

THE EXPOSURE OF LIFE INSURANCE COMPANIES TO INTEREST RATE RISK: AN EXPLORATION OF PRESENT AND FUTURE CHALLENGES

By Dimitris Karapiperis, CIPR Research Analyst III

◆ INTRODUCTION

State insurance regulators are keenly aware life insurers' financial health depends, to a great extent, on their ability to overcome the challenges posed by the current extended period of low interest rates, in addition to the uncertainty surrounding the magnitude and the pace of the anticipated rate increases. In different stress scenarios, the options embedded in life insurance products, such as yield guarantees and early surrender options, can expose life insurers to additional and significant financial risk. Specifically, a spike in interest rates could cause substantial disintermediation effects on life insurers, as a great number of policyholders may decide to exercise their option to surrender their lower-yielding life products for competitive investments offering higher interest rates.

Cognizant of the critical importance of interest rate risk for life insurance companies, the CIPR hosted an event titled Navigating Interest Rate Risk in the Life Insurance Industry during the NAIC 2014 Fall National Meeting in Washington, D.C. In addition, the CIPR is currently examining interest rate risk, particularly the liquidity and disintermediation risk faced by life insurers, and plans to release the results/analysis in a study later this year.

This article has two purposes. It aims to inform the reader regarding the research underway at the CIPR on interest rate risk as well as present the commentary from panelists participating in the CIPR Interest Rate Risk Event.

◆ CIPR INTEREST RATE RISK EVENT

The CIPR event took place Nov. 19, 2014, and it was attended by more than 100 people, among them state insurance regulators, as well as representatives from various federal agencies, rating agencies, industry associations and academic institutions. The discussion panel was comprised of five seasoned and highly knowledgeable professionals selected for their work and expertise in interest rate risk in the life insurance industry.

The two-hour panel discussion was moderated by Doug Hartz, principal consultant of Insurance Regulatory Consulting Group and former NAIC senior counsel. Hartz's extensive background and knowledge of issues involving troubled and/or insolvent insurers helped sharpen and focus the questions and direct the discussion to cover the issues from all angles. Hartz split his questions in two segments: 1) discussion of the current interest rate environment; and 2) questions on the future direction of interest rates. He opened the discussion by noting that, although life insurers have been navigating the low interest rate environment

well, there are questions about how they would react to changes; e.g., a sudden spike or a "new normal" of low interest rates. The insights provided by the panelists are woven into the article.

◆ THE CURRENT INTEREST RATE ENVIRONMENT

The panelists at the CIPR Interest Rate Risk Event did an admirable job of explaining the current environment and discussing how it has affected life insurers. Responding to the first question about how the low interest rate environment has affected life insurers, Richard Rosen, vice president and research advisor in the Federal Reserve Bank of Chicago's Insurance Initiative, pointed to a study conducted by the Fed's Insurance Initiative looking at the macro view of the market regarding the interest rate risk sensitivity of life insurers.¹

The study examined how life insurers' stock returns varied with the returns of the 10-year Treasury note and examined the pre-crisis period (2002–2007) as well as the immediate post-crisis period (2010–2012). During the baseline pre-crisis period, life insurers' stock prices changed little when the interest rate changed. However, in the 2010–2012 period, interest rate changes had a significant impact on life insurers' stock returns. Stock prices dropped 4.6% for each 100 basis points (bps) increase of the 10-year note (the similar number for the pre-crisis period was just 0.4%). Rosen also noted demand for annuities sharply declined in the 2010–2012 period, as life insurance products with a savings component were not as attractive in the low interest rate environment.

Thomas Girard, senior managing director of New York Life Investors, turned the attention to the asset side by pointing out the material impact prolonged low interest rates have had on life insurers' investment yields across the board. Life insurers' investment strategy in a low interest rate environment should be focused on how to slow the rate of descent of the investment yield. In order to keep the yield descent from being too steep, Girard suggested insurers have four levers they can use: 1) investment strategy; 2) risk management; 3) product design; and 4) operational efficiency. In terms of investment strategy, life insurers can alter their asset allocation by including more higher-yielding investments, like private equity. With their fixed-income investments, life insurers can earn higher yield by taking on additional credit risk.

