SOCIETY OF ACTUARIES
SMALLER INSURANCE COMPANY SECTION

SMALL TALK
JUNE 2020

Model Updates: Playing the Long Game

By Max J. Rudolph

Each iteration of a model requires the actuary to follow a disciplined thought process to determine how much effort is appropriate. Sometimes the modeled business and model update generates changes that are not material, or the assumptions have not changed, so little work is needed. Other times, and it sometimes seems like this is more often the case, our world is crashing in around us and we wonder how we can keep up with it.

As I write in April 2020 during a pandemic, this is definitely one of those times. The coronavirus has impacted, either directly or indirectly, assumptions related to morbidity, mortality, asset values, interest rates, behavioral assumptions, tax rates and sales expectations. Even if the COVID-19 virus was only a trigger that unwound the financial excesses built up over the past 30 years, we are realizing that the Fed can't be managed by a maestro guiding the economy to a smooth landing. In fact, we are relearning Minsky's mantra that stability breeds instability. A long bull market has allowed lazy analysis, but the tide is going out and we are finding out who has been swimming naked. What follows is a process that facilitates documentation, shortens turnaround and creates a quality product.

KNOW YOUR RISK PROFILE

A corporate modeling team understands an entity's risk profile better than anyone else. Typically, only a small subset of tested scenarios is ever shared with management. This group has a greater appreciation of assumption sensitivities than those who priced the product, since they have already seen the historical impact of policyholder actions like lapses and claims. When modelers rotate to a business unit, they bring with them experience that can't be learned anywhere else about how risks interact and aggregate.

Do payout annuities really offer an internal mortality hedge against life insurance policies? Can an insurer identify instances where higher-order interactions have increased risk or where diversification has reduced risks? Examples of increased risk from interactions include companies that wrote the group life policies of occupants while owning the commercial mortgage on the World Trade Center. A current example would be geographic concentration across multiple perils, such as writing both pre-need life insurance and property insurance in low-lying coastal areas prone to hurricanes.

CONVENTIONAL SOLUTIONS

Actuaries inherit models often built long ago using outdated methods. Recognizing the pros and cons of the status quo provides a good platform for moving forward. If these models have been used effectively for financial reporting or for management presentations, there needs to be a really good reason to replace all or part of it.

This discussion can go well beyond thinking about a model that does cash flow testing. Think about the economic models used and if they make sense in an environment with low or negative interest rates. How do population growth and geopolitics play into these thoughts? Should the company write a universal life policy that requires nominal rate guarantees for many years into the future when rates show no sign of rising? COVID-19 has higher excess mortality (additive) at advanced ages relative to young or middle aged, so consider which products will be most impacted.

IDENTIFY GAPS IN THE CONVENTIONAL WISDOM

Where do the existing models come up short? Does the investment strategy modeled reflect the actual purchases being made? Is historical claims experience predictive of the future (known known), or has it changed (unknown known), as can happen after a new pathogen becomes endemic (e.g., HIV in Africa) or as the climate warms? Contemplate what time horizon needs to be considered. If the liabilities are guaranteed for more than 30 years (e.g., whole life insurance sold to a 25-year-old, or payout annuities to new retirees), are the asset assumptions expected to be stable over that period? Can I match asset and liability lifetime cash flows at issue? If not, a company may want to shorten the time period of guarantees.

LEARN FROM OTHERS

What are other companies doing? Compare your company's current practices with external asset managers, the product design of catastrophic bonds or reinsurer best practices. Are competitors selling a similar product as a noninsurer with less stringent regulations? Cast a broad net, and look back to previous historical cycles that are similar. Borrow their best ideas. Find contrarian thinkers who think differently than you do. By listening to them, you will generate additional understanding even when you don't agree.

CRITICAL EVALUATION

Now that you have collected information from past actions, external sources and your own emerging risk scanning, take a hard look at what matters and how it should be implemented. Complete scenarios, both deterministic and stochastic, to ensure the model meets both regulatory and management needs.

You will need a game plan and buy-in from your manager and likely others. If you have thought it through, your ideas will be encouraged, and collaborating with others will generate even more ideas.

