

# “Investor Toolbox”

## Abstract

- As investors, we want high returns and certain outcomes. However, returns in the short-term are unpredictable, and risk/volatility is a reality.
- Five Tools for Managing Risk
  1. Standard Deviation – When looking at an individual’s tolerance for portfolio volatility, an advisor can use standard deviation to determine the likelihood that a portfolio of a certain construction will perform below that investor’s risk tolerance.
  2. Diversification – Diversification can be captured in the phrase, “Don’t put all of your eggs in one basket.” The benefit of the ***diversification effect*** is combining assets or asset classes in such a way that the volatility of a group of securities is less than the weighted volatility of the average security in the portfolio.
  3. Correlation – Correlation measures the degree to which the movement of one security explains the movement of another security. If two securities have perfect negative correlation, then the return and volatility of one wipes out the return and volatility of the other. With perfect positive correlation, when one investment is going up or down, so are all of the other investments. Therefore, there is no diversification.
  4. Asset Allocation – Asset class differentiation is the categorization of different investment vehicles, separating their risk and return characteristics from one another. Research from Brinson, Hood, and Beebower reveals that 90 percent of a portfolio’s return comes from asset allocation, or portfolio structure, and less than ten percent comes from what is typically considered to be managerial skill.
  5. Efficient Frontier – At each measure of expected return, there is a combination of securities that has the highest expected return. Each of these points is considered to be the optimal portfolio for that level of risk and return. When these optimal risk/return points are combined, they create a line that is called the optimal set, or efficient frontier. By adding some types of risky asset classes to the portfolio, the expected return can remain the same or improve, but the expected volatility can be reduced.
- These five tools are not silver bullet solutions, as they should all be used together.
- Our job as advisors and investors is to determine the future value of current decisions, not the current value of past decisions.

# Wealth That Lasts

## Investor Toolbox

by Robert J. Bancroft



*We have been working through the elements of the Wealth That Lasts process during the past few articles. The purpose of the process is to block out the “noise” that comes from the scattered, disconnected investment information that bombards us every day. The financial services industry has focused most of its attention on marketing to potential clients rather than on educating them. This type of marketing is typically based on fear or greed and is intended to make investors uncomfortable and willing to change their existing investment structure. Because the marketing of investment products can be subjective, our Wealth That Lasts class adds a level of objectivity to the investment process by providing educational resources to affluent individuals and families.*

As investors, we want high returns and certain outcomes. However, as we discussed in previous articles, returns in the short-term are unpredictable, and risk/volatility is a reality. We explored the discovery and development of Modern Portfolio Theory (MPT) from 1952 to the present. We generically call this section asset allocation; but in this article, we are going to focus on the tools of

MPT. The tools include standard deviation, diversification, correlation, asset allocation, and efficient frontier. We are going to define these tools and discuss how you and/or your financial advisor may use them in the implementation of your wealth management strategy.

### Measuring and Managing Risk

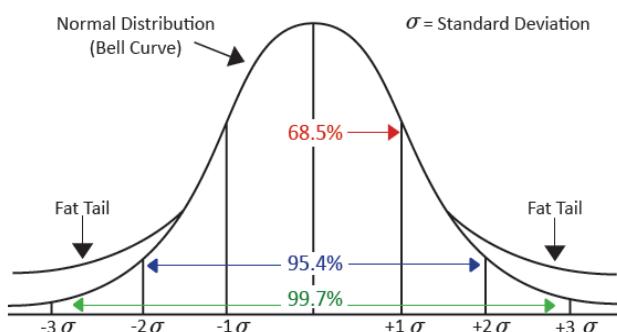
#### Tool #1: Standard Deviation

In or around 1730, a gentleman named Abraham de Moivre developed the concepts of normal distribution and standard deviation. By looking at the large sets of data, such as the deaths in London, he could determine the likelihood that a certain person of a certain age would die in a given year. He was not attempting to determine that a particular person would live or die but rather how many would die out of the population as a whole. If the people selling insurance were insuring large enough numbers of people, de Moivre could approximate the number of those insured that would die in a given period of time. With that understanding, the insurers could attempt to quantify the risk and set appropriate premiums to charge individuals for life insurance.

In my work, I need to know the potential returns of particular investments rather than the probability of death, but the calculation methodology is similar. In a perfect world, I would be able to determine the exact return of my investments in advance; but that is impossible, so I must look for alternatives. One method is to study the historical returns in order to determine the range of positive and negative extremes from the average over a given period of time. To be valid, the range of possible returns requires a sufficient amount of historical data. If the returns in that data are normally or approximately normally distributed, we have a tool that will allow us to establish the probability of positive and negative outcomes around the average. This tool is called “standard deviation.” When looking at an individual’s tolerance for portfolio volatility, an advisor can use standard deviation to determine the likelihood that a portfolio of a certain construction will perform below that investor’s tolerance for volatility in a given year. If the portfolio proves that

it has the potential to be volatile beyond the individual's tolerance for downside volatility, the portfolio construction can be altered or avoided. This helps the investor avoid the emotional and costly mistake of overreacting to volatile markets.

