	0.145
28	0.103	0.114	0.116	0.16	0.19	0.218	0.351	0.547	0.336	0.324	0.238	0.178	0.141	0.178	0.192	0.181	0.149	0.134	0.129	0.129	0.127	0.127
29	0.099	0.109	0.109	0.149	0.176	0.194	0.33	0.513	0.309	0.288	0.203	0.152	0.12	0.153	0.165	0.156	0.129	0.117	0.113	0.113	0.112	0.112
30	0.094	0.103	0.102	0.138	0.163	0.172	0.31	0.48	0.284	0.255	0.172	0.128	0.102	0.131	0.141	0.134	0.111	0.102	0.099	0.099	0.098	0.098

Conditional Prepayment Rates for
Pessimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.061	1.061	1.06	1.06
2	1.877	3.396	3.258	2.454	0.811	0.924	0.409	17.488	0.903	1.389	11.2	3.722	1.025	1.513	2.003	1.974	4.245	3.413	2.394	2.546	2.366	2.366
3	6.797	8.442	6.209	2.054	0.67	0.336	7.103	9.337	2.138	18.682	23.394	2.663	1.743	3.058	4.017	6.834	7.573	4.225	3.224	3.177	2.967	2.967
4	10.065	9.046	3.53	1.307	0.348	1.738	4.693	12.267	17.566	25.842	10.595	3.165	2.849	4.435	7.846	9.283	6.891	4.271	3.158	3.097	2.918	2.918
5	9.041	4.745	1.806	0.732	1.393	1.995	5.943	28.888	26.406	11.34	8.484	4.461	3.26	7.93	11.17	8.611	6.776	4.053	3.015	2.966	2.803	2.803
6	4.514	2.407	0.779	1.969	1.607	2.599	19.269	24.929	10.659	9.193	10.319	5.225	5.958	9.717	8.786	7.095	5.325	3.231	2.427	2.392	2.265	2.265
7	2.327	0.977	2.663	2.047	1.998	9.172	20.711	11.321	8.284	9.903	11.827	4.85	7.917	8.045	7.517	5.83	4.491	2.855	2.198	2.17	2.064	2.064
8	1.111	3.228	2.731	2.355	4.761	13.882	9.533	7.857	9.612	9.98	10.721	7.774	7.856	7.938	6.914	5.416	4.282	2.848	2.253	2.226	2.129	2.129
9	3.289	3.3	3.104	5.248	7.437	7.116	7.017	6.186	11.18	15.459	16.258	7.751	7.647	7.111	6.257	5.086	4.271	3.012	2.431	2.416	2.319	2.319
10	3.344	3.542	5.743	7.565	5.419	5.767	6.838	5.318	12.123	23.288	15.425	7.304	6.732	6.436	5.81	4.946	4.266	3.019	2.454	2.438	2.341	2.341
11	3.55	6.053	7.578	5.549	5.09	6.441	6.778	25.365	19.014	23.014	15.348	6.827	6.346	6.21	5.86	5.13	4.423	3.157	2.571	2.554	2.453	2.453
12	5.82	7.834	5.654	5.079	5.424	6.787	23.776	32.187	16.74	19.209	12.571	6.131	5.812	5.9	5.733	5.099	4.494	3.322	2.763	2.747	2.648	2.648
13	7.678	5.774	5.133	5.302	4.943	12.726	36.838	31.745	17.571	18.742	12.629	6.426	6.398	6.56	6.362	5.687	4.999	3.71	3.09	3.073	2.962	2.962
14	5.655	5.247	5.399	4.942	6.208	15.724	24.077	21.574	13.035	13.601	9.851	5.74	5.855	5.945	5.812	5.28	4.728	3.642	3.102	3.086	2.989	2.989
15	5.135	5.348	4.886	4.989	8.398	14.716	21.75	18.411	11.529	12.263	9.345	5.66	5.776	5.897	5.767	5.244	4.702	3.632	3.099	3.084	2.987	2.987
16	5.261	4.981	4.285	6.627	8.077	13.593	18.867	16.066	10.464	11.584	9.132	5.582	5.729	5.844	5.716	5.204	4.673	3.622	3.097	3.082	2.986	2.986
17	5.098	4.547	5.29	6.174	7.088	10.223	13.31	11.589	8.538	9.347	7.711	5.17	5.262	5.305	5.202	4.817	4.408	3.553	3.109	3.096	3.014	3.014
18	4.862	5.529	5.134	5.834	6.393	9.126	12.219	10.982	8.361	9.13	7.606	5.135	5.224	5.263	5.161	4.784	4.383	3.543	3.106	3.094	3.013	3.013
19	5.763	5.244	4.746	5.042	5.377	7.076	9.177	8.456	6.961	7.352	6.404	4.732	4.772	4.748	4.669	4.406	4.119	3.471	3.12	3.11	3.044	3.044
20	5.58	4.943	4.294	4.603	4.997	6.776	8.967	8.267	6.877	7.249	6.332	4.705	4.742	4.716	4.638	4.38	4.099	3.462	3.117	3.107	3.042	3.042
21	5.243	4.493	3.913	4.283	4.821	6.647	8.746	8.098	6.781	7.13	6.249	4.673	4.708	4.678	4.602	4.35	4.077	3.453	3.114	3.104	3.04	3.04
22	4.584	3.989	3.56	3.942	4.384	5.494	6.722	6.256	5.641	5.705	5.226	4.289	4.282	4.201	4.143	3.991	3.819	3.379	3.129	3.121	3.073	3.073
23	4.186	3.724	3.447	3.905	4.338	5.438	6.621	6.165	5.581	5.636	5.173	4.266	4.257	4.175	4.118	3.969	3.802	3.371	3.126	3.118	3.071	3.071
24	3.751	3.491	3.337	3.663	3.934	4.451	5.013	4.692	4.577	4.439	4.264	3.886	3.84	3.713	3.674	3.613	3.541	3.292	3.142	3.138	3.108	3.108
25	3.635	3.465	3.315	3.651	3.919	4.424	4.97	4.654	4.548	4.408	4.239	3.873	3.826	3.699	3.66	3.601	3.53	3.286	3.138	3.134	3.104	3.104
26	3.606	3.441	3.309	3.638	3.9	4.39	4.916	4.606	4.511	4.369	4.206	3.856	3.809	3.681	3.643	3.586	3.517	3.279	3.135	3.13	3.101	3.101
27	3.425	3.304	3.212	3.407	3.501	3.525	3.648	3.436	3.633	3.372	3.404	3.478	3.399	3.236	3.212	3.233	3.252	3.194	3.154	3.153	3.144	3.144
28	3.42	3.3	3.208	3.401	3.495	3.52	3.64	3.43	3.627	3.367	3.4	3.474	3.395	3.232	3.209	3.229	3.247	3.19	3.149	3.148	3.139	3.139
29	3.415	3.296	3.205	3.395	3.489	3.516	3.633	3.425	3.62	3.363	3.396	3.47	3.391	3.229	3.205	3.225	3.243	3.186	3.145	3.144	3.135	3.135
30	3.41	3.291	3.201	3.389	3.483	3.511	3.626	3.419	3.613	3.358	3.392	3.466	3.387	3.226	3.202	3.221	3.239	3.181	3.141	3.139	3.13	3.13

Cumulative Claim Rates for
Pessimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.023	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.118	0.117	0.118	0.118
2	0.851	1.053	0.565	0.464	0.511	0.819	1.683	2.481	0.584	1.234	1.011	0.513	0.408	0.47	0.404	0.342	0.472	0.63	0.665	0.657	0.665	0.665
3	1.969	2	1.181	1.049	1.432	2.203	5.171	6.098	2.268	4.274	4.082	2.3	1.531	1.702	1.583	1.891	2.129	2.164	2.09	2.142	2.13	2.13
4	2.753	2.649	1.586	1.568	2.222	3.863	8.048	9.722	4.463	8.083	7.984	4.427	2.846	3.249	3.733	3.787	4.031	3.986	3.91	3.986	3.952	3.952
5	3.222	3	1.886	1.964	3.091	5.287	10.765	12.912	7.008	11.628	10.922	6.303	4.12	5.315	5.673	5.692	5.728	5.74	5.647	5.747	5.661	5.661
6	3.486	3.236	2.112	2.419	3.85	6.666	13.107	15.28	9.508	14.167	12.857	7.896	5.714	6.962	7.264	7.246	7.18	7.272	7.167	7.287	7.156	7.156
7	3.671	3.431	2.356	2.785	4.591	7.965	15.294	16.837	11.34	15.685	14.242	9.503	7.13	8.272	8.596	8.625	8.475	8.647	8.539	8.677	8.509	8.509
