

**LIFE PRACTICE NOTE 1995–7**  
**December 1995**

**Modeling Mortgage and Real Estate C-1 Risk**

**Introduction**

This practice note was prepared by a work group organized by the Committee on Life Insurance Financial Reporting of the American Academy of Actuaries. The work group was charged with developing a description of some of the current practices used by valuation actuaries in the United States. This work group was originally formed in 1992 and issued the first set of Life Practice Notes that year; changes have been made to this set of practice notes on an annual basis to reflect additional information on current practices.

The practice notes represent a description of practices believed by the work group to be commonly employed by actuaries in the United States in 1995. The purpose of the practice notes is to assist actuaries who are faced with the requirement of adequacy testing by supplying examples of some of the common approaches to this work. However, no representation of completeness is made; other approaches may also be in common use. It should be recognized that the information contained in the practice notes provides guidance, but is not a definitive statement as to what constitutes generally accepted practice in this area. Moreover, these practice notes are based upon the model Standard Valuation Law of the National Association of Insurance Commissioners (NAIC). To the extent that the laws of a particular state differ from the NAIC model, practices described in these practice notes may not be appropriate for actuarial practice in that state. This practice note has not been promulgated by the Actuarial Standards Board, nor is it binding on any actuary.

The members of the work group responsible for the original practice notes are as follows:

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**LIFE PRACTICE NOTE 1995–7**  
**December 1995**

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Comments are welcome as to the appropriateness of the practice notes, desirability of annual updating, validity of substantive disagreements, etc. Comments should be sent to Donna R. Claire at her Directory address.

**Q. Are there any *standard* assumptions that can be used?**

**A.** The latest draft of the revisions to New York Regulation 126 allows using an annual expense charge (or reduction in annual investment income) of 10% of the appropriate asset valuation reserve (AVR) maximum for assets considered in the default component of the AVR. However, if company experience calls for higher charges, the actuary is required by the regulation to use such higher charges. Currently, the AVR maximum for mortgages is 3.5%, multiplied by a company experience factor that can range from 0.5 to 3. The NAIC model *Actuarial Opinion and Memorandum Regulation* also allows an appropriate allocation, applicable to the reserves being tested, of assets supporting the default component of the AVR to be used in cash flow testing. New York Regulation 126 specifically states that this allocation may not be greater than the amount of such assets needed to cover the risk of asset default.

The revisions to New York Regulation 126 are silent on the issue of assets considered in the equity component of the AVR, namely common stocks and real estate.

It is likely that the AVR maximums and risk-based capital (RBC) factors will line up at some point in the future. The actuary may want to consider basing default charges on the RBC factors rather than the AVR maximums. For example, the RBC factor for loans in the process of foreclosure is 20%. Using 10% of the RBC factor results in a charge of 200 basis points. Using 10% of the normal 3.5% AVR maximum results in a charge of only 35 basis points, which may be inadequate in today's environment, for loans in the process of foreclosure.

Using the RBC factors for delinquent loans and loans in the process of foreclosure may help to address one of the shortcomings of the AVR. This shortcoming is that the overall average factor will be 3.5%—whether industry experience is unusually good or unusually bad. The use of higher factors for problem loan categories will produce a higher average factor in bad times, and a lower one in good times.

**LIFE PRACTICE NOTE 1995–7**  
**December 1995**

One additional point to consider about the use of either the AVR maximums or RBC factors is that the company experience factor used in both typically considers only the incidence of mortgage problems, not the severity of loss when problems occur. Thus, a company with a high incidence of problems but low levels of losses may be able to justify the use of somewhat lower factors. Also, the experience factor generally does not yet incorporate loans in good standing with restructured terms.

The *Quarterly Survey of Mortgage Loan Delinquencies and Foreclosures* of the American Council of Life Insurance (ACLI) includes data on restructured *commercial* loans, in sufficient quantity that it generally can be used as an industry average. Restructures were 2.92% of total loans as of December 1990, 5.09% as of December 1991, 7.44% as of December 1992, 9.35% as of December 1993, and 9.58% as of December 1994. Any significant variation in a company's experience from this average could justify an adjustment to the experience factor. One version of the experience factor could be the sum of delinquent loans, loans in the process of foreclosure, restructured loans, and foreclosures; divided by the sum of total mortgage loans and foreclosures. This can be compared to the industry average for the prior two years.

**Q. What approach may be taken to developing company experience?**

**A.** Participation in the Society of Actuaries' Credit Risk Study for Commercial Mortgages and Private Placements can provide a structure for determining the ultimate loss on mortgages, following the loan, if necessary, through the process of foreclosure and ultimate sale. This study also gathers data that may be used in developing a quality rating system for mortgages. The emergence of a rating system can offer the advantage of basing charges on the loans a company holds, rather than on past experience, which may be on different loans. As loans of various qualities mature over the course of the projections, the use of a rating system would also enable default charges to be based on the quality of loans still held at the particular time the charges apply.

The SOA pilot study was based on data from 1986 through 1989 and was released in the spring of 1993. Data on private placements have been collected through 1992 and an updated report for private placements is expected by the end of 1995. In June 1995, data through 1994 were also requested for both commercial mortgages and private placements. Updated reports based on data from 1986 through 1994 are expected by the end of 1996.

If an internal quality system exists in the company, this usually can be used in determining expected defaults.

