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How to Inflation-Proof Variable Annuity Portfolios

By Jim Otar, CMT, CFP
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A variable annuity—even with guaranteed minimum withdrawal benefits—won't fully protect your clients' purchasing power. You'll need to add another "bucket" to the portfolio to moderate inflation risk.

There are three main risk factors in retirement planning: longevity risk, market risk, and inflation risk. These create the time value of fluctuations that can wreak havoc with retirees' income portfolios.

- **Longevity risk.** This comes into the picture when a retiree lives "too long." The mortality tables indicate the percentage of survivability for each age. One way to account for this risk is to enter an age of death where the probability of survivability does not exceed 15% at that age—which means 95 is a prudent age of death for most retirement plans you prepare.

- **Market risk.** Market risk quantifies the probability of portfolio depletion by the age of death. Make sure that this risk does not exceed 10%. Otherwise, irreversible calamities can happen. If the market risk is over 10%—even just marginally—an exponentially higher level of genius or luck is required to recover even from a routine Gaussian correction.

- **Inflation risk.** Inflation risk refers to the ability of maintaining the purchasing power. My limit is 10%, i.e., the purchasing power must stay above 90% of the requested amount. This becomes important when we talk about variable annuities, variable-pay annuities, or index-linked annuities.

A retirement plan must meet all three criteria to be considered a well-designed plan.

Variable annuities with guaranteed minimum withdrawal benefits (VAGW) cover the first two risks: they eliminate market and longevity risk. The remaining risk to moderate is inflation risk.

Inflation risk

Let's look at inflation risk. First of all, ignore all the sales mantras you might hear at conferences such as "step-up resets provide inflation protection." This is just a myth. Resets do not provide sufficient inflation protection.

Let's continue an example from an earlier article "How Variable Annuity Benefits Curb Risk in Retirement Portfolios." Bob, 65, is just retiring. He buys a VAGW for $100,000 that

guarantees 5% withdrawal or $5,000 for life. His contract allows him annual resets until age 95. The asset mix is 80% S&P 500 index and 20% fixed income. Because we are using actual market history for our calculations, let's have him retire at the beginning of 1949.

We know that Bob's guaranteed income at age 65 is $5,000. Let's calculate his income at age 95 for each year of retirement since 1900 with all his resets. Separately, using historic inflation rates, let's calculate the inflation-adjusted value of the $5,000 at age 95 for each year of retirement since 1900. This is the required income to maintain the purchasing power of the initial $5,000.

Table 1 indicates the results and the corresponding shortfall.

Table 1: Comparing Guaranteed Income vs. Real Purchasing Power

Retirement year	Income in the final year	Required income in the final year	Shortfall
1900	$5,826	$11,379	49%
1901	$5,367	$10,590	49%
1902	$5,000	$10,179	51%
1903	$5,000	$8,697	43%
1904	$6,351	$7,608	17%
1905	$5,455	$7,484	27%
1906	$5,000	$7,784	36%
1907	$5,000	$7,744	35%
1908	$6,337	$7,446	15%
1909	$5,217	$7,998	35%
1910	$5,000	$7,214	31%
1911	$5,000	$6,9131	28%
1912	$5,000	$7,573	34%
1913	$5,000	$7,812	36%
1914	$5,000	$8,605	42%
1915	$5,769	$8,630	33%
1916	$5,012	$8,630	42%
1917	$5,324	$7,833	32%
1918	$8,442	$7,833	-
1919	$8,204	$7,078	-
1920	$7,765	$5,682	-
1921	$10,083	$6,025	-
1922	$10,274	$6,957	-
1923	$9,088	$6,355	-
1924	$9,593	$6,752	-
1925	$8,617	$6,954	-
1926	$7,761	$5,996	-

1927	$7,746	$6,596	-
1928	$6,449	$6,205	-
1929	$5,000	$6,833	27%
1930	$5,000	$6,996	29%
1931	$5,000	$7,318	32%
1932	$7,340	$9,165	20%
1933	$8,844	$11,024	20%
1934	$6,609	$10,136	35%
1935	$7,818	$9,987	22%
1936	$5,851	$9,696	40%
1937	$5,000	$9,562	48%
1938	$5,160	$10,716	52%
1939	$5,000	$11,346	56%
1940	$5,836	$12,664	54%
1941	$7,909	$13,356	41%
1942	$9,817	$12,833	24%
1943	$9,339	$12,162	23%
1944	$8,592	$12,209	30%
1945	$8,120	$12,973	37%
1946	$6,677	$14,255	53%
1947	$8,791	$12,903	32%
1948	$9,583	$12,441	23%
1949	$9,817	$12,888	24%
1950	$9,547	$14,349	33%
1951	$8,274	$13,549	39%
1952	$7,786	$14,483	46%
1953	$7,659	$17,602	56%
1954	$8,268	$12,593	34%
1955	$6,519	$14,368	55%
1956	$5,710	$12,631	55%
1957	$5,868	$13,894	58%
1958	$6,723	$19,434	65%
1959	$5,452	$19,930	73%
1960	$5,524	$20,459	73%
1961	$5,792	$20,177	71%
1962	$5,095	$22,237	77%
1963	$6,001	$22,632	73%
1964	$5,435	$22,922	76%
1965	$5,137	$22,695	77%
1966	$5,000	$23,490	79%