(Continued on page 26)

¹ Berends, K., McMenamin, R., Plestis, T., and Rosen, R. 2013. "The Sensitivity of Life Insurance Firms to Interest Rate Changes." Federal Reserve Bank of Chicago, *Economic Perspectives*, Volume 37, Second Quarter, 2013.

Girard added liquidity risk should be prudently managed, however, as high-yield investments may not be as liquid as high credit quality investments. Life insurers need to be cautious in their calculations of how much of their portfolio they can afford to dedicate to higher-risk assets. Furthermore, life insurers should work to strengthen their enterprise risk management (ERM) processes and to see how to adjust or eliminate certain product guarantees and what type of products they should keep.

Matthew Carroll, senior director at Standard & Poor's (S&P) and a lead analyst for the life Insurance ratings team, concurred by noting life insurers in S&P's rated universe of companies experienced, in aggregate, a decline in their investment yield over the past five years from about 5.5% in 2008 to 4.9% in 2013 as bond yields dropped from 6.0% to 5.0% during the same period. Life insurers responding to declining investment yield increased the portfolio share of less liquid assets, such as private placements, commercial mortgage loans, private equity as well as some picking up more structured securities. At the same time, life insurers, despite searching for yield, have not overreached with ratings migrating mostly within the investment grade space, to NAIC-2 from NAIC-1, with the majority of holdings still NAIC-1. Also, in terms of product design, Carroll said annuities with market value adjustments (MVA) can be an effective tool in managing interest rate risk.

Lori Helge, senior consultant in Tower Watson's Risk Consulting, reasoned the design of new life insurance products as part of the adjustment to the sustained low interest rate environment can only have a gradual effect on insurers' books. Long-tailed existing lines of business which are sensitive to interest rates—such as long-term care, structured settlement annuities and other payout annuities—weigh heavily on insurers' books. Products sold not long ago (i.e., in the 1990s) that are still on the books were priced with assumed investment returns of 8% and 9%.

William Harrington, chief examiner at the Ohio Department of Insurance, stressed the importance of effective risk management and noted regulators, in their collaborative risk-focused surveillance of life insurance companies, try to assess both the appropriateness and the effectiveness of their ERM processes. During regulatory examinations, a key question must be about insurers' specific strategies in place to deal with the low interest rate environment.

Carroll added S&P is closely looking at life insurance companies' risk controls, their ERM approach and the internal models they use. As it relates specifically to the investment management function, S&P looks primarily at the credit and interest rate risk controls across five main dimensions: 1)

how well life companies identify their risk exposures; 2) how well they measure and manage these exposures; 3) what their risk limits are and how well their controls keep them within these limits; 4) what their formal policies are in the event the established limits are breached; and 5) how life insurers are learning from past events.

Helge pointed to life insurers' cash flow testing, done annually to evaluate asset adequacy, and the scenarios built in to the models given the six years of unprecedented low interest rates. Life insurer appointed actuaries should continue to monitor cash flow testing results in a range of future interest rate environments, and be cautious about adopting an overly optimistic view of future interest rate levels. Harrington added insurance regulators use a priority system looking for emerging trends and closely monitoring life insurers that may be in trouble due to the prolonged low interest rate environment.

◆ EXPLORING LIQUIDITY AND DISINTERMEDIATION RISK

One of the areas for study is exploring liquidity and disintermediation risk for life insurers. As it was highlighted by the panelists in the CIPR interest rate risk event, there may be a tipping point in rising interest rates where policyholders may opt to surrender their policies en masse and withdraw their cash value. Girard responded to a question on sudden future interest rate spikes by first reflecting on what may constitute a spike. He pointed out a rate increase must be at least 200 bps to 300 bps in a short period in order to be actually considered a spike. An increase of such magnitude could cause significant disintermediation for life insurers if policyholders surrender their products for higher yielding investments.

Carroll emphasized a spike is a low probability but potentially stressful event. On the other hand, a more measured rise of 100 bps to 200 bps over time could be beneficial for life insurers. At the same time, even a gradual increase in interest rates could cause unrealized losses in life companies' fixed-income portfolios, leading to reduced GAAP equity.

