An American Academy of Actuaries Webinar

Discussion of Variable Annuity Plans Practice Note

Presented by members of the Academy's Pension Committee

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American Academy of Actuaries

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Today's Speakers

Moderator and Presenter

- **Rachel Barnes**, MAAA, FSA, EA, FCA, PhD
  Member, Pension Committee

Presenters

- **Bruce Cadenhead**, MAAA, FSA, EA, FCA
  Former Chairperson, Pension Committee

- **Lloyd Katz**, MAAA, FSA, EA, FCA
  Member, Pension Committee

Today's Agenda

1. Background on Variable Annuity Pension Plans
2. Basic Valuation of a Variable Annuity Plan (VAP)
3. Accounting Rulebook
4. Funding Rules and Valuation
5. ASOPs and Other Issues
6. Variations on a Pure VAP
7. Questions

Background on Variable Annuity Plans (VAPs)

What Is a Variable Annuity Plan?

- Works very much like a “traditional” defined benefit plan that pays monthly benefits
- Benefit is adjusted for investment performance
  - In a “pure” VAP, the adjustments would occur when benefits are paid, but in practice, usually done annually
- Benefits commonly denominated in “units” or “shares”
- Similar to owning stock or a mutual fund

How a VAP Works

- Plan has target investment rate, or “hurdle rate”
- Benefit adjusted periodically (usually annually)
- Increases if return greater than hurdle, decreases if less
- Hurdle rate usually ≥ 5.0%:
  - Must be ≥ 3.0% to meet MRD requirements [§1.401(a)(9)-6]
  - Must be ≥ 5.0% to not be a Statutory Hybrid Plan [§1.411(a)(13)-1(d)(4)(ii)(C)]

VAP Benefit Adjustment

- *Example:* Monthly benefit at retirement is $1,000, 5.5% hurdle

Plan Earns 6.5% in Prior Year:

$$\$1{,}000.00 \times {}^{1.065}/_{1.055} = \$1{,}009.48$$

Plan Earns 5.5% in Prior Year:

$$\$1{,}000.00 \times {}^{1.055}/_{1.055} = \$1{,}000.00$$

Plan Earns 4.5% in Prior Year:

$$\$1{,}000.00 \times {}^{1.045}/_{1.055} = \$990.52$$

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Basic Valuation of a VAP

Basic Valuation of a VAP

- Ignoring *any* complicating factors, such as:
  - Internal Revenue Code rules (415, 417(e), 430, etc.)
  - Financial Accounting Standards Board (FASB)
  - Pension Benefit Guaranty Corporation (PBGC) regulations

PV_{VAP} = PV (fixed benefit @ current level) ***i% = hurdle rate***

- Concept long established:
  - TSA 1963, Franklin Smith & Chandler McKelvey
  - Others – e.g. Retirement Shares presentations

Valuation Math

- $PV = B_0 + B_1\left(\frac{1}{1+i_1}\right) + B_2\left(\frac{1}{(1+i_1)(1+i_2)}\right) + \cdots$
- Where:
  - i_t = Actual return from time (t – 1) to time (t)
  - B_t = Benefit payable at time (t)
  - $B_t = B_{t-1}\, x\, \frac{(1+i_t)}{(1+h)}$ [as discussed previously]

- Therefore:

$$PV = B_0 \left\{ 1 + \left(\frac{1+i_1}{1+h} \right) \left(\frac{1}{1+i_1} \right) + \left(\frac{(1+i_1)(1+i_2)}{(1+h)^2} \right) \left(\frac{1}{(1+i_1)(1+i_2)} \right) + \cdots \right\}$$

$$= B_0 \left\{ 1 + \left(\frac{1}{1+h} \right) + \left(\frac{1}{(1+h)^2} \right) + \cdots \right\}$$

