

Variable Annuities: From Controversial to Mainstream Using a Two-Bucket Strategy, Part 1

by Ty A. Bernicke, CFP®

Executive Summary

- This two-part article challenges conventional wisdom that suggests investors allocate their portfolio with lower-cost investment products that diversify unwanted stock market risk by allocating monies to fixed accounts and bonds.
- This article systematically back tests an alternative two-bucket strategy that shifts a portion of an investor's stock market risk for an extra cost to a variable annuity with lifetime withdrawal benefits.
- After back testing the two-bucket strategy with variable annuity against a lower-cost traditional mutual fund strategy over every 30-year time horizon from 1926 through 2004, the study found that the two-bucket strategy achieved approximately 18 percent higher average income and approximately 369 percent greater average inheritance with the assumptions tested.
- These findings might alleviate part of the negative stigma surrounding variable annuities based on previous controversial benefits which many people, including financial planners, feel do not justify the extra costs.
- This research introduces an alternative strategy that investors and advisors can use to transfer stock market risk, which could help maximize income and leave a larger inheritance for one's beneficiaries.
- The study and its findings are presented in two parts. Part 1 introduces and describes the general philosophies surrounding the mutual fund approach and the two-bucket strategy. It also sets specific rules and definitions surrounding the research. Part 2 illustrates the results of the study, further implications, and research limitations.

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The number one financial concern afflicting baby boomers is running out of money during retirement.¹ The variable annuity industry has responded to this concern by creating a new generation of variable annuities guaranteeing investors an income stream over their lifetime. Over 80 percent of the \$131.7 billion in 2005 variable annuity sales offered some sort of guaranteed income/withdrawal benefit.² This increasing sales volume is due in part to certain advisors with which popularity of variable annuities has grown, but the growth in sales still substantially lags behind the growth in mutual funds. Despite the fact sales volume is increasing, variable annuities have yet to be embraced by the mainstream financial media, the public, or a significant portion of financial advisors. Past and current perceptions conclude that the extra costs of these products do not justify the benefits gained.

The negative stigma surrounding variable annuities seems to center on controversial death benefits, high expenses, and questionable tax deferral advantages rather than the new lifetime income guarantees. Critics historically have made compelling arguments suggesting that alternative strategies were less expensive and more effective at providing death benefit guarantees and tax efficiency. Professional research seemed to back these findings. One such study that gained a significant amount of national media attention was published in the 2001 Journal of Risk and Insurance by Steven Posner and Moshe Milevsky. This research indicated that variable annuity death benefits were overpriced for many investors.³

Recently Milevsky, a self-proclaimed variable annuity critic, shared his opinions on his latest research regarding the new generation of variable annuities that provide guaranteed living benefit riders. In the article he states, "I'm not even sure these instruments deserve the old (and maligned) name of variable annuities." He also states, "Regardless of what you want to call these increasingly heterogeneous products, it seems the relative value pendulum has swung in the opposite direction. I can no longer claim that you are being overcharged for these guarantees or that you can achieve similar goals at a lower cost." Based on his own research, Milevsky even expresses concern that the current guaranteed living benefit riders may not be priced high enough to hedge the level of risk the insurance companies are incurring.⁴

Will Extra Earnings Exceed Extra Costs?

For a shift to occur in the perceived value of these products, investors need substantial evidence that the higher fees are reasonable in relation to the benefits gained. In general, higher fees would lead investors to believe they will have less to spend in the future. On closer analysis, this would be true—unless the added protection provided by the higher fee enables investors to allocate their portfolio in a manner where earnings could exceed the extra costs incurred. The following research is predicated on the basis that it is reasonable to assume that investors receiving a guaranteed lifetime income stream would be willing to take a larger stock position within their portfolio. Using a technical approach, this study back tests a higher-cost variable annuity strategy against a lower-cost mutual fund strategy. The two strategies differ in the way risk is mitigated.