Rosen underscored forward markets are indeed indicating a small probability of an interest rate spike, but it would be a mistake to discount the risk just because it is a low probability event. It was also noted it has been nearly impossible to accurately forecast interest rates in the past few years. Interest rates could increase either because there is a strong and sustained belief the economy is going to grow significantly or if there is a sudden pick-up in inflationary expectations. The cause of a jump in interest rates is important as it provides a great deal of information about how sustained it may be and how policyholders may react. He added surren-

(Continued on page 27)

ders have been small and questioned if there is a tipping point where policyholders would be eager to withdraw the cash value in their life insurance products. An additional issue is the reduced liquidity of the bond market, which may be a huge problem in the event life insurers need to liquidate assets fast in the event of a run-like scenario.

Harrington stressed that regulators are always looking at life insurers' strategies in dealing with present and emerging risks. Considering the financial risks life insurers face, it is critically important to know if life companies are adequately capitalized and how liquid their assets are at any given time.

The low interest rate environment presents a troubling scenario for life insurance companies, which must also consider the liquidity of their assets in a time, as it was also noted in the panel discussion, when the bond market is dealing with reduced liquidity. As volatility and uncertainty are rising, a change in monetary policy which could launch interest rates much higher could be very distressing to life insurers.

Considering the importance of these risks, the CIPR is working on a study exploring both issues of disintermediation and liquidity for life insurance companies. How, or if, these risks manifest—in addition to their impact on life insurers—depend on the unfolding of the different future interest rate scenarios. Presented in this article are some interesting insights gained from the data analysis so far. The objective of the analysis is to identify the insurers most vulnerable to large unscheduled withdrawals of life products with guarantees, such as annuity and deposit funds, and attempt to identify the most liquid assets available in their balance sheets to meet these unscheduled funding demands.

Moreover, in studying the low probability but real risk of mass withdrawals, it is critical to examine the factors driving surrenders and when, if ever, it is optimal for policyholders to actually withdraw their money prematurely. Although options and guarantees in annuity products allow, in some cases, withdrawal without any early surrender fees or penalties, the propensity of policyholders to surrender early is greatly moderated by transaction costs and even more by tax considerations. The tax-preferred treatment of annuity products not only motivates policyholders to purchase but also provides a strong disincentive for premature withdrawals. The tax penalty incurred in the event of an early withdrawal is often significant enough to act as a deterrent against the withdrawal of life products, even without any market value adjustments or surrender fees.

Thus, in the situation where a withdrawal is a rational policyholder response to a jump in interest rates and not forced by extreme financial strain, it usually involves the replacement

of an annuity or life insurance policy for a new one from a competitor without suffering any tax consequence for the exchange. Under this scenario, although an individual life insurer may experience serious strain due to large early withdrawals, the risk is largely contained within the industry.

◆ LIFE INSURANCE DISINTERMEDIATION

The economic dislocation that took place as a result of the 2007–2008 financial crisis confirmed once again how significant liquidity is for the wellbeing of financial institutions and as the lifeblood of the economy as a whole. As the panelists in the CIPR event stressed, a sudden increase in interest rates is what keeps most life insurance risk managers awake at night.

When interest rates rise, particularly in a short period of time, insurance companies may find it difficult to increase their guaranteed crediting rates in many of their products to match their investment returns. In this case, policyholders may opt to surrender their policies in great numbers to take advantage of higher yields elsewhere. Mass withdrawals can trigger an asset-liability mismatch, causing a potentially serious liquidity strain for life insurers having to sell assets, potentially in a fire-sale mode, to meet rapidly rising obligations. The occurrence of disintermediation places life insurers in the unenviable position of having to liquidate assets in a period when the values of these assets are declining. In addition to these losses, life insurers must also report at the same time unrealized losses in their remaining investment portfolio asset.

