



Article from

The Financial Reporter

June 2019

Issue 117

Discount Rates in US GAAP Targeted Improvements

By Bruce Rosner and Vincent Carrier-Cote

With the new U.S. generally accepted accounting principles (GAAP) targeted improvements, the Financial Accounting Standards Board (FASB) has significantly revised the treatment of discount rates for long-duration insurance contracts. In some ways, the new standard simplifies the process for insurance companies by defining a clear market reference point rather than a company's own portfolio of assets. In other ways, the calculations may be more complex, as companies need to interpret elements that are now principle based. This article will help us move beyond a basic understanding of the new Accounting Standards Update (ASU) 2018-12, *Targeted Improvements to the Accounting for Long-Duration Contracts*, and

explore where there may be some room for interpretation in the requirements as well as some additional context from precedents around the world so that we are all making informed interpretations and choices.

One of the primary paragraphs in ASU 2018-12 addressing the topic of discount rates (under the *Initial Measurement* section) states:

944-40-30-9 The liability for future policy benefits shall be discounted using an upper-medium grade (low-credit-risk) fixed-income instrument yield. An insurance entity shall consider reliable information in estimating the upper-medium grade (low-credit-risk) fixed-income instrument yield that reflects the duration characteristics of the liability for future policy benefits (see paragraph 944-40-55-13E). An insurance entity shall maximize the use of relevant observable inputs and minimize the use of unobservable inputs in determining the discount rate assumption.

WHAT QUESTIONS ARE WE TRYING TO ANSWER?

1. What are appropriate rates during the period where the market is deep and liquid (the observable period)?
2. How should discount rates be extrapolated beyond the observable period?
3. What is the form of the locked-in interest rate curve?

Figure 1
Sample USD Spot Curve

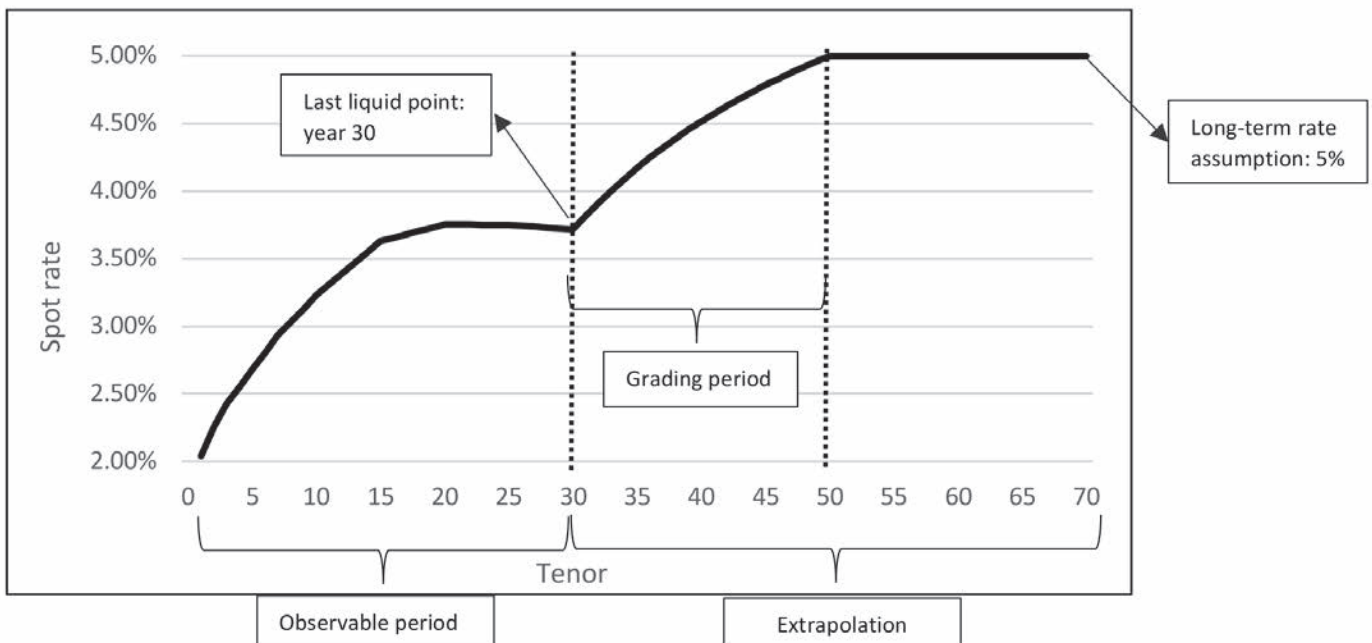


Figure 1 (Pg. 4) illustrates the first two questions and shows the basic segments of the curve that need to be addressed.

