The DoubleBucket® Method of Asset Allocation and Periodic Withdrawals

Craig C. Pedersen and Charles Fulmer

Saving for retirement seems to be a simple concept. An individual signs up for the 401k at work, decides on a contribution amount and a proper asset allocation and that's about it. The company may do a match and the investments grow over time, so everything is good. Certainly, there are other things to consider, but saving for retirement through a 401k is fairly stress free. However, once retirement nears things get more complex. Asset allocation becomes much more important in order to be prepared for any near-term market dips. Some retirees don't think about this until they actually retire which is a little late. Retiring in 2007 for example, just before a 40% drop in the stock market in 2008, could've resulted in a serious situation without being properly prepared. That particular time-period may have been an anomaly, but there have been other significant downturns as well in the last 100 years.

Regardless of age, the best time to start planning for retirement is today − and if not today, at least several years before retirement. What has been done in the past doesn't necessarily matter (it's a sunk cost in economic terms). The current situation needs to be evaluated and a plan should be developed, regardless of age. Also, the plan needs to be re-evaluated on a periodic basis to make sure it still makes sense for any change in situation. Most people think of retirement as two distinct phases: an accumulation phase (pre-retirement) and then the distribution phase (post-retirement). The problem with that is the switch can't be immediately flipped to change from one phase to the other. There needs to be a transition period, but that brings in a few questions like "when does the transition start", "how long is the transition period" and "when and how to adjust investment allocations?" With the DoubleBucket® Method, the transition period is built in. The only thing that needs to be done is to re-balance the assets periodically according to a prescribed amount. As one gets older, the asset mix will gradually become more conservative. Regardless if an individual is in the accumulation phase or into the distribution phase, the "DoubleBucket" (DB) Method is a system that can be used throughout the entire spectrum.

The DoubleBucket® Method is a combination of strategies expressed in a simple to follow process. The key benefits are as follows:

- One system throughout the accumulation and distribution phases
- Prescribed asset allocation, adjusted annually
- Prescribed withdrawal rate
- Zero fees
- Buy low, sell high
- High withdrawal rate

Anyone who has a brokerage account like Schwab or E-Trade and has traded stocks or mutual funds on-line can easily follow this system. Knowing how to create an electronic spread sheet also helps, but good old pencil and paper will work as well.

Comparing "Do-it-Yourself" Versus Professional Planning

While this paper focuses on investments and withdrawal rates, there is much more involved with retirement planning. Taxes, estate planning, social-security planning and risk management are extremely important and may need to be professionally managed. It is suggested to start with a Certified Financial Planner™, or any Financial Advisor who acts as a fiduciary, to develop an overall retirement plan. The individual's situation will be analyzed, and a personalized plan will be created. That plan may also suggest other professionals, such as an accountant, lawyer, or insurance agent, depending on the situation. Paying for these services is certainly not inexpensive, but the good news is that it only involves a one-time fee. Deciding how much or how little of these services are needed is a tough call. It is an important decision so plenty of research should be done and several candidates should be interviewed before partnering with an advisor.

Beyond these one-time services, an advisor may also be used to actively manage the investments on an on-going basis. If so, the advisor may forego the one-time fee for developing an overall plan. The fees for active money management usually involve a percentage of assets. Some advisors may only charge .75% and others may charge as much as 2%, but 1% is typical and a good rule of thumb. How would someone measure the effectiveness of such an arrangement? For example, if an individual devised a plan that returns 8% versus a financial advisor's plan that returns 10% a 1% fee is well worth it. If the advisor's plan only grows at 8.5% then sticking with the individual's plan and not paying the fee would be better. How would one know this up front? Unfortunately, there is no easy way to know. Maybe the results of the advisor's past customers could be audited, but this data is usually not public. The advisor may claim they are worth it, but there will be no hard proof. The fees (at 1%) on a $1 million principal would be $10,000 per year. Adding this up over the course of a 30-year retirement would result in $300,000 in fees − or more if the assets appreciate.

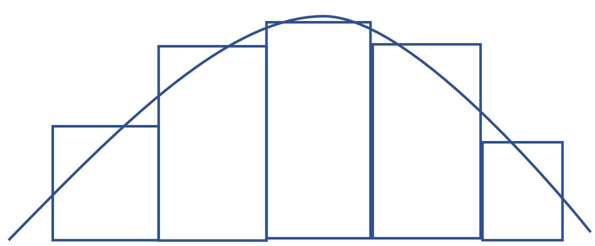
If an individual is not comfortable managing their own investments and can live with these fees, using a professional advisor is the way to go. On the other hand, if one is leery of handing their money over to someone they don't know and they don't like the idea of paying thousands of dollars in fees, the DoubleBucket® (DB) Method is an option. The DB Method is basically a hybrid of a bucket strategy and an asset allocation strategy. It is a system of dividing a retirement span into timeframe buckets (like a traditional bucket strategy) and dividing the assets into investment buckets (asset allocation). There is a lot of information on bucket strategies and asset allocation on the internet and elsewhere, but the details of how to determine the specific timeframes and asset allocations are hard to come by. In addition, the subject of how to adjust asset allocations and withdrawal rates as one ages − from pre-retirement and through retirement − is typically not mentioned. With the DoubleBucket Method, these details are prescribed in a systematic way. It uses history to determine asset allocation and dollar cost averaging and low management fees to maximize return.

Using Buckets

The DoubleBucket® Method was primarily designed to address two difficult problems with managing retirement investments: 1) where to invest (i.e., asset allocation), and 2) how much to withdraw (i.e., the withdrawal method). The specifics of the withdrawal method will be discussed later. Let's first discuss buckets and how they are used to determine asset allocation.

The key concept of any Bucket Strategy is that money is put into individual investment buckets based on when the money is needed. Long range money is put into riskier investments − such as the stock market and real estate − whereas short term money is primarily put into cash and/or short-term bonds. Medium range buckets will be invested with a mix of investments to smooth out the rate of return. So basically, we have time buckets and asset buckets and that is what coined the term DoubleBucket. The difference between a standard bucket strategy and the DoubleBucket (DB) Method is that with the DB Method money is not necessarily taken out of a timeframe bucket. Instead, it is withdrawn from the asset buckets that are "over the curve." Let's say for example, the current asset mix is 10% cash, 30% bonds and 60% stocks and the plan is to pull money out on a quarterly basis. When the withdrawal is made, let's say the percentages have changed to 9%, 30% and 61%. The withdrawal would be made, and rebalancing would be performed so that the percentages end up back at the starting ratio. This is the basic idea of asset allocation and can be thought of as "dollar cost averaging." Typically, the term dollar cost averaging is used when investing money, but it works the same as it is pulled out. Dollar cost averaging can be thought of as "buying low" during the accumulation phase and "selling high" during distribution. "Buy low, sell high" is the objective, right? The DoubleBucket Method is a systematic way of achieving that goal and is a good way to optimize long-range returns.