8	3.802	3.63	2.546	3.154	5.337	9.37	17.135	17.706	12.485	16.681	14.889	10.742	8.074	9.196	9.595	9.674	9.484	9.709	9.615	9.766	9.575	9.575
9	3.966	3.792	2.74	3.512	6.141	10.832	18.299	18.204	13.316	17.252	15.411	11.694	8.803	9.953	10.423	10.556	10.341	10.609	10.534	10.697	10.488	10.488
10	4.091	3.92	2.927	3.886	7.052	11.953	19.127	18.541	13.813	17.726	15.799	12.411	9.412	10.592	11.129	11.314	11.027	11.322	11.274	11.446	11.224	11.224
11	4.214	4.054	3.129	4.352	7.816	12.8	19.715	18.85	14.275	18.056	16.077	13.051	9.972	11.19	11.795	11.98	11.638	11.957	11.94	12.118	11.887	11.887
12	4.318	4.194	3.379	4.775	8.424	13.458	20.049	19.086	14.594	18.253	16.279	13.596	10.459	11.718	12.339	12.527	12.145	12.483	12.498	12.683	12.444	12.444
13	4.424	4.371	3.618	5.13	8.932	13.868	20.288	19.21	14.78	18.371	16.418	14.011	10.835	12.104	12.738	12.931	12.525	12.88	12.92	13.109	12.866	12.866
14	4.548	4.546	3.839	5.418	9.319	14.267	20.427	19.282	14.915	18.456	16.534	14.393	11.158	12.435	13.079	13.279	12.855	13.228	13.291	13.483	13.237	13.237
15	4.671	4.711	4.009	5.696	9.743	14.575	20.514	19.332	15.018	18.522	16.636	14.721	11.436	12.719	13.372	13.579	13.141	13.531	13.615	13.811	13.563	13.563
16	4.788	4.826	4.18	6.007	10.088	14.795	20.573	19.367	15.1	18.575	16.721	15.001	11.674	12.963	13.623	13.837	13.388	13.795	13.899	14.098	13.848	13.848
17	4.876	4.957	4.368	6.272	10.351	14.959	20.614	19.393	15.167	18.619	16.792	15.242	11.879	13.172	13.838	14.059	13.602	14.026	14.148	14.348	14.098	14.098
18	4.977	5.094	4.527	6.477	10.56	15.088	20.646	19.413	15.224	18.656	16.853	15.447	12.053	13.351	14.022	14.25	13.786	14.226	14.364	14.566	14.316	14.316
19	5.079	5.209	4.653	6.644	10.729	15.19	20.671	19.431	15.273	18.688	16.904	15.623	12.203	13.504	14.18	14.413	13.944	14.4	14.552	14.756	14.506	14.506
20	5.164	5.3	4.756	6.779	10.868	15.274	20.693	19.446	15.316	18.715	16.948	15.772	12.33	13.635	14.314	14.553	14.078	14.55	14.716	14.92	14.671	14.671
21	5.231	5.375	4.841	6.89	10.982	15.346	20.711	19.489	15.353	18.738	16.985	15.899	12.439	13.747	14.429	14.672	14.193	14.679	14.857	15.063	14.814	14.814
22	5.287	5.437	4.912	6.982	11.084	15.407	20.728	19.47	15.385	18.757	17.016	16.006	12.531	13.842	14.526	14.774	14.291	14.791	14.979	15.186	14.938	14.938
23	5.334	5.488	4.97	7.065	11.174	15.461	20.742	19.48	15.413	18.774	17.042	16.096	12.608	13.922	14.608	14.859	14.373	14.887	15.084	15.291	15.044	15.044
24	5.373	5.531	5.023	7.139	11.254	15.506	20.754	19.489	15.438	18.788	17.064	16.171	12.673	13.99	14.678	14.932	14.443	14.968	15.175	15.382	15.136	15.136
25	5.407	5.57	5.071	7.206	11.324	15.546	20.766	19.497	15.459	18.801	17.083	16.233	12.726	14.046	14.735	14.992	14.501	15.038	15.252	15.46	15.215	15.215
26	5.437	5.606	5.115	7.265	11.387	15.58	20.776	19.504	15.478	18.812	17.099	16.284	12.771	14.093	14.783	15.042	14.55	15.098	15.318	15.526	15.282	15.282
27	5.466	5.639	5.155	7.319	11.442	15.609	20.785	19.511	15.495	18.821	17.112	16.327	12.808	14.133	14.823	15.084	14.592	15.148	15.374	15.582	15.339	15.339
28	5.492	5.669	5.191	7.367	11.491	15.633	20.793	19.516	15.509	18.829	17.123	16.361	12.838	14.163	14.856	15.119	14.626	15.191	15.422	15.63	15.388	15.388
29	5.516	5.697	5.224	7.41	11.534	15.654	20.8	19.522	15.522	18.835	17.131	16.39	12.863	14.192	14.883	15.149	14.655	15.227	15.462	15.67	15.429	15.429
30	5.538	5.722	5.253	7.448	11.573	15.672	20.807	19.526	15.533	18.841	17.138	16.413	12.883	14.214	14.906	15.173	14.678	15.257	15.496	15.705	15.464	15.464

Cumulative Prepayment Rates for
Pessimistic Economic Growth Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.061	1.061	1.06	1.06
2	2.075	3.662	3.603	2.794	1.098	1.279	0.574	17.753	1.176	1.588	11.454	4.21	1.279	1.882	2.439	2.341	4.247	4.437	3.427	3.577	3.398	3.398
3	8.673	11.707	9.553	4.781	1.756	1.607	7.517	25.2	3.276	19.743	31.932	6.748	2.993	4.867	6.341	8.993	11.463	8.448	6.519	6.619	6.244	6.244
4	17.667	19.513	12.704	6.012	2.093	3.28	11.614	33.628	19.868	39.378	38.711	9.627	5.713	9.011	13.569	17.266	17.417	12.266	9.405	9.445	8.918	8.918
5	24.862	23.206	14.252	6.689	3.427	5.132	16.389	49.993	39.849	45.336	43.233	13.461	8.694	15.974	22.811	24.065	22.74	15.66	12.018	12.012	11.36	11.36
6	28.108	24.983	14.906	8.488	4.929	7.46	30.425	59.241	45.514	49.292	47.964	17.653	13.891	23.628	29.098	29.049	26.549	18.199	14.017	13.979	13.239	13.239
7	29.7	25.684	17.116	10.311	6.752	15.337	42.121	62.125	49.24	52.911	52.598	21.268	20.258	29.217	33.885	32.764	29.525	20.327	15.749	15.687	14.882	14.882
8	30.44	27.972	19.315	12.358	10.973	25.984	46.18	63.778	53.029	56.045	56.17	26.656	25.965	34.184	37.865	35.938	32.18	22.349	17.455	17.371	16.513	16.513
9	32.603	30.229	21.74	16.792	17.197	30.584	48.754	64.924	56.885	60.276	60.901	31.514	31.012	38.215	41.155	38.705	34.671	24.395	19.228	19.131	18.227	18.227
10	34.724	32.566	26.078	22.821	21.351	33.962	51.007	65.821	60.508	65.531	64.579	35.668	35.067	41.555	43.971	41.215	37.018	26.358	20.951	20.842	19.896	19.896
11	36.896	36.411	31.458	26.888	24.996	37.446	53.032	69.792	65.407	69.406	67.614	39.218	38.593	44.531	46.605	43.651	39.315	28.325	22.694	22.572	21.586	21.586
12	40.324	41.074	35.156	30.38	28.64	40.823	59.52	73.454	68.823	71.833	69.684	42.149	41.584	47.147	48.992	45.914	41.519	30.309	24.5	24.366	23.348	23.348
13	44.574	44.235	38.311	33.818	31.751	46.646	67.06	75.828	71.752	73.709	71.477	44.998	44.655	49.85	51.455	48.278	43.836	32.431	26.446	26.3	25.25	25.25