Additionally, the initial discount rate at the start of the contract should be locked in for income statement purposes. Each valuation period, the liability will be measured twice:

- Once using the locked-in interest rates for accreting interest on the liability in net income.
- A second time using current interest rates for the purpose of producing a liability on the balance sheet as well as an accumulated other comprehensive income (AOCI) balance.

This is similar to the way that available-for-sale assets are accounted for under Accounting Standards Codification (ASC) 320, *Investments—Debt and Equity Securities*.

THE OBSERVABLE PERIOD

The FASB intended for companies to have consistent treatment of the observable period. The ASU references an “upper-medium grade (low-credit-risk) fixed-income instrument yield,” and the basis for conclusions notes that this is commonly interpreted as single A.¹ The ASU also states that one should maximize the use of observable data, which limits the ability to pick a subset of assets with market values that are not considered Level 1 and that produce a more favorable outcome. Despite this, there are still areas that companies are investigating:

- Observable single A rates should be used where liquid. Single A rates commonly exist at longer tenors (and occasionally at intermediate points) but trade at low volumes and are not considered reliable.
- Companies are exploring the use of indices that track specific ratings rather than the entire universe of traded instruments (e.g., the Bloomberg Barclays Index).
- The ASU was written with a common understanding of what single A rated means in the United States, but how this translates into local ratings in other currencies may not be readily apparent. For example, if a local Treasury bond is considered single A rated, can that be included in the mix of instruments used to set the discount rate? Or can you adjust upward or downward based on the rating of the local Treasury bond to translate from its rating to single A?

A company will have to perform its own analysis to determine the last liquid point (LLP). This analysis is similar to what is currently performed for derivative valuation under US GAAP and may involve considering trading volumes and other metrics to assess liquidity of the market at each tenor.

EXTRAPOLATION BEYOND THE OBSERVABLE PERIOD

A wider range of practice will likely emerge with respect to estimation of unobservable rates. The ASU points us to ASC 820, *Fair Value Measurement*, and, in particular, Level 3 guidance regarding unobservable inputs. The Level 3 guidance is generally principle based, as follows:

In developing unobservable inputs, a reporting entity may begin with its own data, but it shall adjust those data if reasonably available information indicates that other market participants would use different data or there is something particular to the reporting entity that is not available to other market participants...

A reporting entity shall take into account all information about market participant assumptions that is reasonably available...

This guidance is not prescriptive and permits companies to exercise their own judgment. However, some of the difficulty that companies will have to work through is that the guidance does tell them to look to their peers, which potentially creates an awkward situation if a company finds itself outside the range of practice. Fortunately, we do already have some indication of what companies have done in similar situations, in particular, under economic capital frameworks, Solvency II and in anticipation of International Financial Reporting Standard (IFRS) 17, *Insurance Contracts*. We will come back to specific practices under other standards in the next section.

Companies must choose whether to hold the LLP constant or grade to a long-term expected rate (which may be done using forward rates or spot rates). Additionally, when grading to a long-term expected rate, the following choices are available:

- Determine the ultimate rate as a single unit or separately determine a long-term view of real interest rates, inflation and spreads.²
- Determine the length of the grading period.
- Determine the path from the LLP to the ultimate rate, which may be linear, using polynomial regression, splines, Smith-Wilson,³ bootstrapping⁴ or another method.

The decisions made here can have a very significant impact on the measurement of long-dated liabilities and may also impact the volatility of the liabilities over time. Ultimately, a company should consider consistency with internal practices at the company for other purposes (e.g., variable annuities measured using fair value, which operate under the same guidance in ASC 820) or with economic capital or other internal metrics. It should also consider consistency with industry practice; complexity of the

method and the ongoing process that will be required; theoretical soundness, such as continuous, stable forward rates; and faster grading, which will result in a more stable liability from one valuation period to the next and typically results in a lower liability in today's low interest rate environment.