One of the big advantages of the DoubleBucket Method is that the retirement span is broken up into smaller chunks so that it is easier to manage. If we remember the first calculus course we took in high school or college, one way to calculate the area under a curve is to break it up into smaller rectangles and then sum up those areas (if interested, google "Taylor's Theorem"). This will approximate the area of the overall curve which looks something like this:



Calculating the area of a rectangle is much simpler than learning calculus, so why not break up the problem into smaller chunks that are easier to understand? Adding up the area of each of the 5 rectangles above will approximate the area under the curve. For financial planning, this approach makes a lot of sense since it's so difficult to predict all the variables that may occur during a long span. The best that can be done is an approximation and doing that is much easier for specific smaller time frames as opposed to one long frame. Think of each rectangle above as a timeframe bucket of a retirement span.

Overview of the DoubleBucket® Method

The DoubleBucket® Method is a four-step process, as follows:

1) Establish Retirement Duration
2) Determine Asset Allocations for Time Buckets
3) Generate the DoubleBucket Variable Annuity Table
4) Analyze the Results over History

The details of each step will be discussed in the following paragraphs.

Step #1: Establish Retirement Duration

One impossible task in retirement planning is knowing exactly how long an individual will live. An educated guess can be made based on the individual's health and family history, but it's still just a guess. A gentleman named Chuck Feeney once said: "I want the last check I write to bounce." That would be ideal, but probably not too realistic (although we'll see later that the "DoubleBucket variable annuity" accomplishes something like that). If the withdrawal rate is too large, the principal may run out. If the withdraw rate is too small, the principal may grow to a significant size. To combat this problem, the DoubleBucket® Method suggests a variable income stream. This means that income can go up and down from year to year. That seems a little unsettling, but it's more realistic than blindly taking out the same percentage each year without reacting to market changes. The bottom line is that the DB Method should result in more discretionary income up front that can be adjusted up and down depending on market performance. In tough times, discretionary income could be cut, but in average and good periods, it can make for much happier times during the active retirement years. One very important thing to understand is that the DB method will never run out of money ***before*** the "guesstimated" end date. However, it does run down to exactly zero at the ***end***.

With the DoubleBucket Method, we suggest picking a specific termination age and then plan to that exact age. How is that possible? It's simple. The termination age is extended to an age that will likely not be outlived. Or set to an age where the individual doesn't necessarily care if their nest egg is depleted. Say an individual is currently 60 years old, in good health and has ancestors who have lived to 90. If the 4% rule is used (as discussed below), the principal should last 30 years. However, there is a significant chance this will result in one of two potential outcomes: 1) The individual lives longer than 90 and runs out of money, or 2) The individual dies a multimillionaire. The reason for this dichotomy is the blindness in reacting to market performance. Contrasting this against the DB method, the termination age would be extended – say somewhere between 95 and 105 – just to be safe. The ride may be a little bumpy as withdrawals react to market conditions, but it should result in a higher average withdrawal rate and a smoother landing as the funds drain down to zero on the back end.

Picking an extended retirement duration will require an allocation of money to fund those last 5-10 years that is probably not needed. Think of that as a cushion. All retirement plans need a cushion and it's our opinion that this is the least expensive way to finance that cushion. At historical stock market returns, financing a year of retirement 40 years in the future does not cost very much today[1]. What this also does is allow an individual to be more aggressive in asset allocation over a long timeframe which results in a higher withdrawal rate. Not everyone is comfortable with setting such a lengthy termination date, but it should appeal to those who like things to be deterministic. The alternative is worrying about all other outcomes which can be a little daunting. The net effect is a higher average withdrawal rate, while also simplifying things by planning to a specific date.

Step #2: Determine Asset Allocations for Time Buckets

The asset classes that are typically mentioned when discussing asset allocation or bucket strategies are Stocks, Bonds and Cash. In the table below, Gold will also be added to the mix. There are several other asset classes that could be considered such as Real Estate, the NASDAQ, and International Stocks. More analysis will be done on these and other asset classes later in this paper and on our website, but what is listed below will be sufficient for this example.

The task is to derive the "best" asset allocation for each timeframe bucket. To determine the "best" allocations, we have software that can analyze various historical time frames. This software is available on the website (www.TheDoubleBucket.com/historical-analysis) where experimentations can be quickly performed. Deciding what is "best" is subjective and is a trade-off between risk and historical results. Primarily, the "worst" historical returns are measured against the "average" returns. From that, it is assumed that future returns will be somewhere between the two but lean toward the worst just to be conservative. The figures on the website were derived from analyzing over twenty-four thousand asset mixes going back to 1972. Certainly, other asset mixes could be used if desired.

The DB Method is designed to use any number of Time Buckets, but for the purpose of this paper we will be using 5 buckets:

- **Immediate–** Typically 1 or 2 years of cash for immediate needs
- **Short Term –** Investments for ~5-year time frame
- **Mid Term –** Investments for ~10-year time frame
- **Intermediate –** Mid to Long Term Investments for ~15-year timeframe
- **Long Term –** Investments for ~20 years plus

One or two years of cash in the immediate bucket should be sufficient to get through most down periods, but that depends on personal risk tolerance. More cash will result in a reduced withdrawal rate. If one year of cash is used in the immediate bucket, that means that the short-term bucket runs from year 2 thru 6, the mid-term bucket runs from years 7 thru 11, the intermediate bucket runs from year 12 to 16, and the long-term bucket starts at year 17 and runs thru the entirety of the retirement span. Here is an example of a reasonable set of "best" allocations using the limited number of assets that were chosen.

---

[1] Funding $100,000 in yearly income in 40 years costs about $10,000 in today's dollars. This assumes a 9% stock market return with 3% inflation.

Example Allocations for Time Frame Buckets

years	Cash	Gold	10y T-Bonds	Corp Bonds	S&P 500	Expected Return
Immed	100%	0%	0%	0%	0%	0%
5-yr	20%	10%	20%	20%	30%	1%
10-yr	10%	20%	10%	10%	50%	2%
15-yr	0%	20%	15%	15%	50%	3%
20+ yr	0%	30%	0%	0%	70%	4%

The gold position may be surprising here but seems to work out well over history. Gold helps counter any down periods in stocks or periods of high inflation. The "Expected Return" column is very important as it is used to predict the value of those buckets in the future. If the expected return is overly optimistic, it could result in too high of a withdrawal rate and the potential of declining income in subsequent years. Also, it's important to note that the expected return is inflation adjusted. We will talk more about determining expected returns later in this paper. These time-bucket allocations will now be used to build an annuity table in the next step.