The lower-cost mutual fund strategy used in this study avoids a hypothetical investor's unwanted stock market risk by increasing the portfolio's allocation to bonds and fixed investments. This technique is referred to as the traditional mutual fund strategy. The study compares this technique with the higher-cost variable annuity strategy. The variable annuity technique shifts a portion of a hypothetical investor's unwanted stock market risk to an insurance company by using a portion of the investment dollars to buy a variable annuity with lifetime withdrawal benefits (LWB), which guarantee the investor income over their entire life. The study assumes that this guaranteed income stream would enable the investor to comfortably allocate a higher percentage of their portfolio to stocks while still investing within their risk tolerance. The study seeks to determine a measurable way to compare if this higher-cost variable annuity strategy has the potential to provide greater income and total wealth accumulation than the traditional mutual fund strategy.

The variable annuity strategy created is referred to as the "two-bucket strategy." This strategy uses two independent investments. One is a variable annuity that carries a guaranteed minimum withdrawal benefit for life. This portion represents 80 percent of the two-bucket strategy and is referred to as the *LWB bucket*. One significant disadvantage of variable annuities offering lifetime withdrawal benefits is the inability to allow for inflation adjustments to meet an investor's income stream. For this reason, a second bucket was established to create flexibility which can help accommodate inflationary pressures. This secondary investment is referred to as the *flex bucket*. The flex bucket comprises the remaining 20 percent of the two-bucket strategy and is diversified into hypothetical stock and bond mutual funds. This bucket gives the investor the ability to withdraw a more consistent income stream by accommodating for inflation protection on both buckets.

Establishing the Program

To create measurable results for this study, a program was created to back test the two strategies over every 30-year time horizon from 1926 through 2004. The year 1926 was selected because reputable data were able to be acquired on investment returns starting at that time. A 30-year time horizon was selected, as it seems a reasonable length of time that many investors could expect to live throughout their retirement years. The program calculates the total amount of income and wealth accumulation generated on a \$500,000 initial investment for both strategies during every 30-year time horizon from 1926 to 2004.

Since today's version of variable annuity products did not exist in 1926, several assumptions were necessary to give a reasonable portrayal of what may have happened had these products existed in the past. Knowing the hypothetical investor has \$500,000 to invest at the onset of retirement, the amount of income the investor could reasonably withdraw from either strategy in hopes of having money last for the duration of their 30-year retirement also had to be defined. The withdrawal technique selected for this study's comparison was the sustainable withdrawal rate.

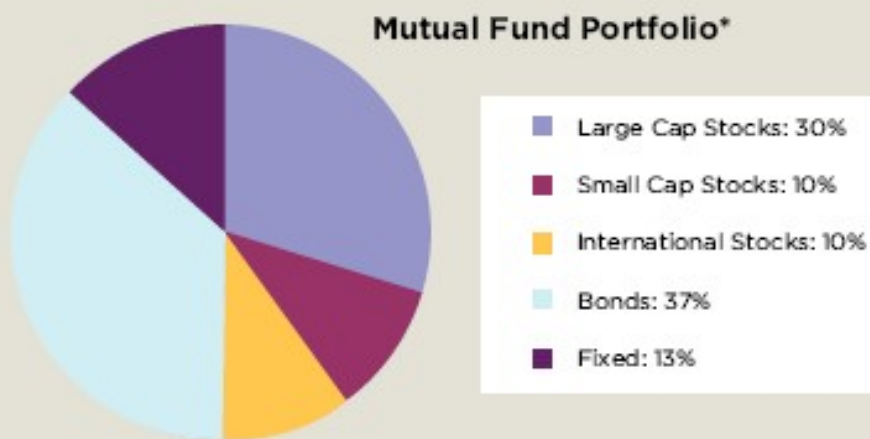
The sustainable withdrawal rate selected attempts to resemble other popular income planning benchmarks derived from previous studies. For the study, a 5 percent initial withdrawal rate was chosen as it falls within the 3–6 percent range that various research has suggested has a high probability of a success over a 30-year time horizon. Previous studies include, but are not limited to, the work of T. Rowe Price,⁵ Jonathan T. Guyton,⁶ and William P. Bengen.⁷ Each of these previous studies applied specific decision rules that were required to be followed to achieve a sustainable withdrawal rate. This paper also applies specific decision rules which are discussed in more detail later.