BEST OF BOTH WORLDS

Models can be qualitative or quantitative, depending on the ability to forecast, materiality and knowledge of the risk. An emerging risk like a pandemic can be initially modeled for a life insurance company very quickly using a simple computation: Multiply the company's net amount at risk (face amount – statutory reserves) by the assumed excess mortality rate (0.5 percent would be considered a tail event), and compare that with the company's surplus position. Did the company remain solvent? What about clusters of events? Can a reinsurer survive a pandemic simultaneously with a California earthquake or global outbreak of wildfires? Quantitative models are required for regulatory purposes, but they should still generate a story that can be shared with management and the board. The most effective modelers don't take a 100-slide presentation to their board. Having backup is important, but creating a picture or telling stories with specific deterministic scenarios allows the modeler to keep board members awake while having a stimulating conversation.

OWN YOUR DECISION

If you follow these steps, and document the process, you will have developed a solid process that shows off the skill set of your team and develops each one to progress in their career. Becoming irreplaceable in your current position might sound like a good idea, but making an easy transition for your replacement leads to new opportunities for you.

APPLICATION TO ENTERPRISE RISK MANAGEMENT (ERM)

This article was developed from a paper written by the author and Mark Alberts[1] as part of a section describing a process for ERM. This section presents the conclusions shared in that earlier paper. In short, playing the long game, based on time horizon and resilience, generates success.

Enterprise risk management is a way to balance risk and return. The tools available—through scenario planning, contrarian thought and common sense—help the analyst better understand the nuances of the block of business and where the shortfalls may lie. For low economic growth, it would be important to look at the risks as components in the analysis. What is causing growth to be low? Is it fertility, or are pandemics becoming more common? How is climate change impacting growth, and how might it change in the future? Which of the many evolving assumptions is likely to hit a tipping point and accelerate or change direction? This type of thinking will help when setting reserves for a life insurer or annuity writer but will become a competitive advantage when thought of as a capital, or insolvency, buffer. Thinking builds resilience, and good ERM requires lots of it. ■

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ENDNOTE

1 Alberts, Mark E., and Max J. Rudolph. 2019. *A Low-Growth World: Implications for the Insurance Industry and Pension Plans.* Schaumburg, IL: Society of Actuaries. *https://www.soa.org/globalassets/assets/files/resources/research-report/2019/low-growth.pdf* (accessed May 21, 2020).

New York Implements PBR Plus

By Felix Schirripa

In February, the New York State Department of Financial Services (NYDFS) adopted its First Amendment to Regulation 213, Principle-Based Reserving (PBR). The amendment implements New York's version of PBR. In brief, the amendment sets the reserve at the "greater of" (a) a modified version of the pre-PBR formulaic reserve, and (b) the National Association of Insurance Commissioners (NAIC) Valuation Manual PBR amount, modified to add extra conservatism (i.e., PBR plus potential margins). New York's approach is a hybrid reserving regime because it is not fully PBR as contemplated by the Valuation Manual and it is not fully the pre-PBR formulaic set of rules.

The reserves under amended Regulation 213 can be expected to come in above or equal to the NAIC standards. The exact differential will vary by company, by product and even by the features contained in those products. Variable annuities with guaranteed living benefits are especially negatively impacted because of new constraints on actuarial assumptions.

Insurers have expressed concern that New York's hybrid approach will add costs to the implementation and administration of PBR. The cost of system changes—both the up-front changes and the ongoing maintenance—can be significant when considering the governance implications and the added testing and training needed.

Another noteworthy aspect is the use of prescribed policyholder behavior assumptions that can bear little relationship to observed and/or expected behavior patterns. The use of assumptions not aligned with experience can lead to large differences between statutory reserves and economic liabilities and may constrain a company's ability to hedge its contractual obligations. This raises the potential for unintended consequences (e.g., insurers not being able to properly hedge assets to liabilities, increases in fees charged to consumers, and products withdrawn from the market).

But there is some reason for New York domestics to be optimistic. The NYDFS has demonstrated a willingness to hear concerns and may entertain amendments to help address the big disconnects between PBR and the statutory reserves mandated by New York's amended regulation.