14	47.458	46.931	41.447	36.835	35.435	52.861	70.115	76.902	73.519	74.799	72.685	47.356	47.263	52.115	53.539	50.326	45.899	34.423	28.327	28.17	27.099	27.099
15	49.923	49.526	44.12	39.717	40.076	57.705	72.181	77.608	74.863	75.638	73.707	49.525	49.667	54.209	55.466	52.235	47.838	36.325	30.136	29.969	28.881	28.881
16	52.312	51.806	46.343	43.335	44.131	61.478	73.566	78.103	75.931	76.325	74.603	51.525	51.897	56 146	57.25	54.014	49.662	38.141	31.878	31.702	30.6	30 6
17	54.499	53.778	48.96	46.463	47.377	63.908	74.351	78.398	76.704	76.811	75.284	53.26	53.816	57.788	58.767	55.563	51.29	39.849	33.564	33.38	32.275	32.275
18	56 474	56.06	51.357	49.221	50.082	65.84	74.971	78.642	77.391	77.237	75.899	54.882	55.61	59.319	60.183	57.017	52.829	41.483	35.188	34.997	33 89	33.89
19	58.696	58.097	53.451	51.455	52.199	67.193	75.377	78.808	77.911	77.546	76.373	56.289	57.155	60 62	61.39	58.283	54.205	43.02	36.762	36.566	35.467	35.467
20	60.717	59.911	55.25	53.385	54.052	68.389	75.734	78.955	78.386	77.826	76.809	57.615	58.61	61.843	62.525	59.479	55.51	44.495	38.28	38.078	36.988	36.988
21	62.506	61.474	56.815	55.092	55.745	69.478	76.05	79.086	78.819	78.079	77.209	58.862	59.98	62.994	63.592	60.609	56.75	45.909	39.743	39.537	38.458	38.458
22	63.985	62.797	58.181	56.591	57.204	70.314	76.27	79.179	79.153	78.266	77.52	59.948	61.163	63.973	64.505	61.596	57.86	47.241	41.164	40.954	39.894	39.894
23	65.272	63.98	59.453	58.014	58.581	71.092	76.472	79.263	79.462	78.439	77.811	60.978	62.285	64.902	65.37	62.534	58.919	48.521	42.535	42.322	41.281	41.281
24	66.375	65.046	60.64	59.293	59.772	71.693	76.613	79.323	79.701	78.567	78.037	61.872	63.25	65.691	66.107	63.351	59.864	49.725	43.866	43.652	42.638	42.638
25	67.402	66.066	61.779	60.519	60.908	72.261	76.746	79.379	79.926	78.688	78.252	62.725	64.173	66.445	66.812	64.134	60.771	50.886	45.152	44.936	43.949	43.949
26	68.382	67.042	62.876	61.694	61.992	72.798	76.87	79.431	80.138	78.802	78.454	63.54	65.054	67.165	67.486	64.883	61.641	52.003	46.393	46.176	45.215	45.215
27	69.279	67.946	63.905	62.752	62.925	73.209	76.957	79.469	80.301	78.885	78.611	64.244	65.809	67.774	68.057	65.532	62.415	53.054	47.601	47.383	46.457	46.457
28	70.143	68.818	64.897	63.77	63.821	73.604	77.041	79.504	80.456	78.966	78.762	64.922	66.536	68.361	68.607	66.158	63.162	54.068	48.767	48.549	47.656	47.656
29	70.975	69.659	65.856	64.75	64.683	73.984	77.121	79.538	80.605	79.043	78.907	65.574	67.237	68.927	69.139	66.762	63.882	55.048	49.893	49.675	48.815	48.815
30	71.777	70.471	66.782	65.694	65.513	74.349	77.198	79.571	80.749	79.118	79.047	66.202	67.913	69.474	69.652	67.345	64.577	55.993	50.981	50.763	49.934	49.934

Policy Year	Conditional Claim Rates for No Financing Change Policy Scenario																					
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.11	0.103	0.1	0.1
2	0.794	0.945	0.519	0.432	0.487	0.796	1.587	2.343	0.563	1.194	0.984	0.503	0.397	0.459	0.39	0.336	0.472	0.524	0.516	0.483	0.47	0.47
3	1.152	0.994	0.643	0.605	0.936	1.413	3.568	4.534	1.715	3.129	3.508	1.875	1.142	1.261	1.214	1.591	1.728	1.424	1.144	1.229	1.254	1.254
4	0.877	0.752	0.453	0.551	0.817	1.725	3.295	5.275	2.323	5.013	6.098	2.339	1.378	1.656	2.333	2.127	2.106	1.48	1.378	1.552	1.585	1.585
5	0.589	0.451	0.351	0.428	0.908	1.534	3.383	5.632	3.363	6.748	5.512	2.183	1.393	2.353	2.344	2.309	1.763	1.377	1.351	1.517	1.519	1.519
6	0.367	0.32	0.269	0.498	0.812	1.539	3.214	6.382	4.704	5.899	4.22	1.985	1.827	2.09	2.127	1.924	1.527	1.252	1.219	1.367	1.365	1.365
7	0.271	0.271	0.294	0.411	0.813	1.513	3.874	6.113	4.074	4.153	3.535	2.156	1.76	1.807	1.823	1.74	1.427	1.162	1.129	1.263	1.263	1.263
8	0.196	0.281	0.236	0.426	0.841	1.832	4.322	4.132	2.904	3.174	1.942	1.787	1.247	1.29	1.396	1.395	1.153	0.939	0.915	1.016	1.016	1.016
9	0.249	0.238	0.248	0.423	0.961	2.261	3.174	2.689	2.41	2.085	1.796	1.457	0.969	1.077	1.23	1.226	1.013	0.818	0.8	0.886	0.887	0.887
10	0.198	0.193	0.247	0.47	1.188	1.914	2.512	1.993	1.662	2.101	1.556	1.103	0.823	0.966	1.105	1.102	0.836	0.677	0.665	0.731	0.731	0.731
11	0.201	0.211	0.285	0.636	1.067	1.566	1.969	1.976	1.795	1.878	1.23	0.996	0.794	0.952	1.094	1.007	0.771	0.62	0.612	0.672	0.672	0.672
12	0.177	0.235	0.383	0.615	0.904	1.322	1.224	2.07	1.506	1.367	0.995	0.895	0.727	0.885	0.941	0.866	0.664	0.531	0.527	0.577	0.578	0.578
13	0.192	0.324	0.388	0.548	0.808	0.895	1.166	1.586	0.994	0.955	0.765	0.709	0 587	0.68	0.725	0.662	0.517	0.419	0.415	0.45	0.45	0.45
14	0.243	0.339	0.382	0.471	0.653	1.009	1.055	1.282	0.837	0.843	0.726	0.689	0.532	0.618	0.659	0.601	0.471	0.383	0.378	0.409	0.409	0.409
15	0.256	0.34	0.309	0.481	0.766	0.901	0.831	1.08	0.734	0.755	0.7	0.617	0.479	0.562	0.599	0.54	0.426	0.352	0.346	0.371	0.371	0.371
16	0.258	0.251	0.331	0.569	0.667	0.702	0.695	0.952	0.656	0.692	0.644	0.558	0.433	0.51	0.544	0.491	0.388	0.321	0.316	0.337	0.337	0.337
17	0.205	0.302	0 379	0.498	0.521	0.578	0.608	0.847	0.596	0.646	0.592	0.504	0.391	0.463	0.493	0.446	0.353	0.293	0.288	0.307	0.307	0.307
18	0.248	0.333	0.328	0.383	0.423	0.498	0.536	0.759	0.559	0.601	0.542	0.45	0.349	0.42	0.447	0.4	0.32	0.269	0.263	0.278	0.278	0.278
19	0.265	0.286	0.256	0.316	0.363	0.434	0.481	0.726	0.526	0.559	0.496	0.405	0.315	0.38	0.404	0.363	0.29	0.245	0.24	0.253	0.253	0.253
20	0.226	0.227	0.212	0.271	0.311	0.38	0.457	0.692	0.493	0.519	0.452	0.362	0.28	0.339	0.36	0.326	0.263	0.225	0.22	0.229	0.229	0.229