Establishing the Portfolios

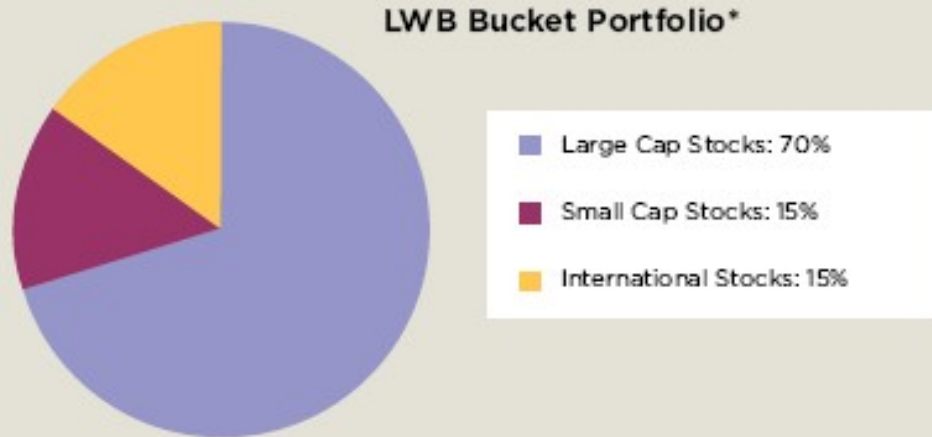
This study also defined portfolio allocations. This proved to be a daunting task because optimal portfolio allocations for a traditional mutual fund strategy vary depending on the investment allocation software used. Morningstar® Advisor WorkstationSM and SunGard® PlanningStationTM were selected to determine optimal portfolio allocations because these programs are widely used by many financial advisors when determining appropriate asset allocations for clients. Both SunGard and Morningstar provide questionnaires to help gauge an investor's risk tolerance. The questionnaires used to determine optimal portfolio allocations were answered in a manner consistent with a retired 62-year-old investor with a moderate risk tolerance seeking to maximize income during the investor's retirement years.

Each of the programs recommended similar portfolio allocations for the hypothetical investor. Due to limitations on the historical data of the specific asset classes recommended, the portfolios used were simplified into broad asset classes. The asset classes selected closely resemble the questionnaires suggested portfolio allocations. Figure 1 shows the traditional mutual fund strategy portfolio allocation, while Figures 2 and 3 show the two-bucket strategy portfolio allocations for the LWB bucket and the flex bucket, respectively.

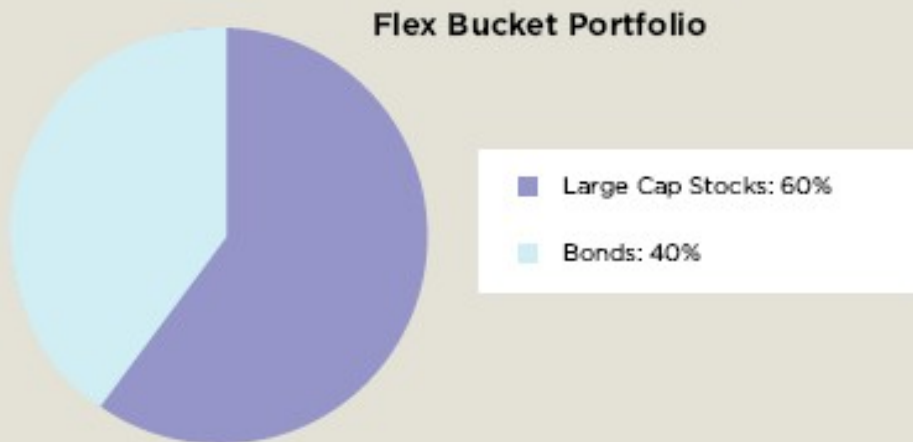
Figure 1: Traditional Mutual Fund Strategy Portfolio Allocation



*For the traditional mutual fund strategy, the 1.2 percent expense ratio reduction of index returns was not subtracted from the Thomson U.S. All Non-U.S. Equity Mutual Funds Index. The expense reduction was avoided because it was assumed that, as the name implies, this is an index of all non-U.S. mutual funds. Being a mutual fund index, it is assumed that an expense ratio has already been incorporated into the returns of the index. For this same index used within the LWB bucket, 1.3 percent was subtracted from the index returns. This is the difference of the typical expense reduction (2.5% - 12%) used in the study as a result of the additional expense incurred for the variable annuity.