Step #3: Generating the DoubleBucket® Variable Annuity (DBVA)

We mentioned earlier the humorous anecdote of wanting the last check to bounce. It turns out that can be done by picking a specific termination date, which is usually extended to provide a cushion. The method used is called the DoubleBucket Variable Annuity (DBVA). The DBVA is a table that contains assets splits for each year of retirement. In addition, it has a divisor called the DoubleBucket Income Factor (DBIF). The DBIF is used to determine yearly withdrawals by dividing the principal amount by this factor. In our historical analysis, the exact value of the DBIF is used. In practice, the DBIF should be thought of as a limit. Any year that stays above that value provides some insurance for later years (since the DBIF is a divisor, the higher the number, the lower the withdrawal). If withdrawals are at or below that yearly limit, the system should work nicely.

Our software will take the bucket allocations established in Step 2 and use that data to generate an annuity table. Note that the math used to generate this table is a straight-forward, time value of money calculation, using the expected return of each bucket. It aggregates the asset splits of each bucket to derive an overall asset mix that determines where money should be invested in each year of retirement. Note in the table below that the asset mix will become more conservative while advancing through retirement.

In this example, a 40-year annuity table will be generated. In the first year of retirement, 11% is allocated to Cash, 21% to Gold, 9% to Ten Year Treasury Bonds, 9% to Corporate Bonds and 51% to the S&P 500. The mutual funds or ETFs that can be used to track those allocations are mentioned on the website (https://www.thedoublebucket.com/asset-buckets). Also note that the DBIF column is used to calculate the yearly withdrawal. Assuming $1 million in savings, a $45,000 withdrawal is derived by dividing the principal by a DBIF of 22 in the first year. When taking a withdrawal, money would be taken out of the funds that are above their prescribed percentages and rebalancing may be required. For the next year of retirement, simply drop down to the second row and do a similar operation. Note that the DBIF gets smaller over time which should result in increased withdrawals to combat inflation.

Overall Asset Allocations for each year of Retirement

Year	Cash	Gold	10Y Bonds	Corp	S&P 500	DBIF
1	0.11	0.21	0.09	0.09	0.51	22.00
2	0.11	0.21	0.09	0.09	0.51	21.78
3	0.11	0.21	0.09	0.09	0.51	21.55
4	0.11	0.20	0.09	0.09	0.50	21.32
5	0.11	0.20	0.09	0.09	0.50	21.08
6	0.12	0.20	0.09	0.09	0.50	20.82
7	0.12	0.20	0.09	0.09	0.50	20.56
8	0.12	0.20	0.09	0.09	0.49	20.29
9	0.12	0.20	0.10	0.10	0.49	20.00
10	0.12	0.20	0.10	0.10	0.49	19.70
11	0.12	0.20	0.10	0.10	0.49	19.40
12	0.13	0.19	0.10	0.10	0.48	19.08
13	0.13	0.19	0.10	0.10	0.48	18.74
14	0.13	0.19	0.10	0.10	0.47	18.40
15	0.13	0.19	0.11	0.11	0.47	18.03
16	0.14	0.19	0.11	0.11	0.46	17.66
17	0.14	0.18	0.11	0.11	0.46	17.27
18	0.14	0.18	0.11	0.11	0.45	16.86
19	0.15	0.18	0.12	0.12	0.45	16.44
20	0.15	0.17	0.12	0.12	0.44	16.00
21	0.15	0.17	0.12	0.12	0.43	15.55
22	0.16	0.17	0.13	0.13	0.42	15.07
23	0.16	0.16	0.13	0.13	0.41	14.58
24	0.17	0.16	0.14	0.14	0.40	14.06
25	0.18	0.15	0.14	0.14	0.39	13.53
26	0.19	0.15	0.14	0.14	0.39	12.89
27	0.20	0.14	0.14	0.14	0.38	12.23
28	0.21	0.14	0.14	0.14	0.37	11.55
29	0.22	0.14	0.14	0.14	0.36	10.85
30	0.24	0.13	0.14	0.14	0.36	10.12
31	0.25	0.13	0.14	0.14	0.34	9.30
32	0.26	0.12	0.15	0.15	0.33	8.47
33	0.28	0.11	0.15	0.15	0.31	7.61
34	0.31	0.10	0.16	0.16	0.28	6.74
35	0.34	0.08	0.17	0.17	0.25	5.85
36	0.36	0.08	0.16	0.16	0.24	4.90
37	0.40	0.08	0.15	0.15	0.22	3.94
38	0.47	0.07	0.13	0.13	0.20	2.97
39	0.60	0.05	0.10	0.10	0.15	1.99
40	1.00	0.00	0.00	0.00	0.00	1.00

Step #4: Analyze the Results

The purpose of this step is to confirm that the “best” time-bucket allocations that were selected in Step 2, play out nicely over history. Our software will generate all past spans starting in any year. For the assets selected above, the data goes back to the early 1930s. For other asset classes such as Real Estate and the NASDAQ, the data only goes back to 1972. The analysis of any asset mix is limited in depth by the historical data for the underlying asset classes. The desired goal is a gradual rising withdrawal rate from year to year during each span. There will undoubtedly be some years that decrease, but if the fluctuations are small and the overall trend is up, that is a good sign. We have tools that can help with this analysis, but we suggest spending a good amount of time in looking at the data. Certainly, some spans will not be ideal. However, if there is only 1 or 2 of those spans, the asset mix may still be acceptable. Those spans were probably periods of high inflation and low market performance which would affect any plan or strategy. If several spans do fantastic but there are also a number of bad spans, then the "best" estimates in Step 2 may need to be adjusted. That may be caused by being too aggressive with the estimated returns of the asset mix. In general, the discrepancy between the good and the bad spans should be moderate.

One important thing about doing analysis on past spans is to realize that income can go up and down from year to year. The DoubleBucket® Method was designed to optimize the overall withdrawal rate so that on average, the returns are better than other systems. In the down years, discretionary spending will take a hit. In the good years, discretionary spending will go up but still should be limited to the parameters of the system. It is important to not turn discretionary income into non-discretionary expenses by overindulging. Buying a new home or car after a couple years of good returns could put too much strain on non-discretionary spending going forward.

In the case studies below, a retirement nest egg of $1 million is used to keep things simple. The figures can be adjusted accordingly for other savings amounts. For example, if the initial principal is $1.2 million, the withdrawal amounts would be multiplied by 1.2. This will not be a problem when using the software on the website because the exact principal can be entered before running the analysis.

One thing that is not explained in detail in this paper, is the method for addressing a variable income stream. Income requirements will undoubtedly not be the same in each year of retirement. Most retirees plan to spend more during their early years, when they will have a more active lifestyle. Also, Social Security withdrawals may occur before or after actual retirement which will affect the withdrawal amount from savings from year to year. Other things can affect retirement withdrawals as well, such as college funding for children/grandchildren, pension disbursements, inheritances, etc. The DoubleBucket Method does have a way to manage variable income streams, but in the case studies below we will keep it simple and assume a constant income requirement.