For example, using data from 1926 to the end of 2010 supplied by Ibbotson Associates<sup>1</sup>, investors can see that the 85-year average return for large company stocks of the S&P 500 Index was 9.9 percent. As we have said previously, the average of 9.9 percent does not occur every year because the returns are inconsistent. The question that we need to ask ourselves is, "In the search for high returns, how much inconsistency am I willing to tolerate?" If investors determine that they are not willing to tolerate annual returns worse than negative 15 percent in any given year, then they have a solid starting point.



By examining large company stocks, we can determine the dispersion of returns around the average of 9.9 percent. The standard deviation of large company stocks as measured by the S&P 500 Index is estimated at approximately 20 percent. Without going into a great amount of detail, a standard deviation of 20 percent tells us that statistically there is a one in 40 chance of seeing a return above 50 percent; there is also statistically a one in 40 chance of seeing a return below negative 30 percent. This look at standard deviation begins to be useful for our planning purposes; if our downside volatility tolerance is limited to a downside return of negative 15 percent, then a portfolio construction that expects a return of negative 30 percent should be avoided or at least modified by investing a portion of the portfolio in cash and/or other asset classes that are less volatile. By knowing this

tolerance for volatility before investing, one can alter his or her investment structure, prevent a major mistake, and avoid a significant amount of anxiety.

## Tools #2 and #3: Diversification and Correlation

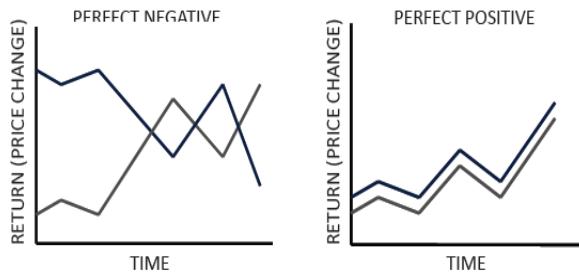
"Diversification," as Nick Murray said, "Is the conscious decision to avoid making a killing for the certainty of not getting killed."

It is nearly universally agreed that diversification is a good thing; but diversification, in my opinion, is the one of the most over used and least understood words in the investment world. Many articles focus on the apparent necessity of diversification but fail to define it properly. It is assumed that since the word has such a significant place in common use, everyone knows what it means. Therefore, people assume that further defining the word is unnecessary. I disagree with this view and will attempt to explain the most important parts of its use here.

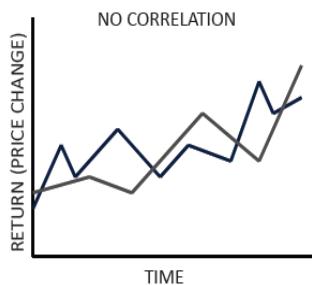
Common sense of the word diversification can be captured in the phrase, "Don't put all of your eggs in one basket." The meaning of the phrase as it applies to investments is that if one were to hold several different types of investments or to hold investments in different places, then they would be diversified. However, that is not necessarily true. As an example, if investors own securities, including the common stock of Coca-Cola and Intel, are they working toward being diversified? On the surface, it may appear that they are because Coke and Intel are different types of companies. Coke is an internationally known beverage company and Intel is well known for its computer chips. There is still a further concept that is necessary to understand before one can make a determination regarding diversification, and that concept is "correlation." Correlation measures the degree to which the movement of one security explains the movement of another security. If securities such as Coca-Cola and Intel move up and down at the same time, then no level of diversification has been achieved. The gain or loss in one of the assets will explain the gain or loss in the other. As in the illustration below, I have provided two types of correlation: perfect negative correlation and perfect positive correlation.

<sup>1</sup> Data taken from Ibbotson Associates study, "Stocks, Bonds, Bills, and Inflation 2011."

If two securities or security types have perfect negative correlation, then the return and volatility of one wipes out the return and volatility of the other. As a result, there is no return or volatility, and the investor ends up paying investment expenses and achieves a negative return. With perfect positive correlation, when one investment is going up or down, so do all of the other investments. Therefore, there is no diversification.



If, on the other hand, both securities have acceptable positive returns over time and the movement of one does not explain the movement of the other, then the true benefit of the diversification can be achieved. In other words, the diversification effect is achieved by combining assets or asset classes in such a way that the volatility of the group of securities is less than the weighted volatility of average security in the portfolio. An example of non-correlated assets is illustrated below.