**LIFE PRACTICE NOTE 1995–7**  
**December 1995**

**Q. To what can a company's results be compared?**

**A.** The ACLI study on commercial mortgages provides information on the incidence of problems as far back as 1965. The industry averages used in the mortgage experience factor for the AVR and the RBC also provide some recent information, although restructured loans are not yet included.

A study entitled, “Commercial Mortgages: Default Occurrence and Estimated Yield Impact,” conducted by Mark Snyderman of Aldrich, Eastman, and Waltch, and published in the fall 1991 issue of the *Journal of Portfolio Management*, tracks the experience of over 7,000 loans held by life insurance companies from 1972 through 1989. This study analyzes the severity of loss as well as the incidence of default, and shows an average loss of 32% on 155 foreclosed loans. Defaults are found to reduce the portfolio average yield by 31 to 52 basis points a year, depending upon the default loss severity assumption for unexpired loans. Annual default rates are studied by years since loan origination, and peak in the early years at 1.6% before settling down to about 1%. The study shows that 41% of defaulted loans were actually foreclosed, with 59% either becoming current or being paid off. The average time from initial default to final disposition was 3 years for foreclosed loans.

In the current environment, many experts expect higher default rates, higher loss rates, and longer disposition times for commercial mortgages than found in the Snyderman study, with the situation continuing for at least a few more years. However, the Snyderman study may be considered by the actuary when developing long-term loss assumptions, perhaps after factoring in several years of more severe assumptions.

A report entitled, “Commercial Mortgage Stress Test,” published June 8, 1992, by Fitch Investors Service, Inc., provides significant additional data on default probabilities and loss severity, including comments on assumptions that might be appropriate for the immediate future. The report also includes a summarization of the qualitative factors that should be considered in rating a pool of mortgages. Many of these factors typically would apply in evaluating individual mortgages.

**Q. How might the company's internal rating system be used by the appointed actuary?**

**A.** If a company has had an internal rating system long enough to do an experience study by rating, these results can be used. (*Note:* These results must be used in New York if the results are worse than the charges suggested in New York Regulation 126.) If, however, the internal rating system is fairly new or has recently undergone recent refinements, the actuary may want to

**LIFE PRACTICE NOTE 1995–7**  
**December 1995**

estimate how the mortgage ratings would correspond to the bond ratings. The actuary can then use the resulting charges suggested in New York Regulation 126 for bonds. If the resulting weighted average charge is less than the overall charge required for mortgages, the actuary could ratio up the charge used for each specific rating.

**Q. What about liquidity concerns?**

**A.** While the yield degradation assumptions outlined above can provide an adequate measure of the amount of losses, companies with significant mortgage holdings or with any significant need for liquidity may wish to consider incorporating additional timing elements into their cash flow testing. For example, the Snyderman study showed an average of 3 years from the time of initial default to ultimate disposition. In the current environment, it may be reasonable to assume either a longer time period or a lower price at disposition.

Interest-only loans in particular may have difficulty finding another lender to refinance with at maturity, especially over the next several years. One may assume that a company will have to refinance 50–75% of loans, with significant balloon payments coming due in the next few years. Reasonable credit charges typically will cover the fact that some of these loans may have to be refinanced at below-market rates. However, the size of the maturity payments may necessitate modeling this refinancing explicitly if these payments are important to meeting the cash needs of the business being tested.

**Q. How can existing foreclosed real estate be modeled?**

**A.** The best analysis generally would be on a property-by-property basis. While the results of such analysis may be summarized to an overall level that can be used for asset adequacy analysis, possible variations by property may be too great to make the use of broad-based assumptions feasible. This is more important if the amount would have a material effect on results.

The Fitch report (see above) includes a summary of some of the additional factors that may be considered in evaluating nonperforming loans and foreclosed real estate.

**Q. Where can market data on real estate be obtained?**

**A.** There are a number of publications that discuss real estate. Examples of these include *National Real Estate Investor*, a monthly magazine that contains an overview of submarkets, published by Communications Channels, Inc.; *Viewpoint 1992*, a national summary of

**LIFE PRACTICE NOTE 1995–7**  
**December 1995**

capitalization rates, discount rates, and market absorption, published by Valuation Network, Inc.; and an annual empirical survey of space available and new construction, published by TCW Realty Advisors.

**Q. How might limited partnerships be evaluated?**

**A.** One method to evaluate limited partnerships is to be consistent with the evaluation of such assets under RBC, i.e., to look through the limited partnership package to the underlying assets. Each asset can then be evaluated on its own merits.

**Q. What may be examined with regard to concentration of a portfolio?**

**A.** If the company has a large percentage of assets in mortgages and real estate, there are various areas of concentration that an actuary may want to consider in determining the adequacy of assets in relation to the liabilities. These include having a large percentage of the company's assets in a single property or development, in a single city or geographic location, and/or having a single type of asset (e.g., hotels). Sensitivity testing of prepayments under mortgages and mortgage-backed securities (including CMOs) usually reflects differences between the current interest rate and the underlying security interest rate.

**Q. Where can additional information on mortgage loans be found?**

**A.** The *Dynamic Financial Conditions Analysis Handbook* (Society of Actuaries, 1995), chapter 4, covers analysis of assets. The bibliography in that chapter provides some references on mortgage loan defaults.