



Milliman Hedge Execution, Support, and Advisory Services



Hedge Execution, Support, and Advisory Services

Milliman's Financial Risk Management practice offers full hedge outsourcing services on a global basis to life insurers and other financial institutions. Our Hedge Execution and Advisory Services offering leverages:

- The broad and varied experience of our 70-person team with backgrounds in:
 - Trading
 - Risk management
 - Portfolio management
 - Quantitative finance
 - Actuarial methods
 - Insurance product development, pricing, and valuation
 - Economic capital
 - Technology
- The industry-standard MG-Hedge™ suite of stochastic-on-stochastic tools, developed by our team, used by numerous variable and index annuity writers to manage their market risk
- Unmatched expertise developing and managing hedging programs for leading companies in the insurance industry

OUR SERVICES

The array of services offered by Milliman under Hedge Execution, Support, and Advisory Services includes the following:

Strategy design

With a full understanding of the economic exposures of the business in question and an appreciation of the unique economic and financial objectives of the client company, Milliman will assist the company in developing and testing the hedge strategy. With the use of detailed stochastic-on-stochastic simulation modeling and backtesting, we help clients evaluate:

- Which economic exposures and Greeks to hedge
- Which capital markets instruments are most appropriate
- Optimal thresholds for rebalancing
- Risk-reward profiles of alternative strategies
- Financial statement implications of different strategies
- Sensitivities to key assumptions

Development/customization of operational and reporting process

Milliman works closely with each client to develop seamless processes and information flow. Each client receives on a daily, weekly, or monthly basis the following reports:

- Hedge program P&L statement
- Performance attribution report
- Risk metrics and VAR reports
- Market value of assets and liabilities for financial reporting

Dialogue with management, regulators, and rating agencies

Senior management, auditors, regulators, rating agencies, and other stakeholders will naturally be interested in the hedging activity. Milliman's consulting team, with years of experience in implementing hedging programs, can help all of these constituencies gain comfort with the program.

Operations

When the strategy has been designed and operational elements are in place, Milliman will assign a team to handle the day-to-day management of the program. The work of this team includes the following tasks:

- Achieving best execution
- Management of client data
- Asset/liability valuation and Greek calculations
- Following the market and each book throughout the course of each trading day
- Maintaining a perspective on the market, instruments, and dealers
- Trade evaluation
- Risk and performance reporting
- Back-office functions, including cash notification and trade reconciliation
- Scheduled discussions on program performance
- Maintenance of the technology and personnel infrastructure supporting the program

WHY OUTSOURCE WITH MILLIMAN

Milliman's Hedge Execution, Support, and Advisory Services were established to:

- Provide best practices to Milliman's clients. These best practices have been honed over the many years that Milliman has been a leader in the field. With our advanced risk management techniques and high-quality consulting talent, we help run some of the largest and most sophisticated hedging programs in the industry
- Realize the economic benefits of participating as part of a group that presents a larger trade size with higher frequency to dealers than would normally be the case if each company hedged independently
- Enable rapid market entry and administrative simplicity for new issuers of sophisticated VA and EIA products by providing the full sequence of functions necessary to design, launch, and risk manage a product
- Provide access to an infrastructure that was developed with a particular emphasis on strong controls, redundancies, backups, and established policies and procedures
- Facilitate tight integration and a natural feedback loop between liability valuation, risk measurement, capital markets assumptions, and hedging effectiveness that can enhance a program's performance
- Reduce the large upfront investment in staff and technology, as well as the ongoing expense of running a hedge program in-house, with flexibility to select the level and time horizon of services

Because Milliman services the consolidated financial risk management needs of many insurance companies, we have focused our energies on building first-class capabilities in each of the critical areas that form the foundation of a successful risk management program. These areas include:

- **Staff** – The many clients making use of our services have enabled us to hire a diverse team with top-quality talent in each of the critical areas involved in running a top hedging program. Our talent is highly professional and rivals the capabilities of the best investment banks and financial managers, while maintaining freedom from conflicts and close alignment with our client's objectives.
- **Analytics** – We have developed the best analytics in the industry as the result of the

constant evolution and focus on research and development from the formative days of the U.S. annuity market. Our MG-Hedge software suite is the market leader and provides the foundation for the financial risk management activities of many of the largest annuity writers in the world. We make use of these models in our own trading activities and they evolve based on our firsthand experience using them to manage risk.

- **Infrastructure** – We have invested significant time and energy in building a rock-solid infrastructure, where redundancies ensure that we can deliver our services with the extraordinary levels of reliability required by hedging activities.
- **Process** – We have been extremely thorough in the development of processes, procedures, and documentation to ensure that we will consistently meet the high standards of performance that we have set for ourselves and that our clients expect from us.
- **Best practices** – We invest significant sums in research and development, and we benefit from the knowledge accumulated from serving the needs of a large number of clients as well as the numerous dealers who cover us. This puts us in the desirable position of being constantly on the leading edge of risk management practices. We are continually evolving our programs for the benefit of our clients.

PROGRAMS WE MANAGE

The hedge programs currently outsourced to us include:

- Hedging of market exposures in variable annuity blocks
 - Guaranteed minimum withdrawal benefits
 - Guaranteed minimum death benefits
 - Guaranteed minimum income benefits
 - Guaranteed minimum accumulation benefits
 - Base product revenues
- Hedging of index annuity option types
 - Point-to-point
 - Averaging
 - Monthly cliquets
 - High-water-mark lookbacks
- Business written by companies in the United States, Europe, and Asia
- Static and dynamic hedging programs
- Management of equity, interest rate, volatility, and exchange rate exposures
- Trading of exchange-traded and OTC vanilla and structured derivatives

**For more information on Hedge Execution,
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Milliman, whose corporate offices are in Seattle, serves the full spectrum of business, financial, government, and union organizations. Founded in 1947 as Milliman & Robertson, the company has 54 offices in principal cities in the United States and worldwide. Milliman employs more than 2,500 people, including a professional staff of more than 1,500 qualified consultants and actuaries. The firm has consulting practices in employee benefits, healthcare, life insurance/financial services, and property and casualty insurance. For further information visit milliman.com.

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