What follows is a brief description of New York's PBR amendment to insurance Regulation 213. The full text is available from the DFS. You can also review the public comments DFS received along with the responses the department provided.

EFFECTIVE DATE AND SMALL COMPANY EXEMPTION

The application of NY PBR Regulation 213 is mandatory effective Jan. 1, 2020 (optional for year-end 2019), and applies to all life companies and fraternal benefit societies doing business in New York. The regulation, Sections 103.4(d) and 103.7(d), has a mechanism for an insurer to request a delay of up to one year in implementing the new reserve standards. The department may approve these requests on demonstration of "undue hardship, impracticability, or good cause."

Small companies have the option to use the Life PBR exemption, as detailed in Section II of VM-20 of the Valuation Manual, which was adopted by DFS. The small company exemption is relevant for life insurance business only. It does not extend to other lines of business, which is also true under NAIC reserve requirements.

INDIVIDUAL TERM LIFE INSURANCE

Under Regulation 213, the reserve for *new* term life business is set at the greater of (1) and (2), where (1) is the aggregate reserve under VM-20 and (2) is the greater of (a) the sum of the cash surrender value and (b) 70 percent of the total current seriatim reserve under Regulation 147.

NONVARIABLE PAYOUT ANNUITIES

The regulation deviates from VM-22 (fixed, payout annuities) in three major ways. First, it adds conservatism by relying on a high-quality reference portfolio composed of 5 percent Treasuries, 45 percent AA and 50 percent A, whereas the NAIC standard uses 5 percent Treasuries, 15 percent AA, 40 percent A and 40 percent BBB. Second, it adds further conservatism by placing a 200-basis-point cap on the gross spread before defaults for each bond quality segment. Third, it then removes some of the added conservatism by using a clever rounding rule that, in many interest rate and spread environments, produces no differences between the New York valuation rate and the VM-22 rate. But if credit spreads widen, the New York rate can be expected to fall below the rate in the Valuation Manual.

Mathematically:

NY Valuation Rate = VM-22 Rate –
[round down to the nearest 25 basis points (unrounded VM-22 Rate – unrounded NY Rate)]

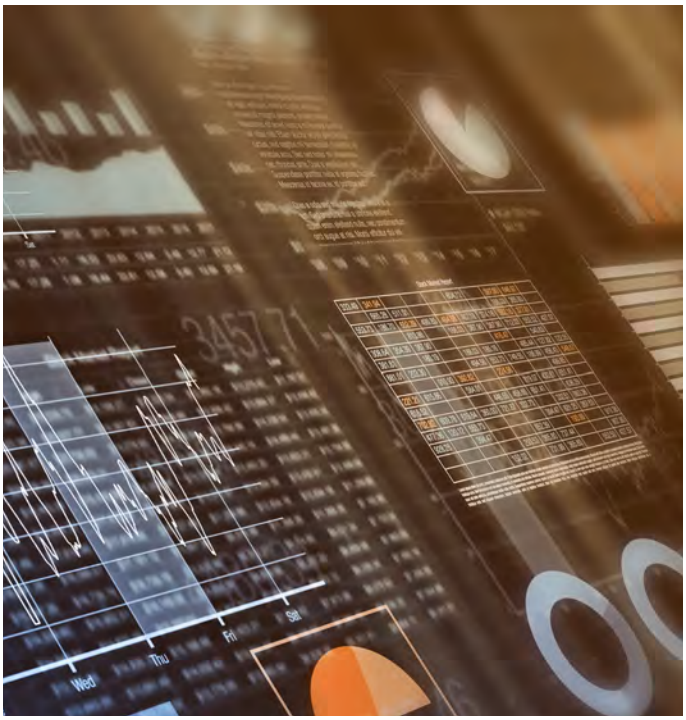
In addition, for jumbo annuity cases (with contract premiums exceeding $250 million), the valuation interest rate is set monthly, not daily as in VM-22, and the regulation also adds a maximum spread constraint of 190 basis points.

