



Article from
Risks & Rewards
April 2020



Investment Year Method: A Method to Align Renewal Credited Rates With Investment Strategy

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Interest rates cycle. Although they have been in decline for the past 40 years, they could rise in the future. One way to simplify the interest rate crediting process, making it transparent to policyholders, would be to follow a formulaic approach to setting rates tied to the investment strategy. A recent research paper¹ I wrote shows a method that can be defended as reasonable and equitable. There are others. There is no reason to reinvent the wheel when product designs can start with historical methods and improve them.

INTRODUCTION

Interest rate setting committees often set rates using rules of thumb, with little theoretical guidance about how renewal rates should be determined or transparency behind the actual process used. The method described here addresses a practical application of the investment year method (IYM) under various interest rate environments that is fair to both policyholder and insurer. It is meant to generate discussion about alternative methods to find one that works best for a specific situation. Insurance is a trust product, with consumers relying on insurers to treat them fairly, and credited rates are set prior to actual investment income being realized.

Aligning interest credited to policyholders with the investment income earned by a life insurer is a key component to meeting client expectations, but it is not straightforward. While the policyholder sees all of their premium included in the account value, whether life or annuity, the insurer has to borrow from surplus to pay initial expenses and set up capital. The statutory reserve requirements help by reflecting surrender charges, but an insurer generally makes an investment when a policy is sold. It gener-



ates profits on that investment through collecting charges from non-guaranteed elements like mortality, expenses and investment spread. Combined, they pay for death benefits, expenses, sales commissions, interest credited, capital charges and profit.

One method to set renewal credited rates is to formulaically estimate the asset rollover based on the needs of the liabilities using duration targets that vary based on year since issue. Since interest rates peaked in the early 1980s, the current generation of actuaries has no experience in a rising interest rate environment. Interest rate guarantees set in that era were often 4 percent or higher, and today's investments supporting these liabilities generally result in a credited rate tied to guarantees. Various methods have been used to adjust the credited rate over time. Most use formulas for guidance and are set by a committee. The experience gained from this process is less important when credited rates are already at the guaranteed rate, so this skill set is being lost.

THE BASICS OF THE INVESTMENT YEAR METHOD

Allocation of investment returns for non-guaranteed elements, such as dividends, or more complex products like universal life and indexed annuities, would follow the same general process, so the examples that follow will focus on non-participating

SPDA products as a simple example the practitioner can extend to other situations.

The IYM allocates premiums received from the policyholder into buckets that segment the cash based on when it was received. This approximates the actual times when assets are purchased that back the policy, providing intergenerational equity.

Traditionally, credited interest on account value (or participating) products was allocated using the portfolio method, taking the investment income from all general account assets and allocating it based on statutory reserves or some other metric. Often, an average reserve was calculated on a quarterly basis to allocate the earned investment income, and investment expenses and other charges were deducted using the same method. The metrics were converted to percentages for the administrative system to credit interest to individual policies.

The IYM for crediting strategy attempts to better align the amount credited to a client with the amount earned by the insurer. This is accomplished by developing a crediting strategy that is a proxy for the investment strategy. This method sets the credited rate in advance, often at the beginning of a policy year. This adds a layer of complexity over some group products that credit interest after the fact.

There are two general methods used to allocate investment income, and the terminology is also used for crediting interest to policyholders. The portfolio method uses the same rate across all policies backed by a set of assets, or a specific portfolio segment, independent of when the policy was purchased. All assets are grouped into one bucket. IYM aligns the income with a characteristic of the asset, generally when it was purchased. Liabilities are then mapped to these segments based on when premiums were received from a policyholder, forming buckets. Assets are then allocated to these buckets, representing the period when the original asset was purchased, even if a matured asset has been replaced. Buckets are rebalanced over time as net cash flows increase or decrease the policyholder's account value.