1967	$5,699	$23,263	76%
1968	$5,098	$23,331	78%
1969	$6,007	$22,663	73%
1970	$10,812	$21,681	50%
1971	$12,494	$21,086	41%
1972	$11,971	$20,759	42%
1973	$11,081	$20,398	46%
1974	$17,153	$19,272	11%
1975	$24,326	$17,487	-
1976	$20,056	$16,898	-
1977	$18,059	$16,656	-

Source: Otar & Associates

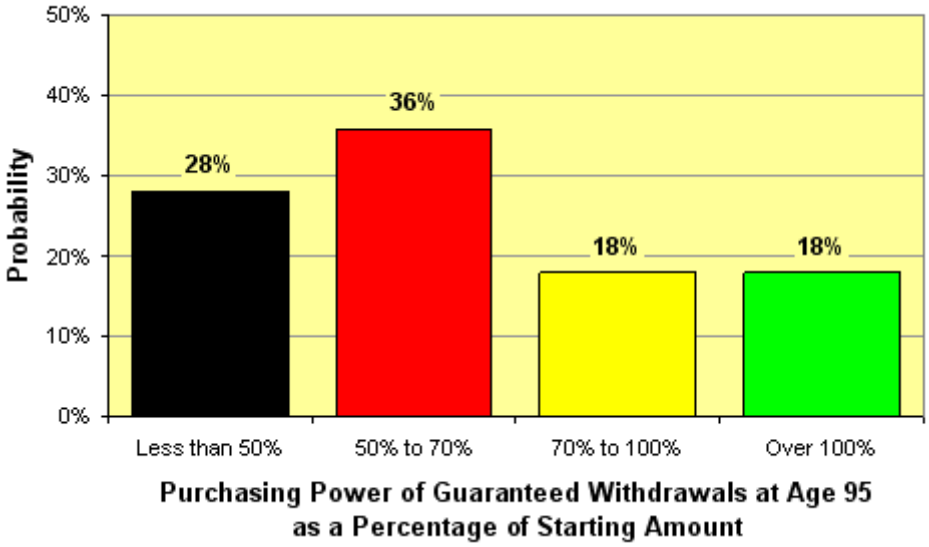
Figure 1 below depicts the real purchasing power for all retirement years since 1900 graphically. It is interesting to note that once the deflationary period that followed the market crash of 1929 disappeared, the step-up resets were unable to increase the income sufficiently to keep up with inflation until mid-1970. And the trend is heading down although we will have to wait another year or two to confirm that.

Figure 1: Percent Income in Real Dollars at Age 95

Source: Otar & Associates

Figure 2 depicts the probabilities in various ranges. For example, there is a 28% chance that the purchasing power at age 95 is less than 50% of the starting amount at age 65. Another example: there is an 82% chance that the purchasing power is less than the starting amount (calculated as 28% + 36% + 18%) at age 95.

Figure 2: Purchasing Power of Guaranteed Withdrawals at Age 95



Source: Otar & Associates

It should be clear by now that inflation risk is not handled well in the VAGW world. Write on a piece of paper in 96-point font size "I understand that withdrawals will not keep up with inflation" and have your client sign it and someone witness it. You, or your firm, will be glad that you did in the not-so-distant future.

Eliminating inflation risk

We know now that VAGW has a shortcoming when it comes to eliminating the inflation risk. Is there a practical way of going around it? Yes.

If you hold a VAGW and need full inflation protection, then you need to have a separate investment portfolio—a separate "bucket." This bucket has only one purpose: it provides the funds to cover any loss of purchasing power from the VAGW payments. Table 2 depicts the approximate size of this separate investment account. The figures are based on actual market history since 1900.

Table 2: Size of Portfolio Needed to Cover Loss of Purchasing Power

Time horizon	Investment portfolio required as the percentage of the VAGW
40 years	65%
30 years	50%
20 years	35%
10 years	13%

Note: The asset mix of the investment portfolio is 50% S&P 500 index and 50% fixed income. Equity: Alpha: 2%, expenses 2%. Fixed Income: Net yield 6-month CD interest rate plus 0.5%. This table applies only when the VAGW payments are guaranteed for life and they are 5% of the guaranteed withdrawal base.
Source: Otar & Associates

Going back to Bob's example, he has a 30-year time horizon (age 65 to 95). He needs $5,000 a year at age 65. He is buying a VAGW for $100,000. He wants full inflation protection. Therefore, he must also have a separate investment portfolio, which is worth 50% of his VAGW, or $50,000. The combined income from the VAGW and this portfolio should provide Bob with lifelong, fully-indexed income.

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