The DFS has said that it plans to publish these valuation interest rates on its website, likely monthly.

VARIABLE ANNUITIES

The reserves for in-force variable annuity contracts (i.e., issued before 2020) are now set at the greater of (1) NAIC VM-21 and (2) AG43 Standard Scenario (as of Dec. 31, 2017) with added constraints on assumed mortality, interest, lapses and other factors. These new constraints increase reserves by an amount that varies by type of living benefit. The reserve increase could be significant. The regulation provides a modest level of relief by allowing the reserve increase to be amortized over a period of three years.

For contracts issued after 2019, the minimum reserve is set at the greater of (1) NAIC VM-21 reserve and (2) the New York–prescribed Objective Floor (OF) reserve. The OF is a modified, more conservative version of the Standard Scenario that must now also reflect an Option Value floor determined on a seriatim basis. Relative to the AG43 Standard Scenario, the OF is more interest-rate sensitive and will likely encourage more interest-rate hedging.



The OF must be determined using two prescribed equity scenarios: (1) –20 percent immediately and 4.5 percent annual gross returns after year one, and (2) +20 percent immediately, –30 percent return in year one, and 4.5 percent after year one. The returns for bond funds are set at –4 percent followed by the yield on the five-year Treasury plus a spread of 100 basis points. Other return assumptions are also specified.

Before the election of the contract's living benefit option, mortality is assumed to follow the 2012 Individual Annuity Mortality (IAM) Basic Table with projection of specified mortality improvements. Postelection, the mortality assumption is required to follow the 2012 Individual Annuity Reserving (IAR) Table. In both cases, selection factors consistent with the mortality assumption in the NAIC VM-21 standard are required.

Lapse rates are required to follow prescribed assumptions that vary by the type of guaranteed benefit, the in-the-moneyness and the presence of a surrender charge.

For guaranteed minimum income benefits, the benefit utilization rates will follow the old AG43 requirements. But for guaranteed minimum withdrawal benefits, the delay withdrawal cohort method is used with modified assumptions that add conservatism.

CONCLUSIONS

New York has adopted the Valuation Manual (including, for example, the Life PBR exemption and its other sections), but its amendment to Regulation 213 is intended to add conservatism to what is in the Valuation Manual.

The NYDFS has also used the amendment to strengthen its existing reserve standards for variable annuities. Companies are given three years to phase in these increases in statutory reserves.

It remains to be seen how the amendment to Regulation 213 will impact insurers and consumers. ■

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An Evolution in the World of Private Equity

By Mark W. Whitford, Audie Apple and Kumber Husain

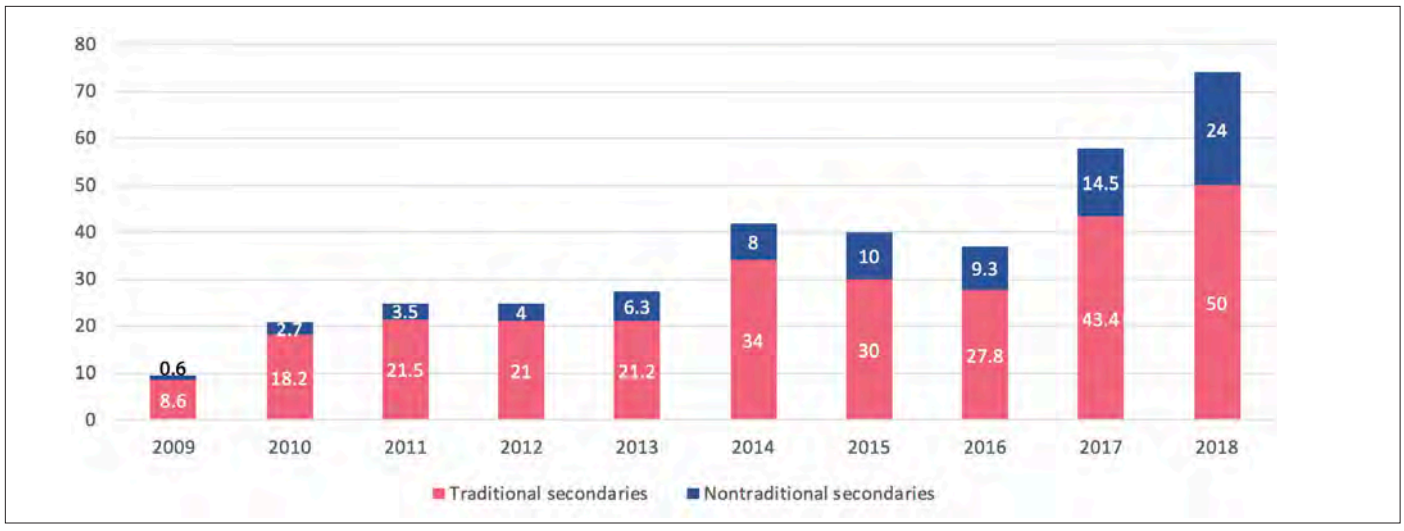
Over the past 20 years, private equity (PE) has grown to about $3 trillion under management globally. Traditionally, investors—called limited partners (LPs)—have mostly gained exposure to underlying companies either via funds (which own companies directly) or funds of funds (which aggregate many PE-fund investments into a single product). Collectively, investment into a PE fund from "day one" is known as the "primary" market. Over the past decade, however, we have also seen growth of the PE "secondary" market, which specializes in buying funds and portfolio stakes secondhand from investors desiring early liquidity in these funds.