Summary of the 4-Step Process

Now may be a good time to go to the website and try the process (see the annuity calculator here: www.thedoublebucket.com/variable-annuity). Step-2 takes the most thought, but the default values can be used for starters (i.e., the "best" estimates) along with the default ages. Just select the "Compute Annuity Button" and then page down to the bottom of the Annuity Table and select "Historical Analysis". It may take a minute, but the historical data for all past spans will be printed. After getting familiar with the process, experimentation can be done with any of the input parameters.

We will now talk about a few other topics and then finish with some case studies.

Other Applications of the DoubleBucket® Variable Annuity

Above, we talked about using the Annuity Table to determine a yearly withdrawal amount for each year of retirement. However, just like any annuity, the DBVA can be used for other situations and one of those is funding discretionary income. Say a retiree had $3 million in savings and wanted to split that between $1 million of discretionary expenses and $2 million of non-discretionary expenses. To be safe, a financial planner may be hired to take care of the non-discretionary money. For discretionary spending, some risk can be taken with a goal of optimizing withdrawals over the next 20 years. The DB is a great way to get optimal use out of lump sum of money over a fixed time frame and have it wind down to zero at the end. Also, because the DB performs very well during "most" spans, a retiree could have a lot of fun with that money for things like travel, golf, and entertainment. Granted, there may be some spans that are not ideal, but that can be said for any retirement plan. Using the DB Method for discretionary income can be a very useful tool.

College savings is another nice application for the DoubleBucket® Method because of a finite 18-year savings period, followed by a 4-year withdrawal period. The total span is fairly long (22 years), but not long enough to be too heavy in the stock market. Starting out, a somewhat aggressive position can be taken, but it will gradually taper off to mostly cash in the last few years. The DoubleBucket® Method does a good job of specifying how to smoothly make that transition over the span.

Another application for the Double Bucket is to estimate withdrawal amounts when an income requirement varies. For example, if a retiree wanted to retire at age 62 but delay Social Security until age 70, they would need to pull out more money before age 70, and then decrease it by the Social Security withdrawal amount after that. The Double Bucket Method manages this by breaking the retirement span into sections and then overlaying those sections to derive the variable withdrawal amounts. The variable income requirement is common amongst most retirees but doesn't seem to get the attention that it should. Too many discussions center around a constant withdrawal, and that does not line up to reality.

There are additional applications for the DoubleBucket, which are listed on the resources page of the website (www.TheDoubleBucket.com/resources).

In general, the DBVA is a great way to get optimal use out of a sum of money over a finite time-period. The yearly withdrawals typically keep up with inflation and the investment principal will smoothly go down to zero at the end. The one caveat is that yearly withdrawals can fluctuate up and down, but the withdrawals will be higher than the 4% Rule in most cases.

The 4% Rule

The 4% rule was developed by William Bengen in the 1990s. Simply stated, if yearly withdrawals are made at 4% of principal (adjusted for inflation), the principal should never run out over the course of a 30-year span. This assumes a 50/50 mix of stocks and bonds in the investment portfolio. This is referred to as the "4% rule", or "inflation based" since it increases with inflation. For example, if the initial principal is one million dollars, the yearly withdrawal would be $40,000 the first year. The next year, the withdrawal would increase by the rate of inflation, regardless of the remaining principal. The 4% Rule is not necessarily a retirement strategy, but more a rule of thumb. The general idea is if 4% can cover a retiree's planned expenses in the current year, they should be safe over the course of a 30-year retirement span because withdrawals increase by the rate of inflation. Recently, there has been some criticism of this rule because of the possibility of running out of money before 30 years. Especially due to recent stock market gyrations (in 2000 and 2008) and the fact that bond rates are at historical lows. Still, the 4% rule is a reasonable rule and is a widely used benchmark. Also note that 4% is just a suggestion. The actual rate could certainly be adjusted up or down depending on risk tolerance and asset allocation. The general method would stay the same.

Another criticism of the 4% rule is that instead of running out of money, the ending principal is too large. That means that more money could have been spent during retirement, but now will be left to the estate. That is not a problem per se, but it is an unfortunate consequence especially for those retirees that don't have an obligation or desire to leave a sizeable estate. In summary, the 4% Rule is a good way to estimate if current savings can fund a retirement plan, but it has three major downfalls: 1) The principal could run out before the end of some spans, 2) The 4% withdrawal rate is too low during most other spans, and 3) The rule cannot be used to predict the ending principal.

There are other hybrid solutions to the 4% rule that try to address these problems by adjusting to changes in the market. However, this is somewhat like playing a stressful game of whack-a-mole, always reacting to what pops up. The DoubleBucket Method also reacts to market changes, but it is an automatic system and is simple to follow. The 4% rule and some variants have their merits, but we see them more as rules-of-thumb as opposed to realistic investment methods. Since the 4% Rule is the most prevalent yardstick, it will be used for comparison purposes in the case studies below.

The Monte Carlo Method

The Monte Carlo Method is a statistical sampling tool that can be used to estimate if a given principal is sufficient to fund a retirement plan. It runs a series of experiments with different combinations of random inputs to see if the results meet a specified criteria in all cases. While this method may reduce or eliminate the risk of prematurely running out of money, it has some of the same disadvantages as the 4% Rule. Namely, withdrawal rates are low, and the ending balance is unpredictable.

Notes on Estimating a Rate of Return

To estimate the return rate in Step 2 of the 4-Step process of the DoubleBucket Method, an analysis is done of the worst and average return rates using a Compound Annual Growth Rate (CAGR) adjusted for inflation. What exactly does CAGR mean? It is the exact rate at which an investment grows over time and is a better measurement than a simple average. Let's say, for example, an investment goes up by 10% the first year and down 10% the second year. Using a simple example, a 10% gain on $100 totals $110 after the first year. If it then goes down 10%, the principal goes down to $99 and the investment is now down $1 dollar. The average return is zero, but the CAGR is a negative 1%. This is one flaw of how some mutual funds are measured. They may advertise an average rate but should be using the CAGR.

To adjust for inflation, the inflation rate is subtracted from the CAGR using historical Consumer Price Index (CPI) figures. This is referred to as an inflation adjusted CAGR (or the "real" rate). This results in a true rate of return. After all, if investments increase by 5% and inflation increases by 6% the actual return is negative. Knowing the rate of return with respect to inflation is an important factor.

