

## Variable Annuities – Part 3 of 5

*Variable annuities with Guaranteed Minimum Withdrawal Benefits (GMWB) are making inroads to Canadian retirement planning. Here is a synopsis of facts about them based on market history.*

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In my previous article, we looked at an example of how a Variable Annuity with Guaranteed Minimum Withdrawal Benefits (which I called VAG) can help when market conditions are adverse.

Let's continue with Bob's example from Part 2. This table indicates the outcome, if Bob were to retire in 1931.

Year	Age	Contract Balance <sup>4</sup>	Guaranteed Withdrawal Balance	Withdrawal	Rider cost per year <sup>1</sup>	Cumulative rider cost <sup>2</sup>	Cumulative benefit <sup>2,3</sup>
Start		\$300,000	\$300,000				
1931	65	\$190,094	\$300,000	\$15,000	\$3,000	\$3,120	\$0
1932	66	\$140,128	\$300,000	\$15,000	\$2,051	\$5,378	\$0
1933	67	\$174,629	\$300,000	\$15,000	\$1,551	\$7,206	\$0
1934	68	\$154,755	\$300,000	\$15,000	\$1,896	\$9,467	\$0
1935	69	\$164,194	\$300,000	\$15,000	\$1,698	\$11,611	\$0
1936	70	\$180,259	\$300,000	\$15,000	\$1,792	\$13,939	\$0
1937	71	\$123,209	\$300,000	\$15,000	\$1,953	\$16,527	\$0
1938	72	\$109,980	\$300,000	\$15,000	\$1,382	\$18,625	\$0
1939	73	\$94,196	\$300,000	\$15,000	\$1,250	\$20,670	\$0
1940	74	\$61,288	\$300,000	\$15,000	\$1,092	\$22,633	\$0
1941	75	\$40,836	\$300,000	\$15,000	\$763	\$24,331	\$0
1942	76	\$27,017	\$300,000	\$15,000	\$558	\$25,885	\$0
1943	77	\$15,415	\$300,000	\$15,000	\$420	\$27,358	\$0
1944	78	\$1,599	\$300,000	\$15,000	\$304	\$28,768	\$13,937
1945	79	\$0	\$300,000	\$15,000	\$166	\$30,092	\$30,094
1946	80	\$0	\$300,000	\$15,000	\$20	\$31,316	\$46,898
1947	81	\$0	\$300,000	\$15,000	\$0	\$32,569	\$64,374
1948	82	\$0	\$300,000	\$15,000	\$0	\$33,872	\$82,549
1949	83	\$0	\$300,000	\$15,000	\$0	\$35,227	\$101,451
1950	84	\$0	\$300,000	\$15,000	\$0	\$36,636	\$121,109
1951	85	\$0	\$0	\$0	\$0		
1960	94	\$0	\$0	\$0	\$0		

- Notes:
1. The cost of guarantees (GMWB, death, principal) is calculated as 1% of the contract value at the start of the year.
  2. Each year's annual rider cost is compounded by 4% annually to bring to present value at expiry.
  3. If the contract balance is larger than the annual payment amount then there is no benefit of guarantee. Otherwise, the annual benefit is his guaranteed payments less the contract balance.
  4. The asset mix is 80% SP/TSX index and 20% fixed income.  
Equity: alpha: 1%, MER 3%. Fixed Income: net yield 6-month CD interest rate

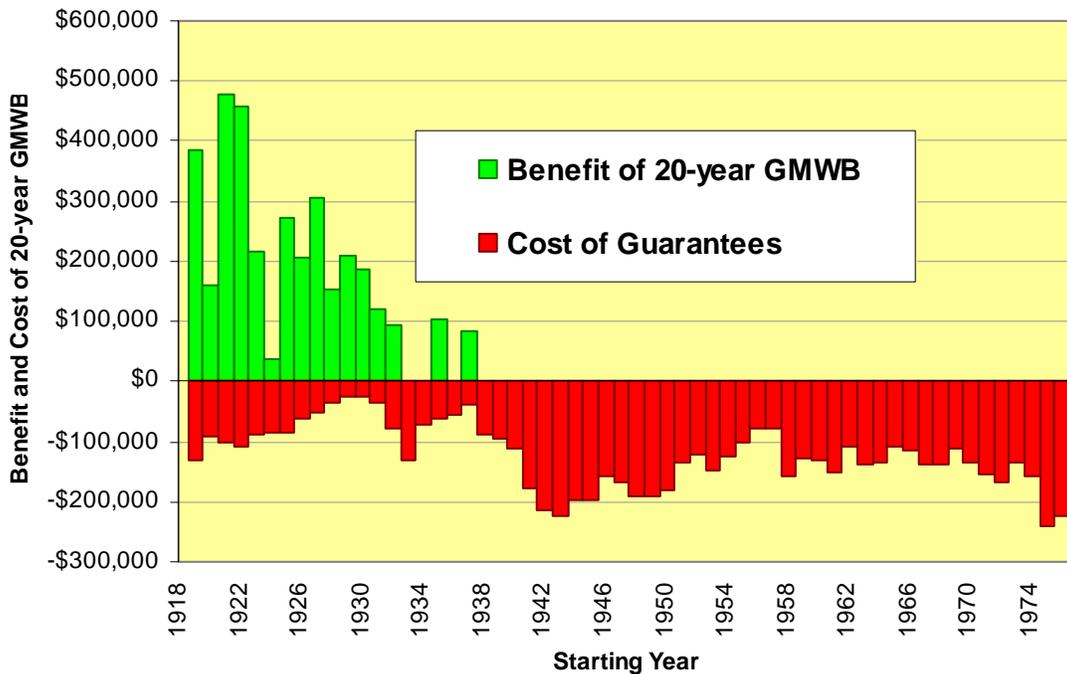
Obviously, 1931 was a bad year to retire. Bob was hit with a loss right off the gate, so there was never an opportunity for a step-up reset, ever. His portfolio ran out of money at age 79. Nevertheless, his minimum withdrawal guarantee provided him with income until age 85. His total cost for the guarantee was \$36,636. His total benefit, the dollar amount of payments he received because of the guarantee, was \$121,109. In this case, the GMWB rider was well worth buying, he got back 231% return on his cost!