The PE market continues to be an inherently long-term and illiquid asset class, as evidenced by an average fund life of 15 years. With the increasing prevalence of secondaries capital in the market, LPs have been able to sell their stakes in private equity funds prior to the end of the fund life. The most common type of secondary deal is known as a limited-partner transaction. A fund investor sells an interest, or a portfolio of interests, to another investor (a purchasing investor) based on a negotiated price, usually as a percentage of net asset value (NAV). The purchasing investor assumes the legal and financial obligations to the underlying fund(s).

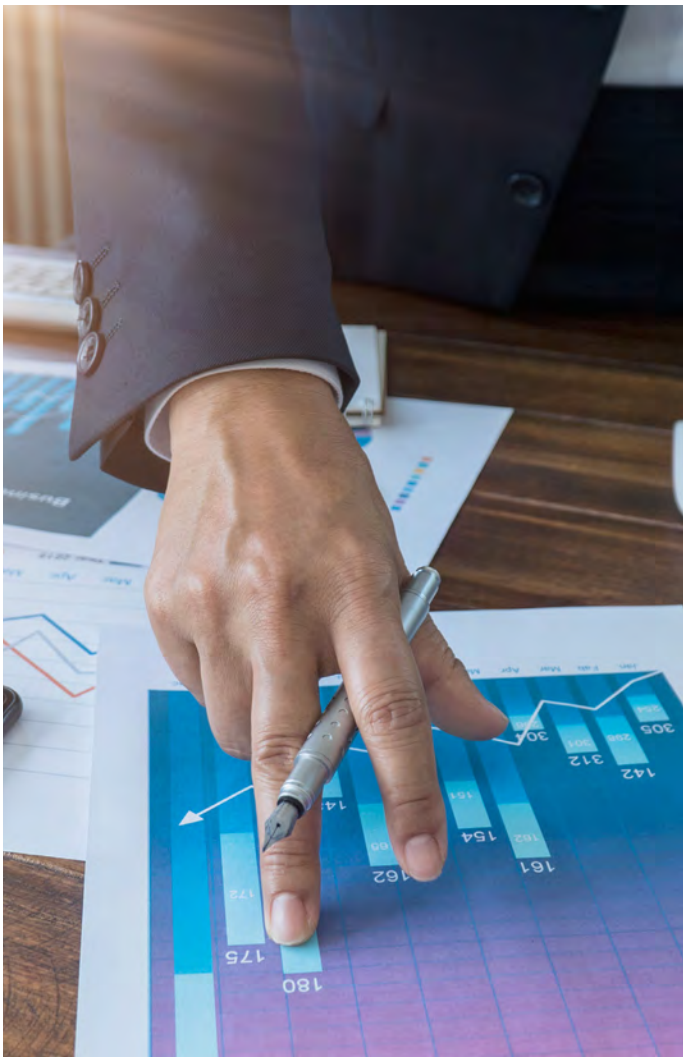
Sellers are usually motivated to undertake these transactions for three reasons: active portfolio management, strategic and regulatory drivers or liquidity-driven situations. Over the past several years, for example, large pension and sovereign-wealth funds and insurance companies have begun to use a more liquid secondary market in order to rebalance exposures and reduce the number of private equity relationships—effectively adopting traditional asset-management techniques to managing their illiquid PE portfolios. Using the secondary market has also become more economically attractive to sellers as the discount to NAV has narrowed in recent years and prices paid on average have increased.