21	0.182	0.19	0.182	0.235	0.272	0.351	0.435	0.662	0.463	0.482	0.411	0.325	0.252	0.306	0.325	0.296	0.238	0.205	0.2	0.208	0.208	0.208
22	0.154	0.164	0.157	0.205	0.255	0.323	0.415	0.633	0.436	0.446	0.373	0.291	0.226	0.276	0.293	0.267	0.216	0.187	0.182	0.189	0.188	0.188
23	0.135	0.142	0.136	0.193	0.236	0.296	0.395	0.603	0.409	0.412	0.337	0.258	0.201	0.245	0.261	0.24	0.195	0.17	0.167	0.171	0.17	0.17
24	0.119	0.124	0.129	0.181	0.221	0.271	0.377	0.576	0.384	0.38	0.303	0.231	0.18	0.22	0.235	0.217	0.176	0.155	0.152	0.155	0.154	0.154
25	0.107	0.118	0.122	0.171	0.206	0.247	0.358	0.548	0.359	0.349	0.269	0.204	0.159	0.196	0.209	0.194	0.159	0.141	0.138	0.14	0.139	0.139
26	0 103	0.114	0.116	0.161	0.193	0.225	0.341	0.522	0.337	0.319	0.24	0.181	0.142	0.176	0.187	0.175	0.143	0.128	0.126	0.126	0.126	0.126
27	0 099	0.109	0.11	0.152	0.181	0.205	0.325	0.497	0.316	0.292	0.213	0.16	0.126	0.157	0.168	0.157	0.129	0.117	0.114	0.114	0.114	0.114
28	0.095	0.105	0.104	0.143	0.17	0.184	0.307	0.469	0.293	0.263	0.185	0.141	0.111	0.139	0.149	0.141	0.116	0.106	0.104	0.103	0.103	0.103
29	0.091	0.1	0.099	0.135	0.16	0.167	0.292	0.446	0.275	0.24	0.163	0.124	0.098	0.124	0.133	0.127	0.104	0.096	0.094	0.093	0.092	0.092
30	0 088	0.096	0.094	0.128	0.15	0.152	0.278	0.424	0.258	0.218	0.143	0.108	0.087	0.11	0.118	0.114	0 094	0.087	0.086	0.083	0.083	0.083

Conditional Prepayment Rates for
No Financing Change Policy Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.066
2	1.877	3.396	3.258	2.454	0.811	0.924	0.409	17.488	0.903	1.389	11.2	3.722	1.025	1.513	2.003	1.974	4.171	2.733	2.681	2.383	2.377	2.377
3	6.797	8.442	6.209	2.054	0.67	0.336	7.103	9.337	2.138	18.682	23.394	2.663	1.743	3.058	4.017	6.711	5.861	3.721	3.37	2.988	2.98	2.98
4	10.065	9.046	3.53	1.307	0.348	1.738	4.693	12.267	17.566	25.842	10.595	3.165	2.849	4.435	7.707	7.182	5.422	3.678	3.345	2.936	2.929	2.929
5	9.041	4.745	1.806	0.732	1.393	1.995	5.943	28.888	26.406	11.34	8.484	4.461	3.26	7.788	8.564	6.578	5.183	3.529	3.213	2.82	2.813	2.813
6	4.514	2.407	0.779	1.969	1.607	2.599	19.269	24.929	10.659	9.193	10.319	5.225	5.847	7.418	6.586	5.234	4.183	2.853	2.599	2.278	2.273	2.273
7	2.327	0.977	2.663	2.047	1.998	9.172	20.711	11.321	8.284	9.903	11.827	4.765	6.044	6.128	5.58	4.554	3.729	2.615	2.396	2.075	2.07	2.07
8	1.111	3.228	2.731	2.355	4.761	13.882	9.533	7.857	9.612	9.98	10.525	5.937	5.913	5.878	5.375	4.467	3.832	2.698	2.471	2.139	2.135	2.135
9	3.289	3.3	3.104	5.248	7.437	7.116	7.017	6.186	11.18	15.193	12.494	6.015	5.8	5.717	5.323	4.693	4.083	2.96	2.73	2.33	2.324	2.324
10	3.344	3.542	5.743	7.565	5.419	5.767	6.838	5.318	11.924	17.958	11.773	5.556	5.389	5.475	5.35	4.728	4.113	2.989	2.759	2.352	2.346	2.346
11	3.55	6.053	7.578	5.549	5.09	6.441	6.778	24.917	14.786	17.577	11.467	5.48	5.408	5.733	5.6	4.953	4.301	3.135	2.896	2.465	2.458	2.458
12	5.82	7.834	5.654	5.079	5.424	6.787	23.411	25.222	13.402	15.093	10 343	5.432	5.619	5.863	5.733	5.14	4.531	3.408	3.172	2.661	2.651	2.651
13	7.678	5.774	5.133	5.302	4.943	12.531	29.222	25.767	13.912	15.611	11.095	6.254	6.466	6.596	6.432	5.761	5.064	3.819	3.556	2.975	2.964	2.964
14	5.655	5.247	5.399	4.942	6.133	12.704	21.056	18.592	11.382	12.591	9.887	6.046	6.203	6.258	6.115	5.561	4.972	3.879	3.643	3.001	2.989	2.989
15	5.135	5.348	4.886	4.93	6.982	12.399	18.817	16.685	10.649	12.327	9.761	6.018	6.169	6.221	6.08	5.535	4.956	3.877	3.644	2.999	2.987	2.987
16	5.261	4.981	4.233	5.542	6.976	11.372	17.018	15.323	10.455	12.072	9.627	5.987	6.133	6.181	6.042	5.507	4.938	3.876	3.646	2.998	2.986	2.986
17	5.098	4.499	4.48	5.548	6.29	9.368	13.015	12.297	9.175	10.236	8.555	5.778	5.871	5.849	5.73	5.307	4.845	3.942	3.74	3.025	3.012	3.012
18	4.81	4.717	4.633	5.219	5.908	8.821	12.653	11.972	9.046	10.061	8.453	5.751	5.84	5.814	5.698	5.282	4.829	3.94	3.741	3.024	3.01	3.01
19	4.972	4.893	4.426	4.869	5.412	7.701	10.077	9.594	7.886	8.464	7.457	5.536	5.573	5.48	5.383	5.077	4.731	4.012	3.846	3.054	3.04	3.04
20	5.194	4.616	4.171	4.659	5.379	7.623	9.883	9.409	7.796	8.349	7.382	5.512	5.546	5.452	5.356	5.055	4.716	4.009	3.846	3.052	3.038	3.038
21	4.889	4.362	3.993	4.641	5.351	7.534	9.672	9.208	7.695	8.221	7.298	5.487	5.517	5.42	5.326	5.032	4.701	4.008	3.847	3.05	3.036	3.036
22	4.622	4.212	4.052	4.579	5.097	6.546	7.69	7.363	6.674	6.874	6.4	5.271	5.251	5.093	5.017	4.826	4.601	4.086	3.963	3.084	3.068	3.068
23	4.425	4.203	4.05	4.568	5.075	6.487	7.575	7.253	6.608	6.795	6.343	5.249	5.228	5.068	4.994	4.807	4.588	4.083	3.962	3.081	3.065	3.065
24	4.426	4.232	4.123	4.501	4.812	5.567	5.94	5.721	5.664	5.602	5.498	5.023	4.953	4.733	4.677	4.592	4.481	4.173	4.095	3.119	3.101	3.101
25	4.419	4.227	4.12	4.491	4.796	5.536	5.89	5.673	5.629	5.564	5.467	5.008	4.937	4.718	4.662	4.579	4.47	4.167	4.091	3.115	3.098	3.098
26	4.412	4.222	4.117	4.481	4.778	5.498	5.827	5.613	5.587	5.516	5.429	4.991	4.919	4.7	4.644	4.564	4.458	4.163	4.088	3.112	3.095	3.095
27	4.421	4.256	4.202	4.409	4.504	4.645	4.484	4.346	4.717	4.468	4.638	4.753	4.633	4.357	4.318	4.338	4.344	4.267	4.244	3.156	3.136	3.136
28	4.414	4.25	4.197	4.401	4.495	4.637	4.475	4.337	4.707	4.46	4.629	4.744	4.624	4.35	4.312	4.33	4.336	4.259	4.236	3.151	3.132	3.132
29	4.406	4.244	4.191	4.393	4.487	4.629	4.463	4.328	4.697	4.451	4.62	4.734	4.615	4.343	4.305	4.323	4.328	4.25	4.228	3.147	3.128	3.128
30	4.399	4.237	4.186	4.385	4.478	4.621	4.455	4.319	4.686	4.443	4.61	4.725	4.607	4.336	4.298	4.315	4.32	4.243	4.22	3.142	3.123	3.123