Figure 2: Two-Bucket Strategy LWB Bucket Portfolio Allocation

*For the traditional mutual fund strategy, the 1.2 percent expense ratio reduction of index returns was not subtracted from the Thomson U.S. All Non-U.S. Equity Mutual Funds Index. The expense reduction was avoided because it was assumed that, as the name implies, this is an index of all non-U.S. mutual funds. Being a mutual fund index, it is assumed that an expense ratio has already been incorporated into the returns of the index. For this same index used within the LWB bucket, 1.3 percent was subtracted from the index returns. This is the difference of the typical expense reduction (2.5% - 1.2%) used in the study as a result of the additional expense incurred for the variable annuity.

Figure 3: Two-Bucket Strategy Flex Bucket Portfolio Allocation

The traditional mutual fund portfolio allocation shown in Figure 1 was designed to replicate the broad asset allocations suggested by Morningstar Advisor Workstation and SunGard PlanningStation. This allocation is designed to be similar to the traditional mutual fund strategy used by many investors in or nearing retirement.

Figure 2 shows the hypothetical variable annuity with the lifetime withdrawal benefits portfolio allocation invested exclusively in stock subaccounts. This variable annuity was invested exclusively in stock subaccounts under the assumption that the investor was willing to take additional stock market risk because of the income security gained by transferring a portion of this risk to an insurance company via lifetime withdrawal benefits. Additionally, this research assumes that the variable annuity company allows the hypothetical investor to allocate 100 percent of their portfolio to stocks. (Although there are several companies that would allow this type of allocation, certain variable annuities have restrictions on investment allocations.)

Figure 3 shows the flex bucket's mutual fund portfolio allocation. The split between stocks and bonds was selected because it seems a reasonable allocation for the timing, size, and frequency of withdrawals that will be taken from this bucket. For both the LWB bucket and the flex bucket, there is no way to gauge an investor's risk tolerance for this approach to investing, as each investor would likely view the added security of the two-bucket strategy differently. As a result, these portfolios are a speculation of what a reasonable allocation might be for the hypothetical investor.

Due to historical constraints in creating the portfolios, modifications were necessary to provide longevity for this study. One constraint occurred from 1926 to 1953 due to the inability to acquire historical data for an international index during that time for the traditional mutual fund strategy portfolio and the LWB bucket portfolio. During this time, large cap stocks were substituted for international stocks until 1954. From 1954 through 1969, the Thomson U.S. All Non-U.S. Equity Mutual Fund index was used. From its inception in 1970 through 2004, the MSCI/EAFE index replaced the Thomson index, as it has become widely recognized as a measure of stock performance for developed international markets.

Incorporating Returns, Inflation, and Expenses Data

To compare the traditional mutual fund strategy with the higher-cost two-bucket strategy, the study incorporated investment returns, inflation, and expense data. Investment returns were represented by several indices acquired from Ibbotson & Associates, a unit of Morningstar, Inc., and Thomson as shown in Table 1.

Table 1: Investment Return Data Sources

Index Data Used	Years Index Used
Large-Cap Stocks: Ibbotson S&P 500	1926-2004
Small-Cap Stocks: Ibbotson U.S. Small Stock	1926-2004
International Stocks: Thomson U.S. All Non-U.S. Equity MF Index*	1954-1969
International Stocks: Ibbotson MSCI EAFE	1970-2004
Bonds: Ibbotson U.S. Long Term Government Bonds	1926-2004
Fixed: Ibbotson U.S. 30-day Treasury Bills	1926-2004

*For the traditional mutual fund strategy, the 1.2 percent expense ratio reduction of index returns was not subtracted from the Thomson U.S. All Non-U.S. Equity Mutual Funds Index. The expense reduction was avoided because it was assumed that, as the name implies, this is an index of all non-U.S. mutual funds. Being a mutual fund index, it is assumed that an expense ratio has already been incorporated into the returns of the index. For this same index used within the LWB bucket, 1.3 percent was subtracted from the index returns. This is the difference of the typical expense reduction (2.5% - 1.2%) used in the study as a result of the additional expense incurred for the variable annuity.