QED … the value of a fixed benefit valued using the hurdle rate

Valuation of VAPs in Practice

- Rules ***may*** or ***may not*** allow use of methodology shown—this is an issue for funding, FASB, lump sum calculations, PBGC premiums, etc.
- Two main approaches:
  1. ***Expected Return & Discount Rate are a Single Assumption***
     a. Segment rates (or yield curve) is mandated "return scenario"
     b. Devolves to valuation of a fixed benefit at the hurdle rate
  2. ***Expected Return Independent of Discount Rate Assumption***
     a. Actuary must make specific, distinct, assumption of return on plan trust
     b. Generally, will produce a very different answer

Let's Look at a Few Examples

- Samantha retires at age 65 on January 1, 2022
- She receives a benefit annually on January 1 of each year, for as long as she is alive (life annuity)
- The plan hurdle rate is 5.0%
- She has accrued 1,000 units, worth $10 each
- The **initial annual benefit amount** is therefore **$10,000** ($10 x 1,000)
- Segment rates under §430(h) for 2022:
  - » $S_1 = 4.75\%$ $S_2 = 5.18\%$ $S_3 = 5.92\%$

Example 1—Valuation at Hurdle Rate

- Fixed annual benefit = $10,000 (never changes)
- Using discount rate = hurdle rate = 5.0%, and the 2022 PPA Female Annuitant Mortality Table, as promulgated by the IRS:

Funding Target = **$134,287.52**

Example 2—Discount Rate = ER

- $B_{65} = \$10{,}000$

  $B_{66} = \$10{,}000 \times {}^{1.0475}/_{1.05} = \$9{,}976.19$

  ⋮

  $B_{70} = \$9{,}905.10 \times \dfrac{1.0518^5}{1.0475^4}\Big/_{1.05} = \$10{,}086.01$

  $B_{71} = \$10{,}086.01 \times {}^{1.0518}/_{1.05} = \$10{,}103.30$

  ⋮

  $B_{85} = \$10{,}330.80 \times \dfrac{1.0592^{20}}{1.0518^{19}}\Big/_{1.05} = \$11{,}906.22$

  $B_{86} = \$11{,}906.22 \times {}^{1.0592}/_{1.05} = \$12{,}010.54$

Example 2—Discount Rate = ER

- Result is same as for Example 1
- Using 2022 segment rates shown, and the 2022 PPA Female Annuitant Mortality Table, as promulgated by the IRS:

Funding Target = **$134,287.52**

Example 3—Independent ER

- Actuary looks at composition of asset portfolio & expected returns
- Concludes that 7% is best estimate of future returns
- $B_{65} = \$10{,}000$

  $B_{66} = \$10{,}000 \times {}^{1.07}/_{1.05} = \$10{,}190.48$

  ⋮
- Using 2022 segment rates shown, and the 2022 PPA Female Annuitant Mortality Table, as promulgated by the IRS:

Funding Target = **$155,603.14** (+15.9% v. prior example)

Example 3—Independent ER

- Results are highly dependent on assumption chosen
- Another actuary concludes that 3% is best estimate of returns
- $B_{65} = \$10{,}000$

  $B_{66} = \$10{,}000 \times {}^{1.03}/_{1.05} = \$9{,}809.52$

  ⋮
- Using 2022 segment rates shown, and the 2022 PPA Female Annuitant Mortality Table, as promulgated by the IRS:

Funding Target = **$110,662.51**

Accounting Rulebook

Fundamental Question—What Is a Discount Rate?

Discount rate: rate used to discount future payments to a present value (PV)

What is a present value (liability / obligation / funding target)?

- A dollar amount (of assets) that would be sufficient today to provide the promised benefit if the assumptions used to measure that present value are met
- Assumptions include that dollar amount (the assets set aside) growing at the discount rate(s)

Discount rate represents an expected return (not an arbitrary number)

- For ASC-715 and IRC 430—based on a hypothetical matching fixed-income portfolio

Funding and accounting rules are consistent with this principle for traditional defined benefit (DB) plans

Accounting and Funding for Traditional Private Sector Plan

Traditional DB benefits can be modeled as a fixed payment stream (independent of market returns / conditions)