Cumulative Claim Rates for
No Financing Change Policy Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.112	0.11	0.103	0.1	0.1
2	0.851	1.053	0.565	0.464	0.511	0.819	1.683	2.481	0.584	1.234	1.011	0.513	0.408	0.47	0.404	0.342	0.472	0.63	0.62	0.58	0.565	0.565
3	1.969	2	1.181	1.049	1.432	2.203	5.171	6.098	2.268	4.274	4.082	2.3	1.531	1.702	1.583	1.891	2.12	1.992	1.715	1.76	1.769	1.769
4	2.753	2.649	1.586	1.368	2.222	3.863	8.048	9.722	4.463	8.083	7.984	4.427	2.846	3.249	3.733	3.789	3.976	3.334	2.974	3.187	3.227	3.227
5	3.222	3	1.886	1.964	3.091	5.287	10.765	12.912	7.008	11.628	10.922	6.303	4.12	5.315	5.675	5.658	5.412	4.518	4.149	4.519	4.56	4.56
6	3.486	3.236	2.112	2.419	3.85	6.666	13.107	15.28	9.508	14.167	12.857	7.896	5.714	6.965	7.246	7.076	6.57	5.542	5.162	5.668	5.707	5.707
7	3.671	3.431	2.356	2.785	4.591	7.965	15.294	16.837	11.34	15.685	14.242	9.503	7.131	8.255	8.474	8.268	7.59	6.454	6.064	6.69	6.73	6.73
8	3.802	3.63	2.546	3.154	5.337	9.37	17.135	17.706	12.485	16.681	14.889	10.743	8.057	9.103	9.345	9.162	8.372	7.163	6.77	7.485	7.525	7.525
9	3.966	3.792	2.74	3.512	6.141	10.832	18.299	18.204	13.316	17.252	15.412	11.676	8.725	9.76	10.061	9.903	9.024	7.757	7.366	8.156	8.197	8.197
10	4.091	3.92	2.927	3.886	7.052	11.953	19.127	18.541	13.813	17.728	15.801	12.329	9.254	10.309	10.662	10.529	9.535	8.231	7.844	8.692	8.734	8.734
11	4.214	4.054	3.129	4.352	7.816	12.8	19.715	18.85	14.276	18.068	16.068	12.88	9.733	10.816	11.218	11.068	9.983	8.649	8.268	9.17	9.212	9.212
12	4.318	4.194	3.379	4.775	8.424	13.458	20.049	19.087	14.601	18.267	16.256	13.343	10.144	11.255	11.665	11.503	10.35	8.993	8.622	9.567	9.609	9.609
13	4.424	4.371	3.618	5.13	8.932	13.868	20.289	19.219	14.783	18.383	16.384	13.686	10.455	11.57	11.986	11.816	10.621	9.255	8.889	9.867	9.909	9.909
14	4.548	4.546	3.839	5.418	9.319	14.268	20.44	19.297	14.913	18.469	16.492	13.996	10.716	11.835	12.257	12.083	10.853	9.483	9.123	10.13	10.173	10.173
15	4.671	4.711	4.009	5.696	9.743	14.576	20.533	19.349	15.014	18.535	16.584	14.256	10.936	12.06	12.487	12.307	11.052	9.684	9.329	10.361	10.404	10.404
16	4.788	4.826	4.18	6.007	10.083	14.784	20.595	19.387	15.094	18.588	16.66	14.474	11.122	12.25	12.681	12.498	11.224	9.86	9.509	10.564	10.606	10.606
17	4.876	4.957	4.368	6.263	10.329	14.934	20.64	19.415	15.158	18.631	16.723	14.659	11.278	12.411	12.846	12.662	11.371	10.014	9.666	10.742	10.784	10.784
18	4.977	5.094	4.522	6.447	10.514	15.051	20.674	19.437	15.212	18.667	16.775	14.814	11.409	12.548	12.986	12.8	11.498	10.148	9.805	10.898	10.941	10.941
19	5.079	5.206	4.637	6.591	10.664	15.143	20.701	19.455	15.258	18.697	16.819	14.944	11.52	12.664	13.105	12.919	11.607	10.266	9.926	11.035	11.078	11.078
20	5.162	5.291	4.727	6.708	10.784	15.218	20.723	19.471	15.298	18.722	16.855	15.054	11.613	12.762	13.205	13.019	11.701	10.37	10.032	11.155	11.198	11.198
21	5.225	5.358	4.802	6.804	10.884	15.281	20.743	19.485	15.332	18.743	16.886	15.147	11.692	12.845	13.29	13.105	11.782	10.46	10.125	11.261	11.304	11.304
22	5.276	5.413	4.863	6.884	10.972	15.334	20.759	19.496	15.362	18.761	16.912	15.225	11.758	12.915	13.362	13.179	11.852	10.539	10.207	11.354	11.396	11.396
23	5.318	5.459	4.914	6.956	11.049	15.38	20.774	19.506	15.388	18.776	16.933	15.291	11.814	12.974	13.423	13.242	11.911	10.608	10.278	11.435	11.477	11.477
24	5.354	5.497	4.96	7.02	11.117	15.419	20.786	19.515	15.41	18.789	16.951	15.346	11.861	13.025	13.475	13.296	11.963	10.668	10.34	11.506	11.548	11.548
25	5.384	5.532	5.002	7.077	11.178	15.452	20.798	19.523	15.43	18.801	16.966	15.392	11.901	13.067	13.519	13.342	12.007	10.72	10.394	11.568	11.61	11.61
26	5.412	5.565	5.04	7.129	11.231	15.481	20.808	19.531	15.447	18.81	16.979	15.431	11.935	13.104	13.556	13.381	12.045	10.766	10.441	11.622	11.665	11.665
27	5.438	5.594	5.075	7.176	11.28	15.506	20.817	19.537	15.463	18.819	16.99	15.464	11.963	13.135	13.588	13.415	12.078	10.805	10.483	11.67	11.712	11.712
28	5.461	5.621	5.107	7.217	11.322	15.527	20.825	19.543	15.476	18.826	16.999	15.491	11.987	13.161	13.615	13.444	12.106	10.84	10.518	11.711	11.754	11.754
29	5.483	5.646	5.135	7.255	11.361	15.545	20.832	19.548	15.488	18.832	17.006	15.514	12.007	13.183	13.638	13.469	12.13	10.869	10.549	11.747	11.79	11.79
30	5.503	5.669	5.161	7.289	11.395	15.561	20.839	19.553	15.499	18.836	17.012	15.533	12.024	13.202	13.658	13.49	12.151	10.895	10.576	11.778	11.821	11.821

Cumulative Prepayment Rates for
No Financing Change Policy Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.064	1.063	1.066	1.066	1.066
2	2.075	3.662	3.603	2.794	1.098	1.279	0.574	17.753	1.176	1.588	11.454	4.21	1.279	1.882	2.439	2.341	4.173	3.765	3.713	3.421	3.414	3.414
3	8.673	11.707	9.553	4.781	1.756	1.607	7.517	25.2	3.276	19.743	31.932	6.748	2.993	4.867	6.341	8.873	9.762	7.323	6.937	6.289	6.276	6.276
4	17.667	19.513	12.704	6.012	2.093	3.28	11.614	33.628	19.868	39.378	38.711	9.627	5.713	9.011	13.441	15.282	14.54	10.658	9.993	8.989	8.969	8.969
5	24.862	23.206	14.252	6.689	3.427	5.132	16.389	49.993	39.849	45.336	43.233	13.461	8.694	15.849	20.537	20.607	18.763	13.693	12.789	11.465	11.439	11.439
6	28.108	24.983	14.906	8.488	4.929	7.46	30.425	59.241	45.514	49.292	47.964	17.653	13.794	21.702	25.4	24.466	21.935	16.027	14.949	13.379	13.349	13.349
7	29.7	25.684	17.116	10.311	6.752	15.337	42.121	62.125	49.24	52.911	52.598	21.204	18.662	26.077	29.161	27.584	24.601	18.078	16.863	15.059	15.025	15.025
