Asset/Liability Management for Insurers

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Insurance companies remove uncertainty from our lives. For this, we pay them a premium. Insurers may protect us from fire damage, loss of income through disability, or the threat of outliving our assets. Insurers in turn utilize pooling principles to aggregate and manage the risks involved with the sale of many policies to many individuals. No individual car accident can be foreseen, obviously, but the total number of accidents in a large population is predictable. This business model is well-known and well-understood.

In many cases, however, a significant period of time separates the insurer’s receipt of premium dollars and its disbursement of claim payments. This gives rise to the actuarial concept of reserves, or inter-period accounting consideration for claims expected to be paid in the future. The balance-sheet counterpart to reserves is invested assets: the bonds, stocks, and real estate investments that an insurer uses to finance future claims. Insurers often count on investment income from these assets to fund a portion of claim payments.

The discipline of asset/liability management is what insurance companies use to align proceeds from invested assets with the future policy claims they are contractually obligated to pay. For example, some high-risk investments like common stocks may exhibit variation in either balance-sheet value or income-statement behavior that makes them inappropriate to back insurance obligations. Other investments, in contrast, may not promise sufficient returns to make the economics of the underlying insurance policy competitively viable in the marketplace.

Deferred annuities can be distinguished by the mechanisms used to credit interest during the pre-retirement period. Under fixed deferred annuities, credited rates are declared periodically by the insurer and applied to the policy’s accumulation value. Insurers retain the contractual right (within regulatory bounds) to vary credited rates depending on market conditions and the performance of reserve assets. Equity-indexed annuities employ a formula applied to changes in recognized stock market indexes, such as the S&P 500, to determine credited rates. This permits the policyholder to enjoy equity-market-based returns but requires specialized investing practices on the insurer’s part. Variable annuities involve accumulation values that vary directly with the investment performance of a separate account containing the policyholder’s premium dollars.

The insurance company issuing these policies must ensure that assets extend throughout their full retirement years. Deferred annuities involve pre-retirement premium payments that accumulate at interest until converted into a benefit stream at retirement. With deferred annuities, the principal policy feature is the savings element.

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The insurance company issuing these policies must ensure that underlying investment performance of reserve assets is such that the company confidently can meet its future contractual benefit obligations as well as supply a satisfactory profit element to its capital providers. The focus of asset/liability management is on coordinating investment strategy and tactics with the design, pricing, and ongoing management of the insurance policies. Challenges arise from the complex interactions between assets and liabilities and how they respond to capital market uncertainty.
Interest-Rate Risk

Most life insurance policies that have a savings element are fixed-income in nature. This means that fixed benefit amounts are promised to policyholders and policy accumulations are in the nature of interest. So it is natural for reserve assets also to be in fixed-income form. As a result, most insurers back their life and annuity business with public and private bonds, residential mortgage-backed securities, and commercial mortgages. Structured assets, such as collateralized mortgage obligations (CMOs) and collateralized debt obligations (CDOs), also may be found in insurer investment portfolios.

Because both assets and liabilities are sensitive to changes in interest rates, life and annuity insurers are exposed to interest-rate risk. This can take the following two forms:

Maturity mismatch risk. This risk arises when the maturity date of reserve assets is not coincident with the date that policy benefits are expected to be disbursed. Reinvestment risk occurs when reserve assets are “shorter” than policy liabilities, causing reinvestment in uncertain interest-rate environments. Capital value risk occurs when assets are “longer” than liabilities, necessitating the premature sale of bonds in an uncertain interest-rate environment.

Disintermediation risk. In the course of offering insurance and annuity contracts for sale and of entering into the purchase of bonds and mortgages, insurers often grant valuable options to their counterparties. Assets can contain call or prepayment options that enable the issuer to refinance debt if interest rates have declined. Liabilities can contain put options that enable the policyholder to surrender his policy prematurely in order to replace it with one from another insurer offering better policy terms, typically when interest rates have increased. This phenomenon is known as disintermediation and causes the unexpected build-up of investible cash when interest rates are low and the unexpected paucity of investible cash when rates are high.

Over time, insurers have developed effective metrics to measure and manage their risk exposure to changes in interest rates. Duration is the primary measure of sensitivity that a financial instrument (asset or liability) has to changes in rates. A bond exhibiting a duration of five years, for example, declines in value by 5 percent for each 1-percent increase in interest rates. An annuity exhibiting a duration of four years declines in value by 4 percent for each 1-percent increase in rates. Immunization is a risk-control technique that equates the durations of assets and liabilities and thereby reduces or eliminates risk due to changes in interest rates.

Application of Derivative Instruments

Alternatively, insurers can apply certain derivative-based solutions to a mismatch between asset and liability durations. Derivatives are a broad class of instruments whose value depends on changes in some asset, index, or reference entity. For example, a futures contract obligates its holder to buy or sell something at an agreed-upon price. An options contract gives its owner the right to buy (a call option) or sell (a put option) something at an agreed-upon price. An option is in-the-money if its owner can exercise it for value.

Other, more complex, derivative instruments have been invented. For repairing a duration mismatch between assets and liabilities, an asset/liability-management practitioner might choose to use an interest-rate swap. An interest-rate swap is an agreement between two parties to exchange an interest-rate stream based on a fixed rate of interest for an interest-rate stream based on a floating rate of interest. If the practitioner's assets were longer than liabilities, she might enter into a swap paying a fixed rate of interest and receiving a floating rate of interest.

Usage of derivatives solutions to address risk problems has mushroomed at insurance companies. Broad, highly liquid derivatives markets permit rapid and nimble readjustment of risk positions at a very low cost. Using derivatives to alter duration positions permits companies more freedom to pursue innovative and rewarding asset and liability opportunities, secure in the knowledge that aggregate risk-position imbalances can be easily remedied.

Risk and Return

An insurance company involves a complex and interrelated set of risk exposures. These risk exposures may include interest rates, as discussed above, and a number of other risk factors. The asset/liability management practitioner will recognize interactions between interest-rate risk and other risks and seek to understand, quantify, and exploit these interactions. For example, it is well-known that changes in interest rates affect not just an insurer's bond or annuity positions but also the value of its common stock holdings. Covariances (or statistical measures of interaction) across the balance sheet are used to express the connectedness among an insurer's many financial risks.

It’s been said that diversification (achieving risk offsets within a portfolio of assets and/or liabilities) is the only true “free lunch” in finance. With risk goes reward, and seeking ways to diversify a portfolio holds out the promise of enhanced returns. The practitioner, desiring an optimal balance of risk and return, happily may discover that some things in the balance sheet “zig” when others “zag.” Achieving this balance in the face of capital market uncertainty and in the midst of highly complex assets and liabilities is the essence of asset/liability management.

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