Establishing a reasonable expected rate of return is a delicate balance of minimizing risk versus maximizing results. If estimates are too risk averse, a retiree may never feel comfortable retiring. On the other hand, aggressive estimates may deplete the retirement nest egg too early. Deriving an estimated rate of return is certainly a challenge. In lieu of a magic ball, the only alternative is an educated guess. The general philosophy of the DB is to use history to make those educated guesses. In other words, the past is used to predict the future. There are certainly financial advisors who try to outsmart the market. Some are successful, some are not. However, it's a risk that we are not comfortable with. John Templeton, one of the greatest stock pickers of his day and founder of the Templeton Growth Fund once said: "A lifetime of investment research has taught me to become more and more humble about making predictions." We agree and feel that most investors would struggle to compete with John Templeton. Taking the humble approach seems to be a wise path.

How does the DB use history to predict the future? It simply analyzes each timeframe bucket going backwards in time. How far it goes back depends on the data that is available for the various asset classes (there is data for some stocks and bonds going back to the 1930s, but for REITs, NASDAQ, and International stocks, it only goes back to the early 1970s). For example, let's say an investment diversification is as follows:

- 5% Cash
- 10% 10Yr Treasury Bonds
- 10% Corporate Bonds
- 15% Dow Jones
- 15% S&P 500
- 15% NASDAQ
- 15% International Stocks
- 15% REITs (Real Investment Trusts)

Using this mix, every 15-year span is analyzed going back to 1972 (i.e., 1972 thru 1986, 1973 thru 1987, … up to, 2005 thru 2019) and we found that the worst inflation adjusted CAGR return was 3.4 %, the average was 6.9% and the best was 12%. Some may argue that going back to 1972 is not a large enough sample size and we don't necessarily dispute that, but the data is not available for all asset classes. Going back before 1972, we only have data for large domestic stocks, bonds, cash, and gold. When analysis is done on those traditional investments going back to the early 1930s average rates of return are lower. However, we feel that modern analysis needs to consider a broader range of investments using other assets which leaves us no choice but to use 1972 as the historical time frame.

In summary, to derive a reasonable rate of return, analysis is done by running various asset allocations across all spans for each time frame bucket. This establishes a good allocation mix. For the 15-year bucket, the above asset mix is a good candidate. The worst rate of return was 3.4%, which occurred during the span from 1973-1987. All other 15-year spans performed better than that. Going forward, 3.4% to 4% could be used as an acceptable rate for the 15yr bucket, which should be conservative. For the other buckets (5-yr, 10-yr, 20-yr+), similar analysis would be done to derive the corresponding asset mixes. That's not to say that some future spans won't do worse. However, if that does occur, the DoubleBucket Method continues to adjust to ensure that principal does not run out. The only negative is that withdrawals are lower than expected.

Once an estimated return is chosen for each timeframe bucket, an overall asset allocation can be calculated using the DoubleBucket Variable Annuity calculator. The asset allocations for the timeframe buckets should be re-evaluated each year as the assumption of what is "best" may change over time. If the timeframe buckets do change, the annuity table would need to be regenerated.

Case Studies

We will now look at two different case studies comparing the DoubleBucket® Variable Annuity (DBVA) against the 4% Rule. The first study will use a more traditional asset mix and the analysis will go back to 1950. The second study will use a more modern asset mix that goes back to 1972. Note that in these studies, the 4% rule will use the DBVA's asset allocation mix as opposed to a static 50/50 mix of stocks and bonds. We have found that the 4% rule does better with the DBVA asset mix as opposed to its own suggested 50/50 mix. In other words, the 4% Rule is given a little boost to make a true comparison.

In each case, two different time spans will be analyzed. One span will be what we consider the worst case for the DBVA, and the other is more typical.

Case Study #1

In this first study, the scenario is a person retiring at age 60 and doesn't expect to live past age 95. They have accumulated $1 million in savings and want to know how much can safely be withdrawn on a yearly basis. The retiree has a conservative investment approach and is not comfortable using assets such as the NASDAQ and REITs. We will go through the 4-Step process of the DoubleBucket® Method and compare the results against the 4% Rule.

Step #1: Estimate Retirement Duration

In this case we have a 35-year retirement span (95 minus 60). To build a cushion for the DBVA, the calculations will be done using a 40-year duration. That will decrease the yearly withdrawals a little bit but adds a little cushion. Whether to use a 35 or 40-year duration in a situation like this is debatable. If the client is not happy with the yearly returns for the 40-year duration, 35 could be used, but that adds risk if the client should happen to live to 100. With the DBVA, funds drain down to zero at the end, so this is an important decision.

Step #2: Derive Asset Splits for Time Frame Buckets

For this example, the exact same table that is used in the explanation of the 4-Step process above. This is a duplicate of that table:

Allocations for Time Frame Buckets

years	Cash	Gold	10y T-Bonds	Corp Bonds	S&P 500	Expected Return
Immed	100%	0%	0%	0%	0%	0%
5-yr	20%	10%	20%	20%	30%	1%
10-yr	10%	20%	10%	10%	50%	2%
15-yr	0%	20%	15%	15%	50%	3%
20+ yr	0%	30%	0%	0%	70%	4%

Step #3: Generate an Annuity Table

Since the same time-bucket asset mix was used as above (in step 3 of the 4-step process), the annuity table will be the same. Please refer to that table for the asset splits and DBIF.

Step #4: Analyze the Results

Altogether, there are 31 spans starting in 1950-1989 and going up to 1980-2019. The results of the DBVA will be compared against the 4% rule in all spans. In doing some analysis, it was discovered that the 4% figure could be adjusted upward to 4.3%. For this case study, we will now call it the 4.3% Rule. This is done because the DB's asset mix is used and with that, the performance is much better than the traditional 50/50 mix of stocks and bonds. This makes it a fairer comparison and gets the most out of the 4% (now 4.3%) Rule. At the 4.3% rate, the method does not run out of money in any of the 40-year spans except in 3 spans where it ran out in the 38th or 39th year.

Rather than list all 31 spans, two spans are used that are especially interesting. The 40-year period that performed the worse for the DBVA was from 1956 to 1995 so that is our first comparison below. The second comparison is the most recent from 1980 to 2019. This time-period is an average or typical comparison between the two methods. Also, it includes both the dot com boom/bust around the year 2000 and the great recession of 2008. It is interesting to see how both methods behave during those periods. The CPI column is the Consumer Price Index (i.e., inflation rate) and it is what the 4.3% rule uses to determine the next years withdrawal amount. The DBVA instead uses the DBIF from the annuity table and simply divides the remaining balance by that value. In other words, it uses the market performance to determine each year's withdrawal rate.

The analysis of the results is noted in between the two tables below.