8	30.44	27.972	19.315	12.358	10.973	25.984	46.18	63.778	53.029	56.045	56.104	25.323	23.052	29.941	32.515	30.45	27.2	20.114	18.767	16.733	16.695	16.695
9	32.603	30.229	21.74	16.792	17.197	30.584	48.754	64.924	56.885	60.203	59.748	29.174	27.05	33.429	35.612	33.284	29.83	22.266	20.8	18.499	18.456	18.456
10	34.724	32.566	26.078	22.821	21.351	33.962	51.007	65.821	60.448	64.269	62.691	32.464	30.513	36.543	38.52	35.97	32.345	24.358	22.782	20.224	20.177	20.177
11	36.896	36.411	31.458	26.888	24.996	37.446	53.032	69.722	64.267	67.45	65.175	35.494	33.773	39.594	41.369	38.621	34.845	26.471	24.791	21.976	21.925	21.925
12	40.324	41.074	35.156	30.38	28.64	40.823	59.421	72.609	67.154	69.65	67.132	38.302	36.949	42.505	44.089	41.207	37.345	28.682	26.914	23.808	23.75	23.75
13	44.574	44.235	38.311	33.818	31.751	46.557	65.431	74.753	69.705	71.551	68.992	41.332	40.373	45.559	46.938	43.932	39.994	31.063	29.207	25.79	25.726	25.726
14	47.458	46.931	41.447	36.835	35.39	51.59	68.446	75.877	71.48	72.831	70.453	44.056	43.425	48.246	49.452	46.393	42.449	33.378	31.462	27.721	27.649	27.649
15	49.923	49.526	44.12	39.683	39.252	55.829	70.544	76.686	72.939	73.915	71.743	46.585	46.257	50.734	51.783	48.692	44.763	35.593	33.627	29.585	29.507	29.507
16	52.312	51.806	46.316	42.711	42.812	59.199	72.069	77.296	74.207	74.838	72.882	48.935	48.885	53.037	53.945	50.84	46.945	37.715	35.706	31.385	31.301	31.301
17	54.499	53.757	48.534	45.557	45.777	61.64	73.029	77.706	75.197	75.52	73.79	51.054	51.235	55.071	55.86	52.786	48.972	39.781	37.755	33.142	33.051	33.051
18	56.453	55.705	50.716	48.072	48.372	63.71	73.834	78.053	76.077	76.118	74.605	53.03	53.426	56.966	57.645	54.611	50.887	41.759	39.722	34.838	34.741	34.741
19	58.371	57.623	52.698	50.287	50.598	65.349	74.392	78.296	76.771	76.568	75.26	54.815	55.388	58.64	59.228	56.266	52.666	43.689	41.663	36.496	36.393	36.393
20	60.269	59.339	54.478	52.297	52.683	66.839	74.88	78.509	77.399	76.971	75.856	56.486	57.226	60.208	60.713	57.824	54.351	45.535	43.525	38.097	37.988	37.988
21	61.96	60.882	56.107	54.2	54.639	68.194	75.309	78.696	77.968	77.333	76.399	58.052	58.947	61.676	62.104	59.292	55.947	47.302	45.312	39.645	39.531	39.531
22	63.477	62.305	57.692	55.986	56.397	69.278	75.616	78.832	78.421	77.609	76.839	59.469	60.491	62.977	63.341	60.624	57.432	49.028	47.078	41.159	41.039	41.039
23	64.859	63.661	59.208	57.683	58.054	70.279	75.893	78.954	78.838	77.862	77.246	60.802	61.944	64.202	64.506	61.884	58.841	50.679	48.77	42.622	42.497	42.497
24	66.179	64.969	60.688	59.275	59.542	71.08	76.093	79.043	79.17	78.056	77.574	62.007	63.245	65.286	65.54	63.027	60.152	52.294	50.447	44.055	43.924	43.924
25	67.438	66.217	62.104	60.789	60.95	71.829	76.279	79.126	79.48	78.237	77.882	63.145	64.476	66.312	66.521	64.111	61.398	53.838	52.051	45.439	45.304	45.304
26	68.637	67.41	63.458	62.23	62.283	72.531	76.452	79.203	79.769	78.405	78.17	64.22	65.64	67.284	67.45	65.141	62.584	55.313	53.587	46.778	46.637	46.637
27	69.784	68.56	64.782	63.581	63.477	73.09	76.576	79.259	79.999	78.534	78.403	65.191	66.681	68.141	68.272	66.073	63.686	56.76	55.113	48.09	47.945	47.945
28	70.878	69.659	66.048	64.869	64.613	73.62	76.695	79.312	80.216	78.656	78.623	66.112	67.67	68.958	69.056	66.961	64.737	58.142	56.57	49.358	49.209	49.209
29	71.921	70.708	67.257	66.095	65.694	74.125	76.807	79.362	80.423	78.773	78.833	66.987	68.611	69.738	69.804	67.808	65.739	59.46	57.962	50.583	50.43	50.43
30	72.915	71.711	68.413	67.265	66.722	74.604	76.914	79.41	80.619	78.883	79.032	67.818	69.505	70.481	70.517	68.617	66.696	60.719	59.291	51.767	51.61	51.61

Conditional Claim Rates for
No NAHA Reforms Policy Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.105	0.103	0.096	0.093	0.093
2	0.794	0.945	0.519	0.432	0.487	0.796	1.587	2.343	0.563	1.194	0.984	0.503	0.397	0.459	0.39	0.336	0.472	0.493	0.479	0.449	0.432	0.432
3	1.152	0.994	0.643	0.605	0.936	1.413	3.568	4.534	1.715	3.129	3.508	1.875	1.142	1.261	1.214	1.591	1.728	1.335	1.062	1.14	1.149	1.149
4	0.877	0.752	0.453	0.551	0.817	1.725	3.295	5.275	2.323	5.013	6.098	2.339	1.378	1.656	2.333	2.127	2.106	1.392	1.27	1.43	1.441	1.441
5	0.589	0.451	0.351	0.428	0.908	1.534	3.383	5.632	3.363	6.748	5.512	2.183	1.393	2.353	2.344	2.309	1.763	1.297	1.243	1.396	1.407	1.407
6	0.367	0.32	0.269	0.498	0.812	1.539	3.214	6.382	4.704	5.899	4.22	1.985	1.827	2.09	2.127	1.924	1.527	1.185	1.136	1.273	1.283	1.283
7	0.271	0.271	0.294	0.411	0.813	1.513	3.874	6.113	4.074	4.153	3.535	2.156	1.76	1.807	1.823	1.74	1.427	1.112	1.066	1.192	1.201	1.201
8	0.196	0.281	0.236	0.426	0.841	1.832	4.322	4.132	2.904	3.174	1.942	1.787	1.247	1.29	1.396	1.395	1.153	0.912	0.877	0.973	0.98	0.98
9	0.249	0.238	0.248	0.423	0.961	2.261	3.174	2.689	2.41	2.085	1.796	1.457	0.969	1.077	1.23	1.226	1.013	0.804	0.773	0.857	0.862	0.862
10	0.198	0.193	0.247	0.47	1.188	1.914	2.512	1.993	1.662	2.101	1.556	1.103	0.823	0.966	1.105	1.102	0.836	0.673	0.649	0.714	0.719	0.719
11	0.201	0.211	0.285	0.636	1.067	1.566	1.969	1.976	1.795	1.878	1.23	0.996	0.794	0.952	1.094	1.007	0.771	0.623	0.601	0.659	0.663	0.663
12	0.177	0.235	0.383	0.615	0.904	1.322	1.224	2.07	1.506	1.367	0.995	0.895	0.727	0.885	0.941	0.866	0.664	0.538	0.519	0.568	0.572	0.572
13	0.192	0.324	0.388	0.548	0.808	0.895	1.166	1.586	0.994	0.955	0.765	0.709	0.587	0.68	0.725	0.662	0.517	0.425	0.411	0.447	0.449	0.449
14	0.243	0.339	0.382	0.471	0.653	1.009	1.055	1.282	0.837	0.843	0.726	0.689	0.532	0.618	0.659	0.601	0.471	0.388	0.376	0.407	0.409	0.409