Account value products pass through net investment earnings to the consumer through the crediting rate methodology. This technique “unbundles” expense, risk and profit charges with the expectation of being equitable to the policyholder. Insurers will often include a distinct mortality charge for a life insurance policy and a spread fee charged in basis points,² a per-policy fee or per-thousand-of-face-amount fee to cover other expenses and risk charges. The policy is priced to meet a hurdle rate return on investment that incorporates the cost of holding capital. The methods described can be extended to variable and fixed indexed products, but the reader is left to contemplate those products once they have the basics of general account products in hand. Since the credited rate must be set in advance, an insurer will create consensus about initial and renewal credited rates using an interest rate setting committee composed of product managers,

investment professionals and often representatives of the corporate staff involved in asset-liability management. Actuaries may participate in various roles. Membership may be driven by logistical factors like the area responsible for implementing the credited rates into the administrative system. While these decisions often require negotiation between competing incentives, a team providing a place to start based on thorough modeling of various options can influence the process using logic and transparency. From there, competitive pressures may force the process to deviate from a theoretical basis.

SPDA EXAMPLE

The example shown in Figure 1 (page 3) is designed to highlight the methodology and not to be typical of the current or any prior market. An investment strategy builds from the risk-free rate, generally a constant maturity treasury (CMT), with a credit spread reflecting assets expected to be purchased and a deduction for the pricing spread to cover expenses and profits. Note that the CMT rates have been chosen to be far apart to better teach the method presented.

The new money supportable rate = five-year CMT + 80 bp credit spread for AA bonds – 140 bp pricing spread (round to near 25 bp).

If the five-year CMT at issue was 7.00%, then

New money supportable rate = 7.00% + .80% – 1.40% = 6.40% (rounded to 6.50%).

The renewal supportable rate = three-year CMT + 80 bp spread for AA bonds – 140 bp pricing spread (round to near 25 bp).

If the three-year CMT is 2.85%, then

Renewal supportable rate = 2.85% + .80% – 1.40% = 2.25%.

For each year since issue, a model determines the duration of the liability which has aged to that point (these can be set at issue or developed annually if results are expected to vary). A weighted average of the current credited rate and the renewal supportable rate for the following year is used to set the credited rate for year two:

- Current credited rate 6.50%, set at issue as described above
- Duration of liability after one policy year = 3.4
- Duration of liability after two policy years = 3.1
- Duration of liability after three policy years = 2.8
- Duration of liability after four policy years = 2.5
- Duration of liability after five policy years = 2.2
- Duration of liability after six policy years = 1.8
- Duration of liability after seven policy years = 1.6
- Interest rate guarantee = 1.5%

Calculations for the weighted average of the current credited rate and renewal supportable rate are shown in Figure 1.

$$\text{Year two credited rate} = \left\{ \text{Current credited rate} \times \left[1 - \left(\frac{1}{2 \times D_1} \right) \right] + \text{Supportable renewal credited rate} \times \left(\frac{1}{2 \times D_1} \right) \right\}$$

where D_1 is the duration of the liability after one policy year

$$= \left\{ 6.50\% \times \left[1 - \left(\frac{1}{2 \times 3.4} \right) \right] + 2.25\% \times \left(\frac{1}{2 \times 3.4} \right) \right\}$$

$$= 6.50\% \times .85 + 2.25\% \times .15 = 5.86\%, \text{ which rounds to } 5.75\%.$$

Year three credited rate =

$$= \left\{ 5.75\% \times \left[1 - \left(\frac{1}{2 \times 3.1} \right) \right] + 2.25\% \times \left(\frac{1}{2 \times 3.1} \right) \right\}$$

$$= 5.75\% \times .84 + 2.25\% \times .16 = 5.19\%, \text{ which rounds to } 5.25\%.$$

Initial rounded results (constant three-year CMT after year one) for renewal credited rate starting with year two are 5.75%, 5.25%, 4.75%, 4.25%, 3.75%, 3.25% and 3.00%.