Limited-partnership sales accounted for around three-quarters of transaction volumes in 2017 (see Figure 1). The growth in secondaries really started during the global financial crisis 10

Figure 1
Secondary Volumes at Record Levels (in Billions of Dollars)



Sources: Greenhill & Co., Inc. as of January 2017; Greenhill & Co., Inc. as of January 2019; DWS Investment GmbH as of June 13, 2019.



years ago. Increased scrutiny of large financial institutions, including banks, led to strategic portfolio sales of illiquid and directly held PE assets and underlying PE-fund commitments. Although this part of the market has historically generated attractive opportunities, its prevalence has waned in recent years, as banks have reduced their balance sheets and exposure to private assets. Liquidity-driven or distressed situations can also still occur today but have historically been less common.

Another, increasingly common type of secondaries is manager-led transactions. Managers, called general partners (GPs), might seek liquidity options on behalf of investors for the remaining assets in a fund, while also potentially securing additional time (and sometimes capital) for a portfolio of legacy assets to mature and be primed for sale (usually called an exit). The structuring (or restructuring) of these types of transactions can be complex and time-consuming. Usually, it requires highly bespoke solutions around the composition of the underlying portfolio, the price to sellers and the alignment between old and new investors, as well as the manager. GP-led deals and other nontraditional secondary transactions such as preferred-equity purchases already account for between a quarter and a third of deal volume (see Figure 1). We believe such deals may play an increasingly important role in the future.

Effectively, growth in the secondary market has contributed to somewhat greater liquidity in the PE asset class. The secondary market offers investors in secondaries funds instant access to a highly diversified PE portfolio, providing exposure across vintage years, sectors and geographies, while sellers benefit from an active buyer universe for their illiquid PE positions. However, the secondary market still remains much smaller than the primary market, with less than 2 percent of PE assets estimated to trade hands each year. Its rapid growth reflects structural changes in the market.

We believe there may be ways to get the best of both direct and secondary investing. By focusing on "stock picking" later-stage investments within an existing PE-fund portfolio, new investors may be able to collaborate with a fund manager's (GP's) best portfolio companies. Supporting these companies can ideally satisfy every stakeholder: new investors, incumbent investors, GPs, as well as the underlying portfolio companies. It may also result in higher returns relative to the market, not least by maintaining the key tenets of a secondary transaction (shorter duration and earlier distributions) while tactically identifying individual, attractive assets within an existing PE-fund portfolio.

In recent decades, the secondary market has grown rapidly, with volumes increasing from $9 billion in 2009 to $74 billion in 2018.

The continued evolution of the PE market has led to the development of strategies that offer investors opportunities with investment characteristics that are a blend of direct buyout investing and traditional secondaries. These strategies, which focus on entering assets midhold, can potentially deliver cash returns commensurate with traditional buyout funds but with a risk and liquidity profile associated with shorter-duration secondary strategies. For insurance companies, particularly those with shorter liability durations like property and casualty or reinsurers, such a strategy could provide access to cash flows sooner than a typical PE fund. Strategies focused on entering assets midhold are generally expected to hold assets for two to four years, shorter than a traditional buyout fund's hold of three to seven years, while still generating strong double-digit net internal rates of return (structured). This is based on our analysis of data from public transactions through the first quarter of 2019. ■

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PROFESSIONAL DEVELOPMENT

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