Discount rate (DR) is based on yields high-quality fixed-income securities

Resulting liability is the amount which, if invested in high-quality fixed-income assets (return = discount rate), will be sufficient to pay the promised benefit

Slight simplifications in this model

- Discount rate is return on high-quality fixed-income portfolio
  - Yield = return on underlying fixed-income portfolio if held to maturity (disregarding default and reinvestment)
- Benefit payments can be treated as fixed (generally true when other assumptions met)
- Lump sums—can be valued using annuity substitution / values move with changes in DR

Accounting Rulebook

Discussed in *Valuing Benefits Payable as a Lump Sum*, but also relevant to variable annuity valuation

ASC 715-30-35-43: "Assumed discount rates shall reflect the rates at which the pension benefits could be effectively settled."

- Can look to information about pricing of annuity contracts
  - Auditors have generally required actual annuity pricing to support this approach – not just theoretical arguments
- Alternatively, can look to "rates of return on high-qualify fixed-income investments currently available and expected to be available during the period to maturity of the pension benefits"—most commonly represented as a yield curve

Accounting Rulebook

ASC 715-30-35-44: “the objective of selecting assumed discount rates using [rates of return on high-quality corporate bonds] is to measure a single amount that, if invested at the measurement date … would provide the necessary future cash flows to pay the pension benefits when due.”

- Very clearly consistent with the idea that obligation = amount which, if invested today (in a specified manner) will be sufficient to pay future benefits

ASC 715-30-35-42: requires an explicit approach to assumptions—“each significant assumption used shall reflect the best estimate solely with respect to that individual assumption.”

What about assumptions that are not independent of the discount rate?

- Benefit adjustment rate would be directly affected by the hypothetical investment in high-quality corporate bonds

Lump Sum Practice Note Digression

Two generally acceptable approaches under ASC 715 accounting rules

Best estimate approaches

- Lump sum conversion assumption based on best estimate of lump sum conversion rates at assumed payment date
- Can be independent of discount rate

Settlement approaches (e.g., annuity substitution)

- Recognizes that proceeds of sale of fixed income that matches underlying annuity should cover the expected lump, regardless of changes in yields
- Rationale for use of annuity substitution in funding rules

Both approaches are consistent with possible outcomes; either is a legitimate measure of the obligation

Lump Sum Practice Note Digression

Simple example

- Pension promise of single lump sum of $1,000 in 7 years
- Allows for early payment of fair value (based on bond yields)
- Expected payment in two years

Option 1: Buy 7-year zero-coupon bond maturing at $1,000 and sell it in two years to cover lump sum

- Settlement approach—equivalent to annuity substitution

Option 2: Buy 2-year zero-coupon bond maturing at estimated value lump sum in two years

- Will be sufficient to cover lump sum if you guess right about bond yields in two years (best estimate approach)

Both options provide possible value of the obligation

Analogy to Variable Annuity Plan

Replace $1,000 fixed payment with $1,000 variable benefit (adjusted based on 5% hurdle rate) payable in 7 years

Option 1: Buy zero-coupon bond maturing in 7 years at $((1+i_7) / 1.05))^7 * \$1{,}000$, where i_7 is the 7-year spot rate

- Settlement approach: $PV = \$1{,}000 * 1.05^{-7}$

Option 2: Buy zero-coupon bond maturing in 7 years at $((1+r) / 1.05))^7 * \$1{,}000$, where r is the expected return based on current plan investments ($r <> i_7$)

- Best estimate approach?: $PV = \$1{,}000 * ((1+r) / (1+i_7) / 1.05))^7$—best estimate of what?