Figures 2 and 3 illustrate how companies might achieve very different outcomes based on their decisions. These two graphs illustrate spot rates and forward rates respectively for the

following methods: bootstrapping of spot rates with a 20-year grading period (Method 1), linear grading of forward rates with a 20-year grading period (Method 2), and holding the last forward rate constant (Method 3).

One of the disadvantages of setting an ultimate spot rate is that the implied forward rates tend to be less appealing from a theoretical perspective, as they may exhibit unrealistic patterns. In

Figure 2
Sample Spot Curves Under Different Approaches



Figure 3
Sample Forward Curves Under Different Approaches



Figure 3 (Pg. 6), we do in fact see large discontinuities in the forward rates under Method 1.

Considerations Outside the US

As we noted earlier, the ASU was written primarily with the U.S. market in mind, leaving some room for interpretation where fixed income markets are fundamentally different from the U.S. market or where local accounting practices differ from U.S. practice.

A particular problem arises where single A rates are not liquid at all or liquid only for shorter tenors but local treasuries and other instruments are liquid at longer tenors. Strictly speaking, we are beyond the observable period of upper-medium grade fixed income instruments and operating under the guidance from ASC 820. However, even that guidance indicates that it is preferable to make use of as much market data as possible. We could consider extrapolating with reference to treasuries or another more liquid instrument, or extrapolating across currencies, which may be difficult to achieve in practice and is generally considered less preferable than sources from within the local currency.

Additional questions may arise regarding the appropriate discount rate for cross-currency products (for example, if you had a product where premiums are specified in local currency but account values are invested in U.S. assets).

WHAT IS THE FORM OF THE LOCKED-IN INTEREST RATE CURVE?

The ASU provides minimal guidance as to how the locked-in interest rate should be used to accrete interest on the insurance

liability. The interest rate used for net income purposes is referred to in the ASU as “the original discount rate used at contract issue date,” without specifying the form of those rates. Here are three basic options for the form of the locked-in rates that we see currently being discussed in the industry:

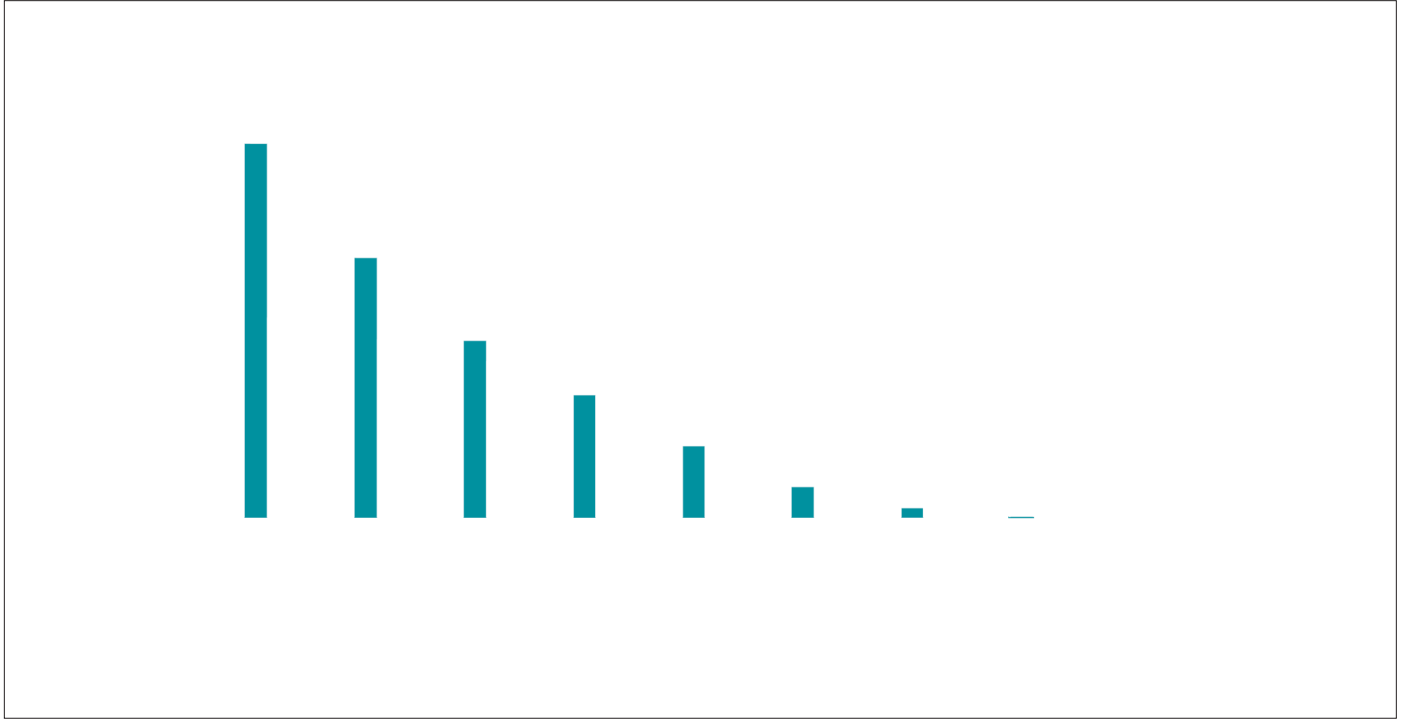
1. **Forward rates:** This is a relatively straightforward interpretation. Companies would derive the forward rates from the initial spot curve that was used at issue. Each year, the prior year’s forward rate is discarded and the remaining forward rates are used to discount the remaining cash flows.
2. **Spot rates:** Each year’s cash flows are tied to the associated spot rate. In each successive year, the cash flow at time N will continue to be discounted at the associated spot rate for time N but over a shrinking time horizon.
3. **Single flat rate:** A single rate is solved for, such that the discounted value of the liability cash flows at issue result in the same liability as using the current market rates (normally, a zero net premium liability). This single rate is preserved and used for the remainder of the lifetime of the policy or group of policies.

When selecting a technique, companies should consider the pattern of profit emergence, which will depend on the relationship between the yield on assets and the effective interest accretion rate on the liability in each year. Additionally, there may be systems limitations in applying certain techniques. Figure 4 describes some additional considerations specific to each of these methods, and Figure 5 (Pg. 8) illustrates the pattern of investment margin under each method for an illustrative

Figure 4
Considerations for Use of Different Interest Rates

Forward Rates	Spot Rates	Single Flat Rate
Aligned to market pricing principles	Little precedent for this approach in accounting for insurance contracts	Similar to treatment of interest-sensitive insurance products under IFRS 17
Similar to treatment of traditional long-duration products under IFRS 17	Would align well with accounting for a set of zero-coupon bonds that collectively produce the same cash flows as the liability (assuming those assets also have changes in market value flowing through other comprehensive income)	Requires an additional step in the valuation process where a flat rate is solved for using linear optimization or other techniques
Has the potential to lock in unusual patterns in forward rates resulting from the relationships between spot rates at successive tenors		Would align well with accounting for a single theoretical asset that produces the same cash flows as the liability (assuming that asset also has changes in market value flowing through other comprehensive income), although that is unlikely to be the case in practice
Unlikely to align well with asset valuation, typically resulting in higher profit in early years followed by lower profit in later years, when an upward sloping yield curve exists		Unique to each cohort

Figure 5
Investment Margin Under Different Forms of the Locked-in Interest Rate Curve⁵



10-year single-premium immediate annuity that is backed by zero-coupon bonds.

In Figure 5, the investment margin under forward rates is front-loaded as a result of locking in the upward sloping yield curve. In the early years, assets will accrue investment income at the book yield (which is a flat rate for each zero-coupon bond), while the liability will accrete interest at the early forward rate tenors. The other two methods tend to produce more leveled income patterns, and in this illustration, the spot rates method produces investment margin that is a level percentage of the liability in each year.