15	0.256	0.34	0.309	0.481	0.766	0.901	0.831	1.08	0.734	0.755	0.7	0.617	0.479	0.562	0.599	0.54	0.426	0.356	0.346	0.371	0.373	0.373
16	0.258	0.251	0.331	0.569	0.667	0.702	0.695	0.952	0.656	0.692	0.644	0.558	0.433	0.51	0.544	0.491	0.388	0.325	0.316	0.338	0.34	0.34
17	0.205	0.302	0.379	0.498	0.521	0.578	0.608	0.847	0.596	0.646	0.592	0.504	0.391	0.463	0.493	0.446	0.353	0.297	0.288	0.307	0.309	0.309
18	0.248	0.333	0.328	0.383	0.423	0.498	0.536	0.759	0.559	0.601	0.542	0.45	0.349	0.42	0.447	0.4	0.32	0.272	0.265	0.28	0.281	0.281
19	0.265	0.286	0.256	0.316	0.363	0.434	0.481	0.726	0.526	0.559	0.496	0.405	0.315	0.38	0.404	0.363	0.29	0.248	0.242	0.255	0.256	0.256
20	0.226	0.227	0.212	0.271	0.311	0.38	0.457	0.692	0.493	0.519	0.452	0.362	0.28	0.339	0.36	0.326	0.263	0.227	0.222	0.232	0.232	0.232
21	0.182	0.19	0.182	0.235	0.272	0.351	0.435	0.662	0.463	0.482	0.411	0.325	0.252	0.306	0.325	0.296	0.238	0.207	0.202	0.21	0.211	0.211
22	0.154	0.164	0.157	0.205	0.255	0.323	0.415	0.633	0.436	0.446	0.373	0.291	0.226	0.276	0.293	0.267	0.216	0.188	0.184	0.19	0.191	0.191
23	0.135	0.142	0.136	0.193	0.236	0.296	0.395	0.603	0.409	0.412	0.337	0.258	0.201	0.245	0.261	0.24	0.195	0.172	0.168	0.173	0.173	0.173
24	0.119	0.124	0.129	0.181	0.221	0.271	0.377	0.576	0.384	0.38	0.303	0.231	0.18	0.22	0.235	0.217	0.176	0.156	0.153	0.156	0.157	0.157
25	0.107	0.118	0.122	0.171	0.206	0.247	0.358	0.548	0.359	0.349	0.269	0.204	0.159	0.196	0.209	0.194	0.159	0.142	0.14	0.141	0.142	0.142
26	0.103	0.114	0.116	0.161	0.193	0.225	0.341	0.522	0.337	0.319	0.24	0.181	0.142	0.176	0.187	0.175	0.143	0.129	0.127	0.128	0.128	0.128
27	0.099	0.109	0.11	0.152	0.181	0.205	0.325	0.497	0.316	0.292	0.213	0.16	0.126	0.157	0.168	0.157	0.129	0.117	0.115	0.115	0.115	0.115
28	0.095	0.105	0.104	0.143	0.17	0.184	0.307	0.469	0.293	0.263	0.185	0.141	0.111	0.139	0.149	0.141	0.116	0.106	0.105	0.104	0.104	0.104
29	0.091	0.1	0.099	0.135	0.16	0.167	0.292	0.446	0.275	0.24	0.163	0.124	0.098	0.124	0.133	0.127	0.104	0.096	0.095	0.093	0.093	0.093
30	0.088	0.096	0.094	0.128	0.15	0.152	0.278	0.424	0.258	0.218	0.143	0.108	0.087	0.11	0.118	0.114	0.094	0.087	0.086	0.084	0.084	0.084

Conditional Prepayment Rates for
No NAHA Reforms Policy Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.203	0.279	0.358	0.349	0.29	0.359	0.166	0.352	0.275	0.202	0.289	0.507	0.257	0.374	0.444	0.375	0.003	1.063	1.062	1.064	1.064	1.064
2	1.877	3.396	3.258	2.454	0.811	0.924	0.409	17.488	0.903	1.389	11.2	3.722	1.025	1.513	2.003	1.974	4.171	2.732	2.671	2.379	2.374	2.374
3	6.797	8.442	6.209	2.054	0.67	0.336	7.103	9.337	2.138	18.682	23.394	2.663	1.743	3.058	4.017	6.711	5.861	3.714	3.358	2.983	2.976	2.976
4	10.065	9.046	3.53	1.307	0.348	1.738	4.693	12.267	17.566	25.842	10.595	3.165	2.849	4.435	7.707	7.182	5.422	3.673	3.335	2.933	2.925	2.925
5	9.041	4.745	1.806	0.732	1.393	1.995	5.943	28.888	26.406	11.34	8.484	4.461	3.26	7.788	8.564	6.578	5.183	3.526	3.204	2.817	2.81	2.81
6	4.514	2.407	0.779	1.969	1.607	2.599	19.269	24.929	10.659	9.193	10.319	5.225	5.847	7.418	6.586	5.234	4.183	2.853	2.594	2.277	2.271	2.271
7	2.327	0.977	2.663	2.047	1.998	9.172	20.711	11.321	8.284	9.903	11.827	4.765	6.044	6.128	5.58	4.554	3.729	2.615	2.393	2.074	2.068	2.068
8	1.111	3.228	2.731	2.355	4.761	13.882	9.533	7.857	9.612	9.98	10.525	5.937	5.913	5.878	5.375	4.467	3.832	2.698	2.471	2.139	2.133	2.133
9	3.289	3.3	3.104	5.248	7.437	7.116	7.017	6.186	11.18	15.193	12.494	6.015	5.8	5.717	5.323	4.693	4.083	2.96	2.73	2.33	2.322	2.322
10	3.344	3.542	5.743	7.565	5.419	3.767	6.838	5.318	11.924	17.958	11.773	5.556	5.389	5.475	5.35	4.728	4.113	2.989	2.759	2.352	2.345	2.345
11	3.55	6.053	7.578	5.549	5.09	6.441	6.778	24.917	14.786	17.577	11.467	5.48	5.408	5.733	5.6	4.953	4.301	3.135	2.896	2.465	2.457	2.457
12	5.82	7.834	5.654	5.079	5.424	6.787	23.411	25.222	13.402	15.093	10.343	5.432	5.619	5.863	5.733	5.14	4.531	3.408	3.172	2.66	2.651	2.651
13	7.678	5.774	5.133	5.302	4.943	12.531	29.222	25.767	13.912	15.611	11.095	6.254	6.466	6.596	6.432	5.761	5.064	3.818	3.556	2.974	2.964	2.964
14	5.655	5.247	5.399	4.942	6.133	12.704	21.056	18.592	11.382	12.591	9.887	6.046	6.203	6.258	6.115	5.561	4.972	3.879	3.642	3	2.988	2.988
15	5.135	5.348	4.886	4.93	6.982	12.399	18.817	16.685	10.649	12.327	9.761	6.018	6.169	6.221	6.08	5.535	4.956	3.877	3.643	2.998	2.987	2.987
16	5.261	4.981	4.233	5.542	6.976	11.372	17.018	15.323	10.455	12.072	9.627	5.987	6.133	6.181	6.042	5.507	4.938	3.876	3.645	2.997	2.985	2.985
17	5.098	4.499	4.48	5.548	6.29	9.368	13.015	12.297	9.175	10.236	8.555	5.778	5.871	5.849	5.73	5.307	4.845	3.941	3.739	3.025	3.012	3.012
18	4.81	4.717	4.633	5.219	5.908	8.821	12.653	11.972	9.046	10.061	8.453	5.751	5.84	5.814	5.698	5.282	4.829	3.939	3.74	3.023	3.01	3.01
19	4.972	4.893	4.426	4.869	5.412	7.701	10.077	9.594	7.886	8.464	7.457	5.536	5.573	5.48	5.383	5.077	4.731	4.011	3.845	3.054	3.039	3.039
20	5.194	4.616	4.171	4.659	5.379	7.623	9.883	9.409	7.796	8.349	7.382	5.512	5.546	5.452	5.356	5.055	4.716	4.009	3.845	3.052	3.037	3.037
21	4.889	4.362	3.993	4.641	5.351	7.534	9.672	9.208	7.695	8.221	7.298	5.487	5.517	5.42	5.326	5.032	4.701	4.007	3.846	3.05	3.035	3.035
22	4.622	4.212	4.052	4.579	5.097	6.546	7.69	7.363	6.674	6.874	6.4	5.271	5.251	5.093	5.017	4.826	4.601	4.086	3.962	3.083	3.067	3.067
23	4.425	4.203	4.05	4.568	5.075	6.487	7.575	7.253	6.608	6.795	6.343	5.249	5.228	5.068	4.994	4.807	4.588	4.082	3.961	3.081	3.065	3.065