Both approaches provide a value, but only the first is a possible value of the obligation

- Buying the bond would change r—not possible simultaneously to earn both the bond yield and a separate, higher (or lower), asset return

Funding Rules and Valuation

A Simple Example

- To demonstrate concept, look at market-based cash balance plan (interest credit based on actual return on plan assets)
- Ignore any complications (e.g., no preservation of capital issue)
- Example:
  - Participant age 64
  - Normal retirement age (NRA) = 65
  - 100% probability of lump sum payment
  - Cash balance = $100
  - No contribution credit (frozen)
  - S_1 = 2.0%, BUT actual return turns out to be 6.0%

Single Assumption

- Expected return = discount rate = 2.0%
- $PV_{64} = \$100 \times (1.02) \times \frac{1}{1.02}$ = \$100
- $CB_{65} = \$100 \times (1.06) = \$106$
- Exactly provides amount needed

Independent Assumption

- Expected return selected by actuary, assume 6.0%
- $PV_{64} = \$100 \times (1.06) \times \frac{1}{1.02}$ = \$103.92
- $PV_{65} = \$103.92 \times (1.06) = \$110.16 \neq CB_{65}$
- Overfunds (in this example)

The Issue With the Independent Assumption Method

- If actual return > discount rate, excess return generated by the plan assets will go toward meeting the promised benefit
  - » If actual return < discount rate, shortfall avoids overfunding
- $\$100 \times (1 + 0.02 + 0.04) = \$106$ ← CB EOY

  CB BOY | Discount rate | Difference between actual return & discount rate
- If independent assumption used, Δ (discount rate, actual return) will cause an under- or overvaluation
  - » $\frac{\$4}{1.02} = \$3.92 \rightarrow \times 1.06 = \$4.16 = \Delta(\$110.16, \$106.00)$

A General Rule

- If CB = Assets, then:

$$CB_{BOY} \times [1 + (Discount\ Rate) + \Delta(Actual\ Return, Discount\ Rate)] = CB_{EOY}$$

And **PV = CB**

- What if plan is over- or underfunded?
  - » Funding rules (amortization) are designed to bring plan to full funding over time

Discount Rate = Expected Return

- Avoids actuary adding discretionary assumption
- Consistent with treatment of non-variable plans under PPA, no estimate made of asset return
- Only assumption that actually funds the benefit—any other assumption will generate investment gain/loss when met
  - » Pre-PPA regulation §1.412(c)(3)-1(c)(2) would appear to prohibit this, if still valid
- Rates implied by yield curve can be viewed as risk-adjusted expected return for any portfolio (mandated return scenario)
- IRS implicitly supported this approach for §415 purposes
  - » Adjustment between fixed and variable is the same regardless of asset mix

A Variable Annuity Example

- In late 2028, Congress passes the “No More Annuity Schemes” Act of 2028 (“NO MAS”), and it is signed by the president
- NO MAS requires that all plans be fully funded immediately
- No future funding or benefit accruals will be allowed
- Jon has accrued 500 units, with a value of $10 each ($5,000)
- Benefits paid annually on 1st day of year
- He will be 65 on 1/1/2029, first payment due then
- Hurdle rate = 5.0%
- Mortality is no longer a factor—people live forever! ☺

Segment Rates

- Segment rates under §430(h) for 2029:
  - $S_1 = 5.00\%$
  - $S_2 = 5.00\%$
  - $S_3 = 5.00\%$
- Corresponds to a long-term flat yield curve—chosen for simplicity

One Assumption v. Two

Single Assumption

- Expected return = hurdle rate = discount rate = 5.0%
- Value of perpetuity:

$$\frac{1}{1-\frac{1}{1.05}} = \mathbf{21.00}$$

- Funding Target = **$105,000**

Independent Assumption

- Expected return = 4.0% (actuary's best estimate)
- Value of perpetuity:

$$\frac{1}{1-\frac{1.04}{1.05^2}} = \mathbf{17.64}$$

- Funding Target = **$88,200**

Do We Have Enough $ If Return = 4%?

Single Assumption

- $Assets_0 = \$105{,}000$
  $B_0 = \$5{,}000$
- $Assets_1 = (\$105{,}000 - \$5{,}000) \times 1.04 = \$104{,}000$
  $B_1 = \$5{,}000 \times \frac{1.04}{1.05} = \$4{,}952.38$, etc.