Year	CPI	4.3% Rule Withdrawal	4.3% Rule Year-end Balance		DBVA Withdrawal	DBVA Year-end Balance
1956	1.52	43000	987709.35		45462.01	985168.33
1957	3.34	43653.6	897889.13		45233.19	893970.03
1958	2.73	45111.63	1043457.83		41474.91	1043112.32
1959	1.01	46343.18	1056046.88		48926.05	1052945.42
1960	1.46	46811.24	1027754.26		49958.23	1021391.16
1961	1.07	47494.69	1115258.65		49050.87	1106248.74
1962	1.20	48002.88	1031291.1		53807.06	1016976.23
1963	1.24	48578.92	1097655.41		50133.28	1079930.02
1964	1.28	49181.29	1141844.36		53995.43	1117297.60
1965	1.59	49810.81	1162850.23		56704.29	1129371.15
1966	3.01	50602.81	1059884.46		58228.17	1020715.16
1967	2.78	52125.95	1122621.76		53510.72	1077445.38
1968	4.27	53575.05	1171673.62		57489.85	1117869.75
1969	5.46	55862.71	1038655.12		60771.39	984002.41
1970	5.84	58912.81	1035804.28		54563.79	982622.15
1971	4.30	62353.32	1093520.47		55644.70	1041314.73
1972	3.27	65034.51	1222281.83		60300.55	1165865.03
1973	6.16	67161.14	1235752.08		69137.39	1173282.99
1974	11.03	71298.27	1183476.09		71362.97	1119920.76
1975	9.20	79162.47	1263218.73		69985.30	1201015.82
1976	5.75	86445.41	1345391.44		77256.41	1284781.25
1977	6.50	91416.02	1286718.56		85247.45	1230855.39
1978	7.62	97358.07	1304465.72		84434.88	1257370.04
1979	11.22	104776.75	1538545.45		89402.19	1497864.59
1980	13.58	116532.7	1641799.44		110704.55	1601559.88
1981	10.35	132357.84	1481327.35		124263.41	1449780.95
1982	6.16	146056.88	1607880.76		118569.09	1602993.54
1983	3.22	155053.98	1600248.23		138831.10	1612734.15
1984	4.30	160046.72	1519393.99		148707.92	1544528.76
1985	3.55	166928.73	1624500.68		152582.87	1671922.46
1986	1.91	172854.7	1693222.12		179733.93	1740511.58
1987	3.66	176156.22	1597760.8		205601.70	1616553.92
1988	4.08	182603.54	1534185.92		212370.18	1522289.42
1989	4.83	190053.77	1559924.56		225811.97	1504619.18
1990	5.39	199233.36	1407582.33		257049.09	1290562.93
1991	4.25	209972.04	1358112.21		263274.58	1164963.97
1992	3.03	218895.85	1202393.62		295602.22	917573.76
1993	2.96	225528.4	1058600.37		308906.30	659595.18
1994	2.61	232204.04	837860.73		331438.38	332709.25
1995	2.81	238264.56	633353.43		332709.25	0.00
Avg:		109670.00			121206.00	

In the comparison above, there were 15 years in which the 4.3% Rule had a higher withdrawal amount over the DBVA (1958, 1970-72, 1975-85). However, the average withdrawal rate for the DBVA was still 10% higher: $121,206 vs. $109,670. Unfortunately, most of that difference was in the last few years of the span. We do admit that this was a very tough span for the DBVA and specifically, the period between 1975 and 1985. This was a period of high inflation which was good for the 4.3% rule. However, if that happened to coincide with poor market results it could've resulted in the 4.3% rule running out of money. Alternatively, the DBVA reacts to market performance and slows down withdrawals to insure funding through the end of the span. The bottom line is that even though this is the worst span for the DB Method it still held its ground with the 4.3% Rule. In most all other spans, the results are much more impressive.

In the comparison below, which is more typical, the span from 1980 to 2019 is used. There were only 4 years in which the 4.3% rule had a better withdrawal rate (1982-85). The average withdrawal rate for the DBVA was an impressive 47% higher: $145,665 vs. $98,908. Of course, the obvious negative against the DBVA is that it always drains down to zero. Not good for the estate but good for the retiree. However, if the retiree dies before the end of the 40-year span there will be at least something left in the tank. Alternatively, if the 4.3% Rule was used and there was over $3m in the account in 1998, certainly more money could be withdrawn. However, that seems a little late. At that point, the retiree is mostly past the active years of retirement and may not need that extra income. In a nutshell, this is one of the big advantages of the DBVA. It pushes more money earlier into retirement while maintaining a safe landing at the end.

Overall, when comparing all 31 forty-year spans, the DBVA had an average withdrawal rate of $167,446 vs. $120,818 for the 4.3% rule (38% better). There were 1240 years that were analyzed (31 spans times 40 years in each span). The DBVA had a better withdrawal rate in 1010 of those years, whereas the 4.3% rule was better in 230.

Year	CPI	4.3% Rule Withdrawal	4% Rule Year-end Balance		DBVA Withdrawal	DBVA Year-end Balance
1980	13.58	43000.00	1144796.24		45462.01	1141851.10
1981	10.35	48839.40	1025370.60		52427.15	1019258.46
1982	6.16	53894.28	1163031.06		47287.55	1163623.18
1983	3.22	57214.17	1218642.53		54578.48	1222199.66
1984	4.30	59056.46	1188963.63		57988.70	1193705.70
1985	3.55	61595.89	1372445.13		57326.03	1383416.15
1986	1.91	63782.54	1544151.73		67288.26	1552960.38
1987	3.66	65000.79	1587153.70		76555.37	1584207.28
1988	4.08	67379.82	1636534.03		79208.80	1620623.47
1989	4.83	70128.92	1858178.02		82248.72	1824926.46
1990	5.39	73516.14	1784163.33		94089.64	1730353.32
1991	4.25	77478.66	1982611.06		90713.32	1904727.01
1992	3.03	80771.51	1990710.95		101631.58	1887352.60
1993	2.96	83218.88	2121090.26		102603.23	1984603.01
1994	2.61	85682.16	2021770.81		110047.97	1861995.47
1995	2.81	87918.47	2368405.63		105442.54	2151265.52
1996	2.93	90388.97	2517732.82		124575.69	2239958.83
1997	2.34	93037.37	2761812.92		132832.63	2400090.44
1998	1.55	95214.45	3077818.68		145981.48	2601718.54
1999	2.19	96690.27	3240329.1		162584.77	2651209.55
2000	3.38	98807.79	3105727.2		170541.40	2452403.71
2001	2.83	102147.49	2912783.77		162721.21	2220467.13
2002	1.59	105038.26	2763950.76		152320.80	2035887.73
2003	2.27	106708.37	3086632.33		144756.77	2196723.19
2004	2.68	109130.65	3177842.09		162355.97	2171249.08
2005	3.39	112055.35	3241241.47		168465.02	2117403.24
2006	3.24	115854.03	3470948.14		173170.01	2159198.77
2007	2.85	119607.70	3652146.10		187002.58	2149214.24
2008	3.85	123016.52	3152110.23		198175.99	1742607.49
2009	-0.34	127752.66	3443109.20		172150.92	1787901.50
2010	1.64	127318.3	3673558.56		192201.83	1767872.69
2011	3.16	129406.32	3741116.32		208833.79	1645681.52
2012	2.07	133495.56	3875031.03		216196.74	1535443.52
2013	1.47	136258.91	3904801.84		227763.21	1365751.18
2014	1.62	138261.92	4013156.89		233324.89	1206572.74
2015	0.12	140501.76	3839457.47		246140.60	952199.01
2016	1.26	140670.37	3872180.34		241614.46	743895.62
2017	2.00	142442.81	3988818.51		250436.59	527736.46
2018	2.40	145291.67	3841015.14		265181.01	262383.88
2019	1.80	148778.67	3771250.33		262383.88	0.00
Avg:		98908.00	1144796.24		145665.00	