24	4.426	4.232	4.123	4.501	4.812	5.567	5.94	5.721	5.664	5.602	5.498	5.023	4.953	4.733	4.677	4.592	4.481	4.172	4.094	3.118	3.101	3.101
25	4.419	4.227	4.12	4.491	4.796	5.536	5.89	5.673	5.629	5.564	5.467	5.008	4.937	4.718	4.662	4.579	4.47	4.167	4.09	3.115	3.098	3.098
26	4.412	4.222	4.117	4.481	4.778	5.498	5.827	5.613	5.587	5.516	5.429	4.991	4.919	4.7	4.644	4.564	4.458	4.162	4.087	3.112	3.095	3.095
27	4.421	4.256	4.202	4.409	4.504	4.645	4.484	4.346	4.717	4.468	4.628	4.753	4.633	4.357	4.318	4.338	4.344	4.266	4.243	3.155	3.136	3.136
28	4.414	4.25	4.197	4.401	4.495	4.637	4.475	4.337	4.707	4.46	4.629	4.744	4.624	4.35	4.312	4.33	4.336	4.258	4.235	3.151	3.132	3.132
29	4.406	4.244	4.191	4.393	4.487	4.629	4.465	4.328	4.697	4.451	4.62	4.734	4.615	4.343	4.305	4.323	4.328	4.25	4.227	3.146	3.127	3.127
30	4.399	4.237	4.186	4.385	4.478	4.621	4.455	4.319	4.686	4.443	4.61	4.725	4.607	4.336	4.298	4.315	4.32	4.242	4.219	3.142	3.123	3.123

Cumulative Claim Rates for
No NAIIA Reforms Policy Scenario

Policy Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	0.059	0.112	0.048	0.033	0.025	0.027	0.1	0.15	0.022	0.043	0.03	0.013	0.012	0.013	0.016	0.007	0	0.105	0.103	0.096	0.093	0.093
2	0.851	1.053	0.565	0.464	0.511	0.819	1.683	2.481	0.584	1.234	1.011	0.513	0.408	0.47	0.404	0.342	0.472	0.592	0.576	0.54	0.52	0.52
3	1.969	2	1.181	1.049	1.432	2.203	5.171	6.098	2.268	4.274	4.082	2.3	1.531	1.702	1.583	1.891	2.12	1.869	1.593	1.636	1.624	1.624
4	2.753	2.649	1.586	1.568	2.222	3.863	8.048	9.722	4.463	8.083	7.984	4.427	2.846	3.249	3.733	3.789	3.976	3.134	2.755	2.953	2.952	2.952
5	3.222	3	1.886	1.964	3.091	5.287	10.765	12.912	7.008	11.628	10.922	6.303	4.12	5.315	5.675	5.658	5.412	4.252	3.841	4.182	4.191	4.191
6	3.486	3.236	2.112	2.419	3.85	6.666	13.107	15.28	9.508	14.167	12.857	7.896	5.714	6.965	7.246	7.076	6.57	5.225	4.788	5.255	5.273	5.273
7	3.671	3.431	2.356	2.785	4.591	7.965	15.294	16.837	11.34	15.685	14.242	9.503	7.131	8.255	8.474	8.268	7.59	6.1	5.644	6.225	6.25	6.25
8	3.802	3.63	2.546	3.154	5.337	9.37	17.135	17.706	12.485	16.681	14.889	10.743	8.057	9.103	9.345	9.162	8.372	6.791	6.323	6.991	7.021	7.021
9	3.966	3.792	2.74	3.512	6.141	10.832	18.299	18.204	13.316	17.252	15.412	11.676	8.725	9.76	10.061	9.903	9.024	7.379	6.903	7.644	7.679	7.679
10	4.091	3.92	2.927	3.886	7.052	11.953	19.127	18.541	13.813	17.728	15.801	12.329	9.254	10.309	10.662	10.529	9.535	7.852	7.372	8.172	8.21	8.21
11	4.214	4.054	3.129	4.352	7.816	12.8	19.715	18.85	14.276	18.068	16.068	12.88	9.733	10.816	11.218	11.068	9.983	8.274	7.791	8.643	8.685	8.685
12	4.318	4.194	3.379	4.775	8.424	13.458	20.049	19.087	14.601	18.267	16.256	13.343	10.144	11.255	11.665	11.503	10.35	8.625	8.141	9.037	9.081	9.081
13	4.424	4.371	3.618	5.13	8.932	13.868	20.289	19.219	14.783	18.383	16.384	13.686	10.455	11.57	11.986	11.816	10.621	8.891	8.408	9.337	9.382	9.382
14	4.548	4.546	3.839	5.418	9.319	14.268	20.44	19.297	14.913	18.469	16.492	13.996	10.716	11.835	12.257	12.083	10.853	9.124	8.642	9.601	9.647	9.647
15	4.671	4.711	4.009	5.696	9.743	14.576	20.533	19.349	15.014	18.535	16.584	14.256	10.936	12.06	12.487	12.307	11.052	9.329	8.849	9.833	9 881	9.881
16	4.788	4.826	4.18	6.007	10.083	14.784	20.595	19.387	15.094	18.588	16.66	14.474	11.122	12.25	12.681	12.498	11.224	9.507	9,03	10.037	10.087	10.087
17	4.876	4.957	4.368	6 263	10.329	14.934	20.64	19.415	15.158	18.631	16.723	14.659	11.278	12 411	12.846	12.662	11.371	9.664	9.189	10.217	10 267	10.267
18	4.977	5.094	4.522	6.447	10.514	15.051	20.674	19.437	15.212	18.667	16.725	14.814	11.409	12.548	12.986	12.8	11.498	9.801	9.33	10.375	10.426	10 426
19	5.079	5.206	4.637	6.591	10.664	15.143	20.701	19.455	15.258	18.697	16.819	14.944	11.52	12.664	13.105	12.919	11.607	9.921	9.452	10.514	10.566	10.566
20	5.162	5.291	4.727	6.708	10.784	15.218	20.723	19.471	15.298	18.722	16.855	15.054	11.613	12.762	13.205	13.019	11.701	10.026	9.561	10.637	10.689	10.689
21	5.225	5.358	4.802	6.804	10.884	15.281	20.743	19.485	15.332	18.743	16.886	15.147	11.692	12.845	13.29	13.105	11.782	10.118	9.655	10.744	10.797	10.797
22	5 276	5.413	4.863	6.884	10.972	15.334	20.759	19.496	15.362	18.761	16.912	15.225	11.758	12.915	13.362	13.179	11.852	10.198	9.738	10.838	10.891	10.891
23	5.318	5.459	4.914	6.956	11.049	15.38	20.774	19.506	15.388	18.776	16.933	15.291	11.814	12.974	13.423	13.242	11.911	10.268	9.81	10.921	10.974	10.974
24	5.354	5.497	4.96	7.02	11.117	15.419	20.786	19.515	15.41	18.789	16.951	15.346	11.861	13.025	13.475	13.296	11.963	10.328	9.873	10.993	11.047	11.047
25	5.384	5.532	5.002	7.077	11.178	15.452	20.798	19.523	15.43	18.801	16.966	15.392	11.901	13.067	13.519	13.342	12.007	10.381	9.928	11.056	11.11	11.11
26	5.412	5.565	5.04	7.129	11.231	15.481	20.808	19.531	15.447	18.81	16.979	15.431	11.935	13.104	13.556	13.381	12.045	10.427	9.976	11.102	11.166	11.166
27	5.438	5.594	5.075	7.176	11.28	15.506	20.817	19.537	15.463	18.819	16.99	15.464	11.963	13.135	13.588	13.415	12.078	10.467	10.018	11.16	11.214	11.214
28	5.461	5.621	5.107	7.217	11.322	15.527	20.825	19.543	15.476	18.826	16.999	15.491	11.987	13.161	13.615	13.444	12.106	10.502	10 054	11.202	11.256	11.256
29	5.483	5.646	5.135	7.255	11.361	15.545	20.832	19.548	15.488	18.832	17.006	15.514	12.007	13.183	13.638	13.469	12.13	10.532	10.086	11.238	11.293	11.293
30	5.503	5.669	5.161	7.289	11.395	15.561	20.839	19.553	15.499	18.838	17.012	15.533	12.024	13.202	13.658	13.49	12.151	10.558	10.113	11.27	11.325	11.325