Time	Benefit	Assets
0	$5,000.00	$105,000.00
10	4,543.71	90,874.16
20	4,129.06	82,581.13
30	3,752.25	75,044.90
40	3,409.82	68,196.43

- ***NEVER runs out of money!!!***

Independent Assumption (4%)

- $Assets_0 = \$88{,}200$
  $B_0 = \$5{,}000$
- $Assets_1 = (\$88{,}200 - \$5{,}000) \times 1.04 = \$86{,}528$
  $B_1 = \$5{,}000 \times \frac{1.04}{1.05} = \$4{,}952.38$, etc.

Time	Benefit	Assets
0	$5,000.00	$88,200.00
10	4,543.71	70,549.76
20	4,129.06	49,899.31
30	3,752.25	24,308.07
40	3,409.82	(9,050.90)

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§1.415(b)-1, Example 10

- ***Facts:*** Variable Annuity Plan, Hurdle Rate = 4%
- ***Conclusions:***
  - Not subject to §417(e)(3)
  - Must adjust at 5% statutory rate
  - Annuity increases annually by (1.05/1.04)
  - Convert to straight life annuity using 5% interest & applicable mortality table
  - For 2022:

$$\$245{,}000 \times \frac{13.48061}{14.83302} = \$222{,}662.10$$

Independent ER Assumption

- For valuing an "Applicable DB Plan," IRS Regulation 1.430(d)-1(f)(5)) requires that the actuary make an explicit assumption of the expected return (interest credit) in accordance with Section 1.430(d)-1(f)(3)
- 1.430(d)-1(f)(3) requires assumption "be reasonable (taking into account the experience of the plan and reasonable expectations)"
- However, example in regulations is for a cash balance plan crediting interest based on an *outside* index
- Pre-PPA Notice 96-8 had similar rule—it specifically referred to "outside" index

Independent ER Assumption

- Does the 1.430(d) methodology apply to a plan crediting interest based on its own rate of return?
  - Is there an inherent difference between a plan that credits interest based on its own *internal* rate of return, and one that credits interest based on an *outside* metric?
    - Plan based on own rate of return has additional asset flow when returns exceed hurdle (or benefits decrease when returns fall short)
    - Plan based on outside index does not (though this could be hedged)
- Does the 1.430(d) methodology apply to plans that are not "Applicable Defined Benefit Plans"?

Independent ER Assumption

- 2010 Gray Book (Q&A 6) may imply "yes," but is vague & informal guidance (not an official Treasury position)
  - *Q: 1. May hurdle rate be used to value a level annuity?*
  - *2. Reasonable to assume future returns implied by yield curve?*
  - *A: "The actuary develops the best estimate of benefits using the actuary's best estimate of the return on plan assets. The simplifications described in this question are appropriate only if they represent the actuary's best estimate."*
- Some actuaries feel there is less regulatory risk with this approach, even if other approach is theoretically correct

ASOPs and Other Issues

ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*

3.6 "…an assumption is reasonable if it has the following characteristics:

a. ***it is appropriate for the purpose of the measurement***;

b. it reflects the actuary's professional judgment;

c. it takes into account current and historical data that is relevant to selecting the assumption for the measurement date, to the extent such relevant data is reasonably available;

d. ***it reflects the actuary's estimate of future experience***, the actuary's observation of the estimates inherent in market data (if any), or a combination thereof; and

e. ***it is expected to have no significant bias*** (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included (as discussed in section 3.5.1)…"

[emphasis added]

3.8 “Selecting an Investment Return Assumption—The investment return assumption reflects the anticipated returns on the plan’s current and, if appropriate for the measurement, future assets…”

For a pure VAP

- Is assumption used to set benefit adjustments the same as the investment return assumption?
- Is the benefit adjustment assumption and/or the return assumption a prescribed assumption (a mandated return scenario)?

ASOP No. 27

3.12 “Consistency among Assumptions Selected by the Actuary for a Particular Measurement—With respect to a particular measurement, the actuary should select economic assumptions that are consistent with the other assumptions selected by the actuary…”

- 3.6 and the above would seem to require return and discount rate to match (for a pure VAP, otherwise be appropriately consistent) when actuary selects the discount rate

But—“The actuary is ***not required*** to select assumptions that are consistent with assumptions not selected by the actuary.”