However, the important question still remains: Did this solve Bob’s problem?

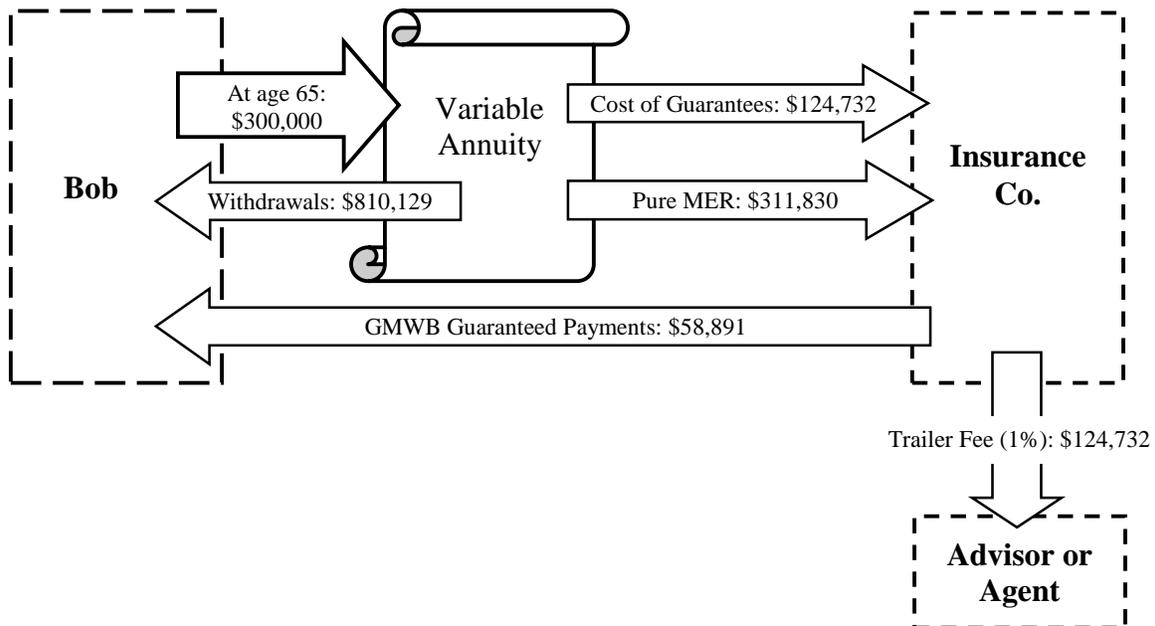
Let’s look at the bigger picture: There are three main risk factors in retirement planning: Longevity Risk, Market Risk and Inflation Risk. In the short term, inflation risk is less important than running out of money completely. Therefore, we will look at the inflation risk later. Did the VAG remove the longevity and the market risks? The answer is a profound “No!” Bob is still alive and kicking and he has no money after age 84.

If Bob were to retire in 1949, he would be lucky. If Bob were to retire in 1931, he would be unlucky. The main purpose of retirement planning is reducing the luck factor to an acceptable level. So, we need to look at the entire market history and quantify the luck factor in Bob’s retirement planning.

We repeat the same process for all years since 1919; the earliest year of available data for the SP/TSX index. The chart shows the outcome, the cost and the benefit of the 20-year guaranteed withdrawals:



For Bob's example, the average cost of the guarantees for all years of retirement since 1919 was \$124,732 and the benefit was \$58,891. Since 1938, the cost of guarantees was \$149,855 and the average benefit was \$0. The following diagram shows the average money flow for all years since 1919:



Historically, there was 47% chance that Bob would have no income by age 95. I can just see 20 years from now, destitute retirees with nothing to lose, knocking on insurance companies' doors: "When my advisor sold me this product 20 years ago, he told me that the withdrawals are guaranteed and markets go up in the long term!" Some of them might even have kept their advisor's scribbles and notes. Do you still remember the infamous "Vanishing Premium" scandals of the 1980's?

What if the guarantee term were for life (which is the norm for VAG products in the US) instead of just 20 years? It makes a huge difference. While the guarantee for life eliminates the longevity and the market risks, the 20-year guarantee falls far short of it.

In conclusion, I will definitely wait until withdrawal guarantee for life is available in Canada because I don't want to waste my clients' money. If you still want to sell the VAG with a 20-year guarantee term, print on a piece of paper in 96-point font size "I understand that withdrawals are guaranteed for 20 years only." and let your client sign it and someone witness it. You, or your firm, will be glad that you did so in about 20 years from now.

I will deal with the inflation risk in Part 4. Are you ready for another can of worms?

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