A historic precedent of an interest rate spike can be found in the inflationary 1970s, providing a cautionary tale for today's life insurers and state insurance regulators. With rates hitting 15%, life insurers were faced with policy surrenders rising to previously unanticipated levels. As a consequence, many life insurers were forced to liquidate assets in order to meet surrender demand. More recently, in 1991, nine large life insurers failed, in part, due to losses from overinvestments in real estate and junk bonds, and their large amounts of contracts with high fixed guarantees.²

◆ LIQUIDITY OF LIABILITIES

The main liabilities of life insurers are product claims with different liquidity characteristics. Understanding the liquidity of life insurers' liabilities is critical in assessing the degree of liquidity risk. Liabilities are categorized in terms of liquidity based on their withdrawal characteristics ranging from the most liquid, which are available for withdrawal at book

(Continued on page 28)

² Grossman, Robert, Martin Hansen, and Peter Patrino, 2012. "The 'Bond Bubble': Risks and Mitigants." Fitch Ratings. Dec. 19, 2012.

THE EXPOSURE OF LIFE INSURANCE COMPANIES TO INTEREST RATE RISK (CONTINUED)

value with no market value adjustments and little to no surrender charges, to the least liquid, which are not available for discretionary withdrawals.

As of year-end 2013, about \$829 billion (or 28%) of life insurers' liabilities consisted of annuity products not subject to discretionary withdrawals and accident and health policies, which are not liquid at all. Approximately \$979 billion (or 33%) of the liabilities were life insurance reserves. Many life insurance policies (except term) allow policyholders the option to withdraw the cash surrender value (the savings component) before maturity. Because life insurance policies tend to have low and predictable redemption rates and replacement costs, they are unlikely to be subject to massive surrenders and withdrawals. Therefore, life insurance liabilities are categorized as low liquidity. About \$538 billion (or 18.3%) of life insurers' reserves were of medium liquidity, as they consisted of annuities subject to discretionary withdrawal at market value or less a surrender charge of 5% or more. Finally, about \$595 billion or nearly 20.3% were highly liquid liabilities made up of annuities and deposit-type products, which allow discretionary withdrawals at book value without any fees or adjustments (Figure 1).

Observing how these life insurance products, categorized by liquidity, have trended since 2007, the decline of the illiquid liabilities (from 33.3% in 2007 to 28.2% in 2013) is as notable as the increase of the most highly liquid liabilities. There has been a slight shift toward more liquid liabilities since 2007, with medium- and high-liquidity liabilities accounting for about 38.5% of the total reserves at the end of 2013 from approximately 33.5% in 2007 (Figure 2).

◆ MATCHING LIQUID LIABILITIES WITH ASSETS

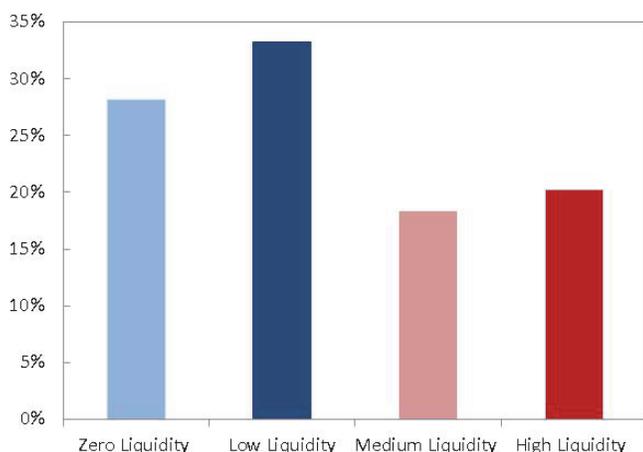
The intent of the analysis is not to specifically dictate how the insurer should address these funding needs but, rather, attempt to match the funding needs with an orderly liquidation of assets. At first, assets must be categorized in terms of liquidity. First in order are cash and cash-type assets, specifically cash, cash equivalents and short-term investments. Even though some cash equivalents, specifically commercial paper and some short-term investments, are not readily convertible into cash, for the purposes of this work, these assets are assumed to be all readily convertible into cash without any discounting or loss.

Given that an insurer may not maintain sufficient cash, cash equivalents and short-term investments to meet these discretionary funding needs, the next step is to see how sufficient the U.S. government bond holdings (Treasuries and agency bonds) are to meet the remaining funding obligations. U.S. government bonds, due to their high credit quality and strong liquidity represent the likeliest of assets to be readily convertible into cash for the insurer at or near their carrying value.