ASOP No. 27 does not clearly address VAP when discount rate is prescribed.

[Emphasis added]

ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*

Latest version requires disclosure of a low-default-risk obligation measure (LDROM)

- Defined based on principles similar to ASC-715 and IRC Section 430

In particular: "…the actuary should select a discount rate or discount rates derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future"

Makes explicit allowance for setting benefit adjustment assumption in a VAP to align with the discount rate: "For purposes of this obligation measure, the actuary should consider reflecting the impact, if any, of investing plan assets in low-default-risk fixed income securities on the pattern of benefits expected to be paid in the future, such as in a variable annuity plan."

Other Valuation Issues

Yield curves and segment rates—how does one “earn” a yield curve?

- Can be modeled as if you earn the spot yield (compounded) through each payment date
- Theoretical compound return on a zero-coupon bond maturing in that year, but not necessarily reflective of the pattern of returns for the hypothetical portfolio as a whole
- Equivalent approaches (e.g., assuming return each year matches portfolio yield) will yield similar results

Stabilized segment rates

- Artificial rates, not based on actual bond yields
- But still can be reflected in the same manner

PBO vs. ABO

- For non-level or pay-based formula, ASC-715 may result in PBO calculation reflecting benefits not yet earned
- In theory, this portion of the obligation (PBO benefit minus ABO benefit) is best modeled as a fixed benefit until it is earned and then variable thereafter
- Avoid this complication by using an ABO-type measure or valuing PBO-ABO in the same manner as ABO

Similar considerations for entry age normal (commonly used in public sector, although not necessarily for variable benefits)

Lump Sums

For plans subject to 417(e), key assumptions (interest and mortality) are specified

Plans with non-level annuities must specify an additional assumption

- Cost-of-Living Adjustment (COLA) (if applicable)
- Return for variable annuity benefit adjustment

Subject to the same standards applicable to general actuarial equivalence

Are 417(e) segment rates a reasonable assumption for this purpose?

- Individual annuity pricing and general economic arguments provide strong support
- Practice note includes an extensive list of pros and cons

Another option is to avoid offering lump sums in VAPs

Similar issues arise for plans that provide both variable and non-variable options

Variations on a Pure VAP

Common Variations

Some variations in VAP are close to the pure VAP and can be captured in annual gain/loss. Others introduce more significant features requiring alternative methods of valuation. Common variations are:

- Plan features for practical administration
- Combination with a traditional pension benefit
- Limits on benefit adjustments
- Investment strategies for the plan assets

Upcoming practice note: Difficult to value plan designs

- **Monthly benefit payments with adjustments**
  - Example: Return on assets or index determined annually and applied to the monthly benefit only once a year
  - Impact: Approximately ½ difference between return and hurdle rate
- **Adjustments after the end of the period**
  - Example: Return determined for a calendar year, but first benefit is adjusted March 1 of the following year
  - Benefits may or may not be retroactively adjusted
- **Valuation considerations:**
  - The plan sponsor bears the risk associated with these annual gains or losses.
  - The gains/losses could be quite substantial for large swings in return.
  - If the differences are anticipated, the actuary could adjust the liability, particularly for significant differences

Combination With Traditional Pension Benefit—Split

- **Design:** Benefits formula split (accrued partly as traditional, partly variable)
- **Example:** The benefit formula could accrue two parts:
  - 0.5% of final average salary in a traditional plan
  - 0.5% of salary to purchase credits in a variable annuity pension plan
- **Valuation considerations:**
  - Each piece could simply be valued separately, and liabilities combined for funding and accounting calculations
  - Is each benefit supported by a separate funds so the variable plan assets match those of the variable plan liabilities, and the return is linked to the assets supporting the variable benefit?

