



SOCIETY OF ACTUARIES

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Modeling CMOs

by Dale Hall

In a small life insurance company setting there is always a push and pull between the analysis that needs to be performed and the costs of getting that analysis done. This question again rears its ugly head when dealing with the problem of testing the adequacy of the company assets through cash-flow testing.

The assets of life insurance companies have grown more and more complex over the past few years as new deals and structures are offered in the asset market. While simpler assets like noncallable and callable bonds can be easily incorporated into cash-flow testing models, the newer and more intricate assets such as CMOs, mortgage-backed securities, and asset-backed securities, create modeling problems. These assets require not only that the specific tranche that the company owns be modeled, but that the entire deal be given consideration because payments to the company invariably depend on the paydown of previous tranches in the deal.

So how should you go about incorporating these complex assets in the model? The first solution is to make use of the huge asset databases that some software vendors have put together. Typically, these databases contain the deal into which you have entered or a similar deal that can act as a substitute. The databases can then provide future cash flows for your tranche for any future interest-rate scenario you desire. Of course for the small company, the issue becomes cost. The databases can be expensive to tap into when the information is bought on a fixed-cost basis, especially given that the company may only hold a handful of cusips (investment identifiers). Variable "per cusip" pricing is sometimes available as a solution, but the cost may still exceed a small company's budget.

In an effort to keep up the integrity of their models without absorbing large costs, some companies are examining alternative ways of incorporating these more intricate assets into their projections. A few of those alternatives follow.

Leverage an Existing Relationship

All around a smaller company, employees are dealing with people on the outside that can provide the information needed.

- **Fixed-Income Securities Brokers.** The person who manages your fixed-income security portfolio has many people calling every day trying to initiate trades. When a trade is actually made, the broker who assisted in the process receives a nice commission. Why not get more value for your commission dollar? Brokerages typically use large-portfolio management systems to analyze assets and to run projections themselves. They might use an asset database or have similar technology that can generate cash-flow projections under different scenarios. Most of the modeling systems being used in small companies today have ways to import this cash-flow data and use it very efficiently in projections. In addition, brokers usually like to get life company portfolios in their hands, and they probably like it better when it comes to them in electronic form. This helps them understand what securities are in your portfolios and what the overall strategy of the portfolio is. With this information, they can recommend different opportunities as they arise. This exchange is typically seen as a fair tradeoff—portfolio information to the broker for cash-flow information from the broker.

- **Consulting Firms.** Relationships exist between consulting firms and all insurance companies, regardless of size. You may have a relationship with different consultants for pricing projects, financial-reporting overviews, and auditing statement results. As part of the relationship, you might consider whether cash-flow information could be received from the consulting firm. Consulting firms often see this process as a means of developing a stronger relationship with the company and developing goodwill for the future.

Security Quotation Systems

Many of the systems that investment departments use to trade securities offer a wealth of information. The systems typically have different screens that can give instantaneous information about the securities, as well as projections of how those securities will behave in the future. In addition, these systems are starting to provide links that enable the user to take information off the screen and export it to a desktop computer in either spreadsheet or text file format. Since your company has already spent a large amount of money and resources to purchase these systems, it makes sense to investigate how they can be used to aid in your asset modeling. The capabilities of systems differ, but some permit you to enter either a constant PSA level or a dynamic vector

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of PSAs into the system and then have the system generate cash flows. These cash flows could possibly be restructured into files that your modeling system can read in and use in a projection. Since some systems require PSAs instead of interest rates to be an input to the process, it might take some expertise or a talk with a broker to see how an interest rate scenario could be translated into a vector of PSAs.

Keep in mind that you should always perform a few checks whenever you receive data from another source. The first check would be to make sure that you are entitled to receive data from the source. With legal contracts and entitlement rights varying all over

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the map, it makes sense to get some assurance that you can proceed in your projections with data you have received. A second check would be to test the credibility of the cash-flow information. If you get data with an asset database as a source, check it against your fixed-income portfolio manager's security quotation system. Take a low-, medium-, and high-level interest rate scenario and get comfortable with the prepayment and extension of the assets. Unfortunately, some security quotation systems may use the same prepayment model that is used to generate the cash flows from the asset database. In this case, you could potentially be checking bad data against the same bad data.

When it comes to making decisions about investing in software or databases used to model assets, it often pays to determine what resources are available within the company before spending money for a complete system. With a little creativity and knowledge of the relationships within a company, you might be able to prevent spending unnecessary resources on an outside system.

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Entering the Equity-Indexed Market through Alliances

by Jerry F. Enoch

The November 1997 issue of *small talk* contained an interesting article, "Equity-Indexed Annuities: Feasible or Flawed for Small Insurers?" by Andrew S. Chow, which thoroughly explored some of the pitfalls facing small insurers who want to issue equity-indexed annuities. One way that small insurers can face the problems of entering the equity-indexed marketplace, as well as many other ventures, is through alliances with other companies. Lafayette Life, a company with less than \$1 billion in assets, has chosen to enter the equity-indexed marketplace, and an important component of its entry into the marketplace is the formation of alliances.

The equity-indexed marketplace appears to be well-suited for the formation of alliances. An alliance can address the problem of inadequate asset mass and investment expertise, and it can also address other problems that particularly plague the small company that is considering entry into the equity-indexed marketplace, such as policy drafting and filing, marketing and training materials, administration, valuation, and cash-flow testing. The simplest structure for an alliance is to have one primary company and one or more secondary companies. The primary company performs all functions for itself; the secondary companies rely on the primary company to perform some functions for them.

Synergies

By grouping together, all companies benefit by pooling premiums to reach the critical mass necessary to purchase the needed investments. This is crucial because derivatives are sold only in relatively large quantities. The primary company can actively develop the necessary investment expertise. The secondary companies can learn from the primary company, which is much easier than learning independently.

The primary company will have developed an investment policy for its own equity-indexed products. Developing and maintaining an investment

policy for equity-indexed products is a substantial undertaking. That policy should be agreeable to the secondary companies and should become a part of an investment management agreement between the companies, under which the primary company will manage the investments for the equity-indexed products. The agreement can allow the secondary companies to hold their own assets.

The policy form, actuarial memorandum, and other filing materials of the primary company can serve as the basis of the policy filings of the secondary companies. In addition, the filing experience of the primary company is a great benefit to the secondary companies. Obviously, the policy characteristics must appeal to the secondary companies for the alliance to succeed. Similarly, the marketing and training materials of the primary company may be directly applicable to the secondary companies, or they may provide the basis from which the secondary companies can develop their own material.

Equity-indexed products present unique administrative challenges. In fact, the design of an equity-indexed product is often limited by the flexibility of the administrative system. The primary company will own, or have access to, an administrative system to administer the equity-indexed business. The primary company may make its system—or full administration—available to the secondary companies for a fee. A competitive advantage can be obtained by selecting a primary company with a flexible administrative system. In fact, flexibility to meet a niche may be a small company's advantage. Of course, it is important for the administrative system to work on January 1, 2000.

Valuation and cash-flow testing of equity-indexed products are major undertakings. In these areas, also, alliances offer advantages over independent operation. The primary company can easily perform valuation for the secondary companies in the same manner as it

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