Finally, any remaining cash funding needs are matched with all other investment-grade bonds and then the balance of the bond portfolio. It is worth noting the investment manager of the insurer may have to decide which securities to liquidate, as certain bond classes may reflect significant potential losses due to deterioration in credit markets which may have led to the discretionary withdrawals in the first place.

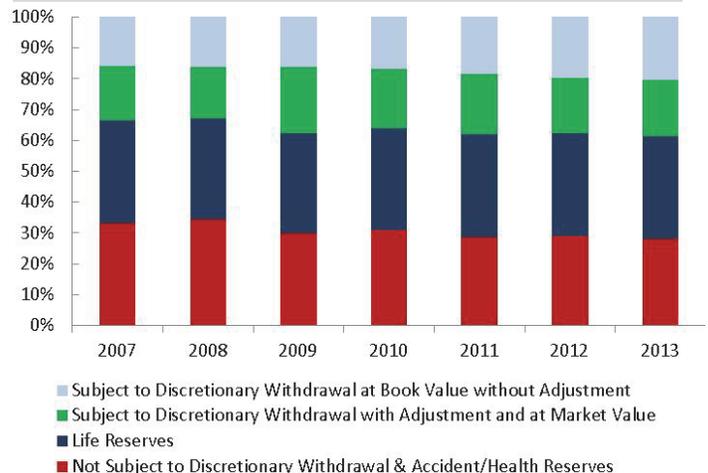
(Continued on page 29)

FIGURE 1: LIQUIDITY OF LIFE INSURER LIABILITIES (2013 YEAR-END)



Source: NAIC.

FIGURE 2: LIFE INSURER LIABILITIES BY WITHDRAWAL CHARACTERISTICS (2007-2013)



Source: NAIC.

THE EXPOSURE OF LIFE INSURANCE COMPANIES TO INTEREST RATE RISK (CONTINUED)

The potential liquidity from the equity, mortgage loan, real estate, Schedule BA assets or any other invested asset classes is not factored in, as it is being assumed that, at a time of credit concerns, these asset classes would either be illiquid or the insurer would incur much higher losses if it needed to liquidate these assets in swift or rapid order. However, the insurer may be forced to consider other asset classes or possibly consider requesting support from a parent company or affiliate should the discretionary withdrawals reach unsupported proportions.

From all life insurers with annuities on their books as of 2013 year-end, 77.5% had liabilities that were more than 100% of their cash and cash equivalent and short-term investments (22.5% had liabilities of less than 100%). About 56% of life insurers had liabilities representing more than 100% of their cash, cash equivalent and short term investments and government securities (44% of life insurers had liabilities of less than 100%). Only when investment-grade bonds were added, the majority of life insurers (75.6%), had liquid withdrawable liabilities that were less than 100% of those assets (a still significant 23.4% of life insurers had more than 100%.) When the entire bond portfolio was added, only approximately 7% of life insurers had liabilities exceeding 100% of their invested assets (Figure 3).

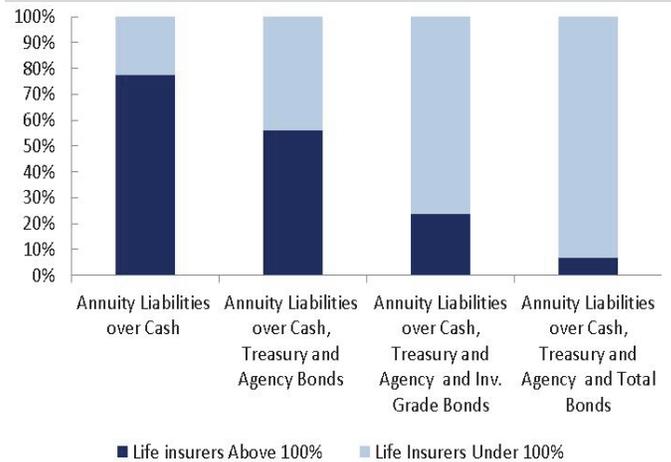
For the top 34 life insurance companies with over \$10 billion in annuity and deposit contracts, accounting for about 73% of the industry aggregate, all but three companies had liabilities of more than 100% of their total cash and cash equivalents, short-term investments, Treasuries and agency obligations, while seven companies' liabilities were over 1000%. If their investment grade bonds were added, then only 14 companies were below 100% and, if all bonds were included, all but five companies' liabilities were less than 100% of these supporting assets.