That last point is worth repeating. If one is constructing a portfolio of securities that don't all move up and down at the same time, then the combined portfolio will have lower volatility than the average security in the portfolio. By diversifying

properly, one not only avoids the possibility of a total loss of his or her investment but also reduces the average volatility of the entire portfolio. That is the true benefit of the diversification effect.

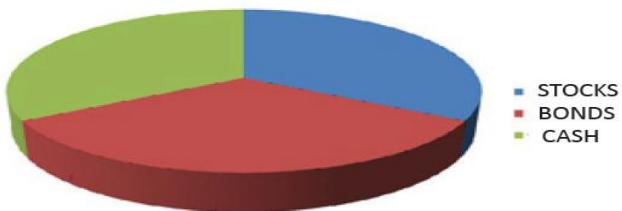
#### Tool #4: Asset Allocation

Asset class differentiation is the categorization of different investment vehicles, separating their risk and return characteristics from one another.

Examples of asset classes that we have discussed so far include cash, bonds, and stocks. We will expand our view of asset classes as we move forward. Asset Allocation, our fourth tool, is the blending together of these different asset classes to achieve a portfolio structure that provides the required or desired level of return while satisfying the investor's desired or required volatility.

Why do I care about asset allocation? In 1986, Gary Brinson, L. Randolph Hood, and Gilbert Beebower conducted research to study the performance of 91 large U.S. pension plans between 1974 and 1983. Brinson, Beebower, and Brian Singer published a follow-up study in 1991 that essentially confirmed the results of their first paper. Both studies were published in the *Financial Analysts Journal*. The group was attempting to learn whether portfolio return comes from investor skill or from the natural return of the market. In their research, the investors that they were monitoring were professional portfolio managers. The BHB group was trying to determine how much of the positive and negative return experienced in a portfolio was attributable to the market moving up or down and how much came from the professional manager's skill. They defined manager skill as the ability to add value to the portfolio in such areas as security selection, market timing, portfolio construction, etc.

The illustration below is an example of asset allocation using equal portions of the asset classes: cash, stocks, and bonds.



A good way to think about BHB's work is with an analogy. Imagine traveling down a river in a small boat powered only with oars. If the water in the river is moving at nine mph, and we are moving with the current, how fast will the boat floating on the river be moving? The boat will be moving along with the river's current at approximately nine mph unless there is a person in the boat rowing. If the person is a skilled rower and going with the current, then the boat may possibly be traveling at ten mph. The contribution of the rower is the additional one mph above the nine mph speed of the river, not the entire ten mph that the boat is traveling.

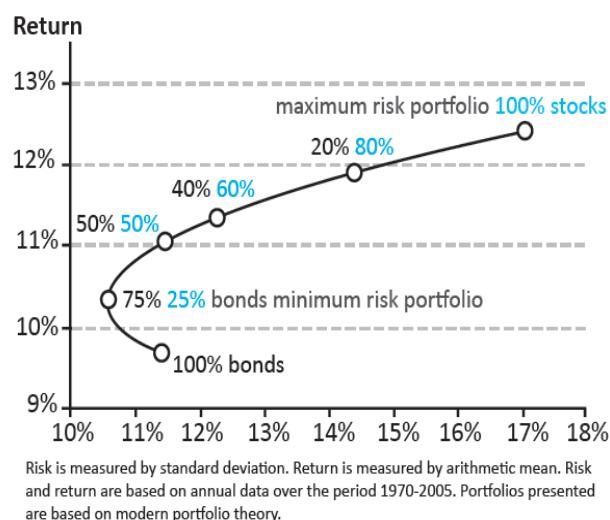
What BHB's groundbreaking research determined was that more than 90 percent of a portfolio's quarterly return comes from asset allocation or portfolio structure, and less than ten percent of the portfolio's return comes from what is typically considered to be manager skill. Their research suggests that the market (river) does most of the hard work and the active manager (rower) is adding less than we expect. Whether one agrees with the study or not, it is easy to believe that it is less difficult to have positive return in a positive market than it is in a negative market. Said another way, "When the markets go up, my portfolio value goes up. When markets go down, my portfolio value goes down."

### Tool #5: Efficient Frontier

While doing graduate work in 1952 at the University of Chicago, Harry Markowitz determined that one could combine the concepts of standard deviation, diversification, correlation, and asset allocation. He proved that when asset allocation is used with asset classes that have low correlation and reliable standard deviation measures, one could achieve a diversification effect. At each measure of expected return, there is a combination of securities that has the lowest expected risk; and conversely, at each measure of

expected risk, there is a combination of securities that has the highest expected return. Each of these points is considered to be the optimal portfolio for that level of risk and return. When those optimal risk/return points are combined together, they create a line. That line is called the optimal set or efficient frontier. The conclusion is that by adding some type of risky asset classes to the portfolio, the expected return can remain the same, but the expected volatility can be reduced. The least risky portfolio may no longer be the lowest return portfolio. In my opinion, this is the closest thing to a free lunch in the investment world.