Table 1 highlights the specific indices along with the corresponding years each was used for the portfolio allocations. The investment returns provided by these indices help illustrate the market conditions that a 62-year-old investor may have experienced during each 30-year time horizon since 1926. Although future market conditions will likely vary from historical returns, history helps determine many of the popular strategies used by investors and advisors today. History also educates investors about the potential risks and rewards that may occur with various strategies during their retirement years.

Next, inflation data were incorporated that could enable the hypothetical 62-year-old investor to maintain a consistent standard of living throughout retirement. To accommodate this need, U.S. inflation data were acquired from Ibbotson & Associates. The study then matched annual inflation rates to each corresponding 30-year time horizon analyzed.

Finally, it is assumed that the investor chose to use actively managed, non-alpha-producing investments rather than passive index funds for both strategies. Being unable to acquire statistical data illustrating the average alpha or value added by active management, it could be

argued that had we discovered this data, any benefits derived from active management for mutual funds and variable annuities may be similar and therefore would not have a material impact on the results of this study. In reality, if an investor chooses to use actively managed investments, the discrepancy between hypothetical performance and real performance would likely vary. For the purpose of this research, it is assumed that the mutual fund and variable annuity investments performed identically to the respective indices incorporated in this study less the annual expense ratios charged.

For the traditional mutual fund strategy and the flex bucket portion of the two-bucket strategy, an annual expense ratio of 1.20 percent was selected for the stock mutual funds and .90 percent for the fixed and bond mutual funds. These expense ratios are the approximate 2004 average fees and expenses of all stock and bond mutual funds as reported by the Investment Company Institute.⁸

For the LWB bucket portion of the two-bucket strategy, an expense ratio of 2.5 percent was selected for the hypothetical variable annuity offering the LWB. This percentage was selected because it seeks to replicate the total expense ratio that a variable annuity owner might incur on an annual basis when buying and maintaining a variable annuity that has lifetime withdrawal benefits. Currently, there are variable annuities with similar guarantees that charge a comparable expense ratio. It is important to note that each variable annuity company has its own expense ratio which could be more or less than the 2.5 percent used. The 2.5 percent total annual expense ratio could be composed of mortality and expense risk charges, administrative charges, lifetime withdrawal benefit rider charges, and subaccount operating expenses.

As such, the variable annuity stock subaccounts will underperform their respective indices by 2.5 percent a year. The traditional mutual fund strategy and flex bucket portfolios will underperform their respective indices by 1.20 percent a year on the stock mutual funds and .90 percent on the bond and fixed mutual funds. For example, according to Ibbotson & Associates, large-cap stocks increased 6.27 percent in 1984. Using the traditional mutual fund strategy and the flex bucket portion of the two-bucket strategy, the hypothetical investor would net 5.07 percent ($6.27\% - 1.20\%$) from this portion of their investment. In this same year, it is assumed the hypothetical variable annuity investor nets 3.77 percent ($6.27\% - 2.5\%$) on the large-cap portion of the subaccount offered within the variable annuity.

When contrasting the two-bucket strategy against the traditional mutual fund strategy, one substantial difference is the extra costs of the LWB bucket. The extra costs are partially derived from the investor, insuring a portion of his or her stock market risk through the variable annuity company. As a result of this and other expenses related to buying a variable annuity, the variable annuity with lifetime withdrawal benefits is assumed to be more than twice as expensive as the traditional mutual fund portfolio.

Withdrawal of Funds from the Investments

Withdrawal rules also needed to be established for both strategies. For the traditional mutual fund strategy, the investment starts with \$500,000 at the onset of each 30-year time horizon analyzed. One year after funds were deposited, 5 percent of the initial investment is withdrawn after being adjusted for the inflation/deflation that occurred during the course of the previous year. Each subsequent year's withdrawal is taken at the beginning of each year and adjusts the previous year's withdrawal for inflation/deflation to help maintain a consistent lifestyle.

For the two-bucket strategy, at the onset of each 30-year time period, the LWB bucket begins with \$400,000 (80 percent of \$500,000) while the flex bucket starts with \$100,000 (20 percent of \$500,000). One year after funds were deposited, 5 percent of \$400,000 will be withdrawn from the LWB bucket as well as each subsequent year. Also after one year, 5 percent of the \$100,000 flex bucket's initial investment is withdrawn after being adjusted for the inflation/deflation that occurred during the course of the previous year on the entire amount being withdrawn from both buckets. Each subsequent year's withdrawal from the flex bucket is taken at the beginning of each year and adjusts the previous year's withdrawal on both buckets for inflation/deflation to maintain a consistent lifestyle.

