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Introduction to the Research on Developing a Liability-Driven Investment (LDI) Benchmark Framework

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For defined benefit pension plans, liability-driven investment (LDI) strategies are becoming more popular as a way to reduce the risks associated with pension liability. The philosophy of LDI for pension funds is similar to asset liability management in the banking and insurance industry. It is a systematic approach to balancing pension liability hedging and pension asset growth.



A few challenges exist in LDI modeling and implementation for pension plans. In a low-interest-rate environment, alternative investments such as real estate, private equity, infrastructure and commodities are used to support the high expected asset return. These asset classes are less liquid or largely driven by specific factors in addition to the general market trend. The interdependency of asset subclasses in a pension asset portfolio also needs careful analysis. LDI cares about not only normal scenarios but also stress scenarios. The interdependency is usually stronger in stress scenarios. Because of the long-term nature of defined benefit pension plans, economic cyclical patterns also need to be embedded in economic scenarios. LDI analysis needs to be based on holistic, consistent and realistic scenarios.

To understand these challenges, an LDI benchmark model was developed in research sponsored by the Society of Actuaries (SOA) Retirement Section Research Committee and Committee on Finance Research. The model starts from an economic scenario generator, which includes fundamental economic factors and asset returns. The economic scenario generator provides a bridge between assets and liabilities in the LDI benchmark model. The exposure of assets and liabilities to common factors embedded in the scenarios can be assessed. With the LDI benchmark model, the financial outcome of LDI strategies can be predicted under different scenarios. This model allows users to test different LDI strategies for asset allocation purposes. The model is also helpful for measuring, optimizing and managing the risks arising from pension asset-liability mismatch. An Excel tool accompanying this report has also been developed to illustrate the LDI benchmark model with numerical examples.

Research materials, including a full research report and the Excel tool, can be found on the SOA website at www.soa.org/resources/research-reports/2019/liability-driven-investment/. ■



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