Case Study #2

In this second study, the scenario is an individual retiring at age 65 and doesn't expect to live past age 85 due to family health history. They have accumulated $1 million in savings and want to know how much can safely be withdrawn on a yearly basis. The retiree is not risk adverse and wants to take advantage of the returns available on assets such as the NASDAQ, REITs, and International stocks. Let's now go through the 4-Step process of the DoubleBucket® Method and then compare the results against the 4% Rule.

Step #1: Estimate Retirement Duration

In this case there is a 20-year retirement span (85 minus 65). To build a cushion for the DBVA, a 30-year duration will be used. This is certainly something that needs to be discussed with the client. The shorter the time span the better the returns, but this increases risk. With the DBVA, funds drain down to zero at the end, so this is an important decision.

Step #2: Derive Asset Splits for Time Frame Buckets

For this case study, a more modern asset mix will be used. In addition to traditional Stocks/Bonds/Gold/Cash, the NASDAQ, International Stocks and REITs will be added. The "best" asset allocations for each time frame bucket as follows:

Asset Allocations for Time Frame Buckets

years	Cash	Gold	10y T-Bonds	Corp Bonds	S&P 500	NASDAQ	Intl Stocks	REITs	Exp Return
1	100%	0%	0%	0%	0%	0%	0%	20%	0%
2-6	10%	20%	10%	10%	30%	0%	0%	20%	1%
7-11	10%	20%	10%	15%	20%	5%	5%	15%	3%
12-16	0%	10%	10%	10%	30%	10%	10%	20%	5%
17-30	0%	0%	0%	0%	40%	10%	10%	40%	6.5%

Step #3: Generate an Annuity Table

The time-bucket allocations from step #2 above were used as input to the Annuity Calculator provided on the website. This will generate the following 30-year annuity table:

Year	Cash	Gold	10Y T-Bonds	Corp bonds	S&P 500	NASDAQ	Intl Stocks	REITs	DBIF
1	0.12	0.13	0.07	0.08	0.28	0.05	0.05	0.22	15.97
2	0.12	0.13	0.07	0.09	0.28	0.05	0.05	0.22	15.81
3	0.12	0.13	0.07	0.09	0.28	0.05	0.05	0.22	15.63
4	0.12	0.13	0.07	0.09	0.27	0.05	0.05	0.21	15.45
5	0.12	0.13	0.08	0.09	0.27	0.05	0.05	0.21	15.26
6	0.13	0.14	0.08	0.09	0.27	0.05	0.05	0.21	15.05
7	0.13	0.14	0.08	0.09	0.27	0.05	0.05	0.21	14.83
8	0.13	0.14	0.08	0.09	0.27	0.05	0.05	0.20	14.59
9	0.13	0.14	0.08	0.09	0.27	0.05	0.05	0.20	14.34
10	0.13	0.14	0.08	0.10	0.26	0.04	0.04	0.20	14.08
11	0.14	0.15	0.08	0.10	0.26	0.04	0.04	0.19	13.79
12	0.14	0.15	0.09	0.10	0.26	0.04	0.04	0.19	13.49
13	0.14	0.15	0.09	0.10	0.25	0.04	0.04	0.18	13.17
14	0.15	0.16	0.09	0.11	0.25	0.04	0.04	0.18	12.83
15	0.15	0.16	0.09	0.11	0.24	0.04	0.04	0.17	12.46
16	0.16	0.17	0.09	0.11	0.24	0.04	0.04	0.17	11.98
17	0.16	0.17	0.09	0.11	0.24	0.03	0.03	0.17	11.48
18	0.17	0.17	0.09	0.11	0.24	0.03	0.03	0.16	10.95
19	0.18	0.18	0.09	0.11	0.23	0.03	0.03	0.16	10.39
20	0.19	0.18	0.09	0.11	0.23	0.02	0.02	0.16	9.80
21	0.20	0.18	0.09	0.11	0.23	0.02	0.02	0.16	9.06
22	0.21	0.18	0.09	0.10	0.23	0.02	0.02	0.16	8.29
23	0.22	0.17	0.09	0.10	0.24	0.01	0.01	0.16	7.50
24	0.24	0.17	0.09	0.09	0.24	0.01	0.01	0.16	6.69
25	0.25	0.17	0.08	0.08	0.25	0.00	0.00	0.17	5.85
26	0.28	0.16	0.08	0.08	0.24	0.00	0.00	0.16	4.90
27	0.33	0.15	0.08	0.08	0.22	0.00	0.00	0.15	3.94
28	0.40	0.13	0.07	0.07	0.20	0.00	0.00	0.13	2.97
29	0.55	0.10	0.05	0.05	0.15	0.00	0.00	0.10	1.99
30	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00

Step #4: Analyze the Results

Altogether, there are 19 thirty-year spans, starting at 1972-2001 up to 1990-2019. The DBVA will be compared against the 4% rule in all those spans. In doing the analysis, the 4% figure can be adjusted upward to 5.2% (using the same reasoning as in the first study, where a 4.3% rate was selected). It will now be referred to as the 5.2% Rule. Rather than listing all 19 spans, we're going to select 2 spans that should be interesting. The first is the span where the DBVA performed the worst starting in 1973 and the second is the most recent span from 1990 to 2019. This one is quite interesting because it includes the wild market gyrations of the dotcom bubble around 2000 and the great recession of 2008.

The analysis of the results is noted in between the two tables below.