OTHER PRACTICES FROM US GAAP AND AROUND THE WORLD

Here we provide some context from other practices. None of these should be considered a precise parallel, as they typically follow different guidance (with the possible exception of assets/liabilities that are accounted for at fair value under U.S. GAAP), are not always material and, in some cases, are bound by explicit methods in the applicable regulation rather than the company's own methods.

The guidance for pensions under U.S. GAAP refers to high-quality instruments, typically considered AA rated and above. It does not specify that one must maximize the use of

observable data. Industry practice has evolved to include some flexibility in terms of selecting the reference assets, resulting in higher discount rates. Pensions have a “lock-in” concept in a limited fashion. Each year, the discount rates at the start of the year are locked in for one year for the purpose of interest accretion that goes to net income; industry practices include locking the spot rates or a single flat rate. Extrapolation methods have tended toward less sophisticated approaches (e.g., holding the last forward rate constant). However, extrapolation is not currently a material issue for most pension plans.

Meanwhile, fair value standards are currently applied in U.S. GAAP to a variety of assets as well as some insurance liabilities. Extrapolation methods have tended toward less sophisticated approaches (e.g., holding the last forward rate constant). Again, extrapolation is not a material issue for many common products in the United States.

IFRS 17 has a principle-based discount rate intended to capture a rate that is suitable for the liability that excludes credit risk. Most companies are adopting a bottom-up approach equal to risk-free rates plus an illiquidity premium. They estimate the illiquidity premium by adjusting from relevant assets. Some companies are adopting a top-down approach, beginning with their own asset portfolio and removing estimated credit elements. In principle, this can result in a similar overall result to single A rates, but the illiquidity premium



under IFRS 17 is often determined using historical analysis rather than current rates. With regard to extrapolation, companies are adopting a wide range of practice. Common methods include grading to an ultimate forward rate or ultimate spot rate. Grading periods may range from 10 to 60 years, and a variety of grading methods are used. Many European companies are expected to follow a practice similar to what they use for Solvency II.

Under Solvency II and the Insurance Capital Standard, discount rates are structurally similar to IFRS 17, but more prescriptive than principle based, and extrapolation is done using Smith-Wilson. The ultimate forward rate is prescribed and varies by groups of currencies.

CLOSING REMARKS

Despite the FASB's desire for consistency, there are areas where a broad range of practices will be acceptable, and companies will have to develop their own methods based on their unique circumstances. We do expect some convergence to happen over time, but the industry may never fully converge. Fortunately, we can look to IFRS 17 and other standards to learn from all the thinking that has been applied in similar situations, and we expect that companies will balance that against their own constraints and existing practices. ■

The view and opinions expressed in this article are those of the authors, Bruce Rosner and Vincent Carrier-Cote, and do not necessarily reflect the official views of Ernst & Young LLP. The material has been prepared for general information purposes only and is not intended to be relied upon as accounting, tax or other professional advice. Please refer to your advisors for specific advice.



Bruce Rosner, FSA, MAAA, is a senior consulting actuary at Ernst & Young LLP. He can be reached at bruce.rosner@ey.com.



Vincent Carrier-Cote, FSA, is a consulting actuary at Ernst & Young LLP. He can be reached at [vincent.carriercote@ey.com](mailto:carriercote@ey.com).

ENDNOTES

- 1 The FASB originally contemplated AA rates but moved to A in response to feedback from the industry. This is discussed in Basis for Conclusions 60 of the ASU.
- 2 The ultimate rate may be derived from historical data and forward-looking views of the economy. The expectation is that the current process to determine long-term rates for other purposes will be leveraged where available.
- 3 The Smith-Wilson method fits a set of functions to spot rates, as well as an ultimate forward rate and convergence speed, and applies linear algebra to solve for an interpolation or extrapolation.
- 4 Bootstrapping identifies a level forward rate over the grading period that results in the specified ultimate spot rate.
- 5 Investment margin is defined as investment income on assets less interest accretion on the reserve. The projection assumes that the liabilities are cash flow matched with a laddered portfolio of zero-coupon bonds purchased at issue, such that the overall asset yield increases over time as the short-maturity assets mature and the mix of assets shifts to longer-maturity, higher-yielding assets. The analysis is based on an upward sloping forward rate curve.