Interpretation:

- Rates earned by new purchases in this example have fallen 4.15% since issue (from 7.80% to 3.65%).
- Rates earned by the assets drop 75 bp, then 50 bp per year for five years, then 25 bp.
- Rates are still above the interest rate guarantee of 1.5%.

- Rates are still above the supportable renewal rate of 2.25%.

CONCLUSION

At some point conditions will change and insurers will revisit their approach to setting renewal credited rates. This method provides a perspective that can easily be defended theoretically if used directly, and provides a useful starting point in any case. By providing a proxy to the investment strategy the policyholder should feel they are being treated fairly when buying a contract that promises to pass through the investment results. ■



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ENDNOTES

- 1 <https://www.soa.org/resources/research-reports/2019/investment-year-method/>
The accompanying spreadsheet on the SOA website can be studied or modified for other examples.
- 2 One basis point (bp) is the same as .01%; this terminology is typically preferred by investment professionals. These fees are charged based on the account value in an individual policy.

Figure 1
Example 1 Weighted Average of Current Credited Rate, Renewal Supportable Rate Calculations

Renewal Crediting Strategy	Supportable rates	5 yr CMT	AA spread	Pricing spread	Supportable rate			
New Money		3.00	0.80	1.40	2.40			
Output items	Renewal	2.25	0.80	1.40	2.25			
Renewal credited rates utilizing effective duration to weight	End of Year	1	2	3	4	5	6	7
Renewal Rate weighting	Duration	3.4	3.1	2.8	2.5	2.2	1.8	1.6
	Assumed Rollover	15%	16%	18%	20%	23%	28%	31% (inverse of 2x duration)
Renewal supportable rate	Current Credited Rate	2.25	2.25	2.25	2.25	2.25	2.25	2.25
	Recommended Renewal Rate (before rounding)	6.50	5.86	5.82	5.74	5.65	5.52	5.31
		6.25	5.65	5.61	5.53	5.45	5.33	5.13
		6.00	5.44	5.40	5.33	5.25	5.14	4.95
		5.75	5.23	5.19	5.12	5.05	4.95	4.77
		5.50	5.01	4.98	4.92	4.85	4.75	4.59
		5.25	4.80	4.77	4.71	4.65	4.56	4.41
		5.00	4.59	4.56	4.51	4.45	4.37	4.23
		4.75	4.38	4.35	4.30	4.25	4.18	4.05
		4.50	4.16	4.14	4.10	4.05	3.98	3.87
		4.25	3.95	3.93	3.89	3.85	3.79	3.69
		4.00	3.74	3.72	3.69	3.65	3.60	3.51
		3.75	3.53	3.51	3.48	3.45	3.41	3.33
		3.50	3.31	3.30	3.28	3.25	3.21	3.15
		3.25	3.10	3.09	3.07	3.05	3.02	2.97
		3.00	2.89	2.88	2.87	2.85	2.83	2.79
		2.75	2.68	2.67	2.66	2.65	2.64	2.61
		2.50	2.46	2.46	2.46	2.45	2.44	2.43
		2.25	2.25	2.25	2.25	2.25	2.25	2.25
		2.00	2.04	2.04	2.05	2.05	2.06	2.07
		1.75	1.83	1.83	1.84	1.85	1.87	1.89
		1.50	1.61	1.62	1.64	1.65	1.67	1.71
		1.25	1.40	1.41	1.43	1.45	1.48	1.53
		1.00	1.19	1.20	1.23	1.25	1.29	1.35
		0.75	0.98	0.99	1.02	1.05	1.10	1.17
		0.50	0.76	0.78	0.82	0.85	0.90	0.99
		0.25	0.55	0.57	0.61	0.65	0.71	0.81
Resulting credited interest rates		6.50	5.75	5.25	4.75	4.25	3.75	3.25
								3.00

not adjusted for guaranteed rate of 1.5%