Year	CPI	5.2% Rule Withdrawal	5.2% Rule Year-end Balance		DBVA Withdrawal	DBVA Year-end Balance
1973	6.16	52000.00	944909.79		62630.46	934313.98
1974	11.03	55203.20	842550.50		59112.63	828814.07
1975	9.20	61292.11	906269.56		53012.96	899939.05
1976	5.75	66930.99	1011881.78		58242.63	1014724.34
1977	6.50	70779.52	1018074.43		66508.52	1025769.80
1978	7.62	75380.19	1052823.37		68157.82	1069483.85
1979	11.22	81124.16	1281395.01		72119.56	1315239.95
1980	13.58	90226.29	1412992.66		90119.64	1453266.84
1981	10.35	102479.02	1284641.98		101314.15	1325262.95
1982	6.16	113085.60	1393379.19		94139.24	1464225.01
1983	3.22	120051.67	1447171.95		106150.25	1543489.53
1984	4.30	123917.33	1402881.28		114403.34	1515081.26
1985	3.55	129245.78	1541633.52		115042.45	1694634.57
1986	1.91	133834.00	1677208.30		132115.21	1861536.69
1987	3.66	136390.23	1622811.76		149378.84	1803269.28
1988	4.08	141382.12	1602745.53		150512.85	1788102.45
1989	4.83	147150.51	1654833.28		155815.53	1855710.33
1990	5.39	154257.88	1462125.53		169541.81	1642963.12
1991	4.25	162572.38	1515860.38		158150.49	1731955.81
1992	3.03	169481.70	1420012.74		176659.40	1640356.28
1993	2.96	174617.00	1402491.73		181058.12	1643376.11
1994	2.61	179785.66	1223523.43		198154.30	1446187.91
1995	2.81	184478.07	1214351.76		192722.09	1464948.96
1996	2.93	189661.90	1147766.62		218945.97	1395661.95
1997	2.34	195218.99	1054776.88		238434.84	1281422.96
1998	1.55	199787.12	911663.10		261410.03	1087624.89
1999	2.19	202883.82	742006.51		275977.92	849696.59
2000	3.38	207326.97	560015.98		286055.08	590350.35
2001	2.83	214334.63	353142.89		296643.71	300046.31
2002	1.59	220400.30	134959.40		300046.31	0.00
Avg:		138509.00			153419.20	

In the table above, the 5.2% Rule beat the DBVA in 13 different years (years 1975 thru 1986 and 1991). In the other 17 years the DBVA was better and averaged over 10% better ($153,419 vs. $138,509). Admittedly, this was a rough span for the DoubleBucket Method (especially 1982), but this type of performance is an anomaly and is quite contrary to most of the other spans that were analyzed. Also note that the 5.2% rule came close to running out of money before the last year of the span. The DBVA will never run out of money before the end because it holds on to its cash and will only run out at the end of the last year.

The second comparison below is from 1990 to 2019 which includes the tumultuous period of the dotcom bubble around 2000 and the 2008 recession. During this span, the DBVA beat the 5.2% rule each year and returned an average rate of 26% more ($100,064 vs. $79,373).

Overall, when comparing all 19 30-year spans, the DBVA had an average withdrawal rate of $143,142 vs. $102,945 for the 5.2% rule (39% better). There were 570 years in all that were analyzed (19 spans times 30 years in each span). The DBVA had a better withdrawal rate in 544 of those years, whereas the 5.2% rule was better in only 26.

Year	CPI	5.2% Rule Withdrawal	5.2% Rule Year-end Balance		DBVA Withdrawal	DBVA Year-end Balance
1990	5.39	52000.00	898808.64		62630.46	888729.79
1991	4.25	54802.80	1021689.43		56228.59	1007762.78
1992	3.03	57131.92	1024497.22		64458.95	1001922.79
1993	2.96	58863.02	1099592.54		64842.85	1067077.07
1994	2.61	60605.36	1040966.72		69939.90	999036.98
1995	2.81	62187.16	1170508.38		66381.55	1115349.20
1996	2.93	63934.62	1269454.60		75212.44	1193238.48
1997	2.34	65807.90	1360552.27		81760.15	1256368.97
1998	1.55	67347.81	1405101.89		87587.46	1269912.96
1999	2.19	68391.70	1459539.77		90207.49	1288107.98
2000	3.38	69889.48	1419388.18		93382.49	1220292.06
2001	2.83	72251.74	1335462.41		90447.97	1120053.09
2002	1.59	74296.47	1254068.72		85047.36	1029181.23
2003	2.27	75477.78	1428995.43		80235.88	1150559.13
2004	2.68	77191.13	1499682.89		92326.51	1173996.38
2005	3.39	79259.85	1526132.89		97989.55	1156084.75
2006	3.24	81946.76	1672733.19		100741.41	1222354.78
2007	2.85	84601.83	1689942.92		111677.04	1181880.82
2008	3.85	87012.99	1365011.50		113767.02	909576.63
2009	-0.34	90362.99	1498733.96		92776.77	960394.72
2010	1.64	90055.75	1616815.96		106005.79	980628.26
2011	3.16	91532.67	1608704.82		118241.78	909552.54
2012	2.07	94425.10	1659775.77		121208.91	864089.79
2013	1.47	96379.70	1605872.04		129143.73	754913.83
2014	1.62	97796.48	1649363.41		128969.45	684587.56
2015	0.12	99380.78	1526756.12		139655.73	536766.02
2016	1.26	99500.04	1507994.99		136200.97	423224.74
2017	2.00	100753.74	1519604.09		142480.96	303160.10
2018	2.40	102768.81	1409502.25		152334.18	150045.30
2019	1.80	105235.27	1332178.30		150045.30	0.00
Avg:		79373.05			100064.28	

Summary

The DoubleBucket® Method resolves two main problems that face retirees: determining asset allocation and providing a withdrawal method for optimal income. It is especially attractive to those retirees who have a flexible discretionary budget and don't have a requirement to leave an inheritance to their heirs. Income can go up and down from year to year but in almost all cases the DoubleBucket Variable Annuity withdrawal method will provide a better average return rate than the so called 4% Rule.

Analyzing some of the historical spans in detail, the withdrawal rate for the DBVA is somewhat heavy on the backend. One of the reasons for this is that conservative estimated returns were used in the time-buckets. Alternatively, a more aggressive approach could be used in those estimates which would move more income earlier into retirement. However, the spans that start out during poor market conditions would be penalized in the middle years. A better approach to this problem might be to specify an adjustable income stream. Since discretionary spending is typically higher early in retirement, income requirements could be reduced later on. This concept can be supported by breaking up the retirement span into sub-spans, each with a different income requirement. This idea is implemented on the website but was not studied here.

Keep in mind that the DoubleBucket® Method is not necessarily an investment strategy but more a tool to analyze historical results and calculate future asset allocations based on those results. Even if DoubleBucket is not a perfect fit for a specific retiree, hopefully this paper and the website can be used as a tool for deriving an asset allocation and withdrawal methodology in general.

In doing our studies and analysis, we have tried to double check our results. However, there is always a chance we've made a mistake or two along the way. If anything is in error or if there are questions or comments, please drop us a line on the website's contact page: www.TheDoubleBucket.com/contact.

Thank you!