Combination With Traditional Pension Benefit—Legacy Benefit

- **Design:** Plan was changed from another formula to a VAPP
- **Example 1:** The previous plan was frozen (hard/soft), and the variable benefit is accruing going forward
- **Example 2:** The previous plan was grandfathered for existing employees, and the variable benefit is accruing for new hires
- **Valuation considerations:**
  - Each piece could be valued separately, and liability is the combination of the two for funding and accounting calculations
  - Is each benefit supported by a separate funds so the variable plan assets match those of the variable plan liabilities, and the return is linked to the assets supporting the variable benefit?

Combination With Traditional Pension Benefit—Floor

- **Design:** Benefits have a minimum formula benefit (or a maximum)
- **Example:** the benefit payable is the greater of the amount under each formula, not greater than the 415 limit:
  - 1% final average earnings traditional benefit
  - 1% of pay variable annuity pension plan
- **Valuation considerations:**
  - Valuing separately and looking for the greatest liability doesn't capture the asymmetry that the benefit can't be less than the largest benefit, but it can be more. Stochastic modeling would likely be needed to assess whether additional liability load is needed.
  - How are the benefits supported by the trust, is there a separate fund, and how does that correspond to the accruals for the VAPP portion?
- **Plan in action:** Wisconsin Retirement System

Combination With Traditional Pension Benefit—Fixed at Retirement

- **Design:** VAPP converting to a fixed income stream at retirement
- **Example:** Benefits are accrued as an active employee and vary through working years and prior to commencement (if terminated), at retirement the benefits are determined and fixed for the lifetime of the retiree
- **Valuation considerations:**
  - Non-commenced benefits can could be valued as a VAPP and commenced benefits (retirees) valued traditionally
  - Are benefits converted at par or based on market rates?
  - How are the benefits supported by the trust—is there a separate fund for retirees and the VAPP?
- **Plan in action:** Minneapolis Retail Meat Cutters and Food Handlers Pension Fund provides this as an alternative to the variable benefit (participant choice)

Limits on Benefit Adjustments

- **Design:** Stabilized VAPP where periodic adjustments are limited
- **Example:** A VAPP with 5% hurdle rate where the annual adjustments to benefits are limited:
  - Lower limit 0%
  - Upper limit 10%
- **Valuation considerations:**
  - Consider a load to a pure variable plan if return expectations are not symmetrical around 5% using stochastic modelling
  - How large are the limits? Is the plan closer to fixed or variable?
- **Plan in action:** Minneapolis Retail Meat Cutters and Food Handlers Pension Fund (UFCW, Local 663)

Limits on Benefit Adjustments—Stabilization Reserves

- **Stabilization reserve**
  - Separate account funded by the plan sponsor
  - Returns could be held in reserve a few ways (above maximum adjustment or between hurdle rates; e.g., no benefit adjustments between 4% and 6%)
  - When benefits are subsidized (hurdle rate floor is in effect), the funds in reserve are used to fund the increased benefits
  - The plan sponsor may need to fund the reserve initially or ad hoc, could be automatic, defined in the plan or bargained
  - Does the funding of the reserve and magnitude of liabilities impact the benefit adjustment?
- **Hypothetical reserve**
  - The same idea as above, only there is no real account
  - The plan definition can include the provisions to fund the account before benefits are allowed to increase again

Investment Strategies for the Plan assets

- **Design:** Separate funds for various groups
- **Example 1:** Active vs. retiree investment strategies
- **Example 2:** Participant choice of investment risk
- **Valuation considerations:**
  - Do the separate funds operate like separate VAPPs, each with their own hurdle rate/discount rate?
  - Are there any asymmetries that might require stochastic analysis and load to the valuation?

Questions?

Key References

Variable Annuity Plans Practice Note

Valuing Benefits Payable as a Lump Sum

Comment letter to FASB on future standard-setting agenda

Thank you for attending.

Contact: Craig Hanna, Director, Public Policy (hanna@actuary.org)
Devin Boerm, Deputy Director, Public Policy (boerm@actuary.org)
Matthew Sonduck, Assistant Director, Public Policy (sonduck@actuary.org)

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