One important aspect of the flex bucket is that it accommodates for all inflation/ deflation adjustments for both income streams derived from the two-bucket strategy. The following comparison illustrates how the withdrawal strategies differ. In 1970, inflation was 5.49 percent according to Ibbotson & Associates. The first withdrawal from the traditional mutual fund strategy would have \$26,372.50 (\$25,000 + inflationary needs). The two-bucket strategy would also have been \$26,372.50 withdrawn, but \$20,000 would have been withdrawn from the LWB bucket and \$6,372.50 would have been withdrawn from the flex bucket.

Additionally for both strategies, it is assumed that the portfolios are rebalanced immediately following the needed income withdrawal to match the target allocations described earlier. Transaction costs related to rebalancing and providing income were ignored for both strategies. Transaction costs are ignored as they are usually free on variable annuities and could potentially be free for some custodians that hold mutual funds.

Specific Assumptions of the LWB Bucket

The LWB bucket is a variable annuity that contains a rider that guarantees an income stream of 5 percent of the initial purchase price for the life of the investor regardless of market performance. Five percent was selected because at the time of this writing, several companies offered a similar guaranteed minimum withdrawal benefit for life for a 62-year-old investor. A variable annuity offering a lifetime withdrawal benefit of this nature would guarantee an income stream for the investor of \$20,000/year ($\$400,000 \times 5\%$), assuming the investor never withdraws more than this amount in any one year. The \$20,000 guaranteed income stream does not increase annually for inflation, but this amount could increase if the variable annuity subaccounts perform well.

This hypothetical variable annuity's LWB benefit contractually steps up the guaranteed income stream to 5 percent of the actual value of the variable annuity on the fifth-year anniversary date if the value of the account exceeds the initial purchase amount. For example, if the \$400,000 initially invested grows to \$450,000 in five years after withdrawals, the investor's new lifetime withdrawal benefit would step up to 5 percent of the new \$450,000 base. The increase would provide \$22,500 of guaranteed annual income for the life of the owner. Although the guaranteed income stream may step up again in another five years or at future five-year increments, it would never decrease assuming that the investor never exceeded the current guaranteed withdrawal amount in any one year.

It is important to note that each company has its own unique step-up benefit, and the step-up feature used for this study was selected because it is similar to those offered currently through various insurance companies' variable annuities. For example, many variable annuities carry surrender charges for excessive early distributions. For the purpose of this article, surrender charges are ignored as a 62-year-old investor can typically withdraw a 5 percent income stream starting after one year of owning a variable annuity with a lifetime withdrawal benefit. Many variable annuities currently offering these benefits typically allow these withdrawals without penalty.

Also, many variable annuities used to require investors to annuitize their contracts to receive the benefits of income guarantees. This study assumes that this variable annuity never requires annuitization, which is consistent with many new contracts. For many new contracts, the investor continues to draw income for life from his or her variable annuity even when the balance falls to zero.

With these features in mind, the study assumes that the full amount of the lifetime withdrawal benefit is withdrawn each year from the variable annuity, including any five-year step-up increases of the investor's guaranteed annual income from the variable annuity above the investor's annual income needs. The program created assumes the following for any excess step-up income withdrawn from the LWB bucket during any one year. First, the excess income reduces and could potentially eliminate withdrawals from the flex bucket. Second, if the LWB bucket withdrawal is great enough to exceed the total inflationary/deflationary income needs, any excess amount is assumed to be spent by the investor rather than being reinvested in the variable annuity subaccounts or the flex bucket.

Results of the comparison between the traditional mutual fund strategy and the two-bucket strategy will be illustrated in Part 2 in the September 2007 issue of this journal.

Endnotes

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5. T. Rowe Price Associates, "Sustaining Your Savings to Fund All—Not Just Some—of Your Retirement," November 2003.
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7. William P. Bengen, “Determining Withdrawal Rates Using Historical Data,” *Journal of Financial Planning*, [January 1994](#): 14–24.

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