◆ CONCLUSION

The panelists presented some concluding observations at the CIPR event. Girard noted life insurance industry overall is prepared to manage through a sudden rate spike. However, one concern still remains: if rates stay low for a while longer there may be people who will view it as a permanent situation, leading to discounting the risk of a spike and, therefore, have a number of insurers caught unprepared. Rosen said the key is if life insurers can maintain their discipline in a changing world. If companies do decide to shift strategies, it is critically important for regulators to be on top of it.

Harrington, offering some final thoughts, stressed the Own Risk and Solvency Assessment (ORSA) requirement will help insurers better examine and manage their risks, while allowing state insurance regulators to better assess the ade-

FIGURE 3: LIFE INSURER WITHDRAWABLE ANNUITIES AS PERCENTAGE OF INVESTED ASSETS (2013 YEAR-END)



Source: NAIC.

quacy of their risk-management framework. Carroll closed the panel discussion by emphasizing life insurers' balance sheets are strong and insurers are well-capitalized and very liquid. However, if the current low rate environment persists another four or five years, it could put substantial pressure on the industry.

As the CIPR studies the impact of interest rates on life insurance, it will keep in mind that significant economic shocks help highlight the risks associated with financial assets and liabilities highly correlated with macroeconomic conditions. The option to withdraw annuity and deposit contracts exposes life insurers to macroeconomic activity which may result in disintermediation and possible financial distress, and even insolvency in some extreme cases. Given the potential for significant cash outflows for life insurers, it is critically important to assess the degree to which economic factors—such as adverse economic conditions and changing interest rates, as well as household financial strain, demographic changes and retirement uncertainty—relate to withdrawal activity.

ABOUT THE AUTHOR



Dimitris Karapiperis joined the NAIC in 2001 and he is a researcher with the NAIC Center for Insurance Policy and Research. He has worked for more than 15 years as an economist and analyst in the financial services industry, focusing on economic, financial market and insurance industry trends and developments. Karapiperis studied economics and finance at Rutgers University and the New School for Social Research, and he developed an extensive research background while working in the public and private sector.



**National Association of
Insurance Commissioners**

**& The CENTER
for INSURANCE
POLICY
and RESEARCH**

NAIC Central Office

Center for Insurance Policy and Research

1100 Walnut Street, Suite 1500

Kansas City, MO 64106-2197

Phone: 816-842-3600

Fax: 816-783-8175

<http://www.naic.org>

<http://cipr.naic.org>

To subscribe to the CIPR mailing list, please email CIPRNEWS@NAIC.org or SHALL@NAIC.ORG

© Copyright 2015 National Association of Insurance Commissioners, all rights reserved.

The National Association of Insurance Commissioners (NAIC) is the U.S. standard-setting and regulatory support organization created and governed by the chief insurance regulators from the 50 states, the District of Columbia and five U.S. territories. Through the NAIC, state insurance regulators establish standards and best practices, conduct peer review, and coordinate their regulatory oversight. NAIC staff supports these efforts and represents the collective views of state regulators domestically and internationally. NAIC members, together with the central resources of the NAIC, form the national system of state-based insurance regulation in the U.S. For more information, visit www.naic.org.

The views expressed in this publication do not necessarily represent the views of NAIC, its officers or members. All information contained in this document is obtained from sources believed by the NAIC to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, such information is provided "as is" without warranty of any kind. **NO WARRANTY IS MADE, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY OPINION OR INFORMATION GIVEN OR MADE IN THIS PUBLICATION.**

This publication is provided solely to subscribers and then solely in connection with and in furtherance of the regulatory purposes and objectives of the NAIC and state insurance regulation. Data or information discussed or shown may be confidential and or proprietary. Further distribution of this publication by the recipient to anyone is strictly prohibited. Anyone desiring to become a subscriber should contact the Center for Insurance Policy and Research Department directly.