Stocks and bonds: risk versus return 1907-2005



As with nearly everything I have said in these articles, these tools are neither a silver bullet solution nor are they to be used independently from the rest of the structure. Most of the information used in Modern Portfolio Theory is based on historical returns. That viewpoint begs the obvious question, "What if history doesn't repeat itself?"

***Our job as advisors and investors is to determine the future value of current decisions, not the current value of past decisions.***

A tool that helps us model potential future outcomes is called Monte Carlo Simulation, which is also the subject of our next article, "Investing's Crystal Ball." To access this article, go to our home page, click on "resources," and select "articles" from the drop down box.

The Wealth That Lasts course and these articles are intended to walk an investor through the steps of the

Wealth That Lasts process. The final outcome should be a draft of the investor's personal wealth management strategy. To this point, we have developed your values and goals and determined if they were realistic given your personal circumstances. We then established your tolerance for volatility, which will be used when we start making asset allocation decisions. In the next three articles, we will combine additional tools and investment types and help you to determine which types of investments you prefer to hold and in what amounts. We will then move on to decide whether you are going to do all of this yourself or if you are going to assemble a team. Either way, we will define the roles and responsibilities involved in the proper functioning of your wealth management strategy. We will finish by establishing your communication plan and completing a hierarchy of your estate planning needs. All of these elements will be used to design your Investment Policy Statement and/or Family Mission Statement.

As always, I appreciate your feedback. If you have questions or comments, please email me at

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The securities/instruments discussed in this material may not be suitable for all investors. The appropriateness of a particular investment or strategy will depend on an investor's individual circumstances and objectives. Global Wealth Management Institute and Wealth That Lasts recommends that investors independently evaluate specific investments and strategies, and encourages investors to seek the advice of a financial advisor.

Global Wealth Management Institute and Wealth That Lasts do not provide tax or legal advice. Clients should consult their tax advisor for matters involving taxation and tax planning and their attorney for matters involving trust and estate planning and other legal matters.

Past performance is no guarantee of future results.

Asset allocation and diversification do not guarantee a profit or protect against a loss in a declining financial market. Rebalancing does not protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy.

Any type of continuous or periodic investment plan does not assure a profit and does not protect against loss in declining markets. Since such a plan involves continuous investment in securities regardless of fluctuating price levels of such securities, the investor should consider his financial ability to continue his purchases through periods of low price levels.

Monte Carlo simulations are used to show how variations in rates of return each year can affect your results. A Monte Carlo simulation calculates the results of an analysis by running it many times, each time using a different sequence of returns. Results generated by a Monte Carlo simulation will vary with each use and over time because each portfolio simulation is randomly generated. Some sequences of returns will give you better results, and some will give you worse results. These multiple trials provide a range of possible results, some successful (you would have met all your goals) and some unsuccessful (you would not have met all your goals). The percentage of trials that were successful is shown as the probability that the analysis, with all its underlying assumptions, could be successful. Results using Monte Carlo simulations indicate the likelihood that an event may occur as well as the likelihood that it may not occur. In analyzing this information, the analysis does not take into account actual market conditions, which may severely affect the outcome of your goals over the long term. The projections or other information generated by a Monte Carlo simulation regarding the likelihood of various investment outcomes (including any assumed rates of return) are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Global Wealth Management Institute and Wealth That Lasts cannot give any assurances that any estimates, assumptions or other information generated by a Monte Carlo simulation will prove correct. They are subject to actual known and unknown risks, uncertainties and other factors that could cause actual results to differ materially from those shown.

Interest in municipal bonds is generally exempt from federal income tax. However, some bonds may be subject to the alternative minimum tax (AMT). Typically, state tax-exemption applies if securities are issued within one's state of residence and, local tax-exemption typically applies if securities are issued within one's city of residence.

Bonds are affected by a number of risks, including fluctuations in interest rates, credit risk and prepayment risk. In general, as prevailing interest rates rise, fixed income securities prices will fall. Bonds face credit risk if a decline in an issuer's credit rating, or creditworthiness, causes a bond's price to decline. Finally, bonds can be subject to prepayment risk. When interest rates fall, an issuer may choose to borrow money at a lower interest rate, while paying off its previously issued bonds. As a consequence, underlying bonds will lose the interest payments from the investment and will be forced to reinvest in a market where prevailing interest rates are lower than when the initial investment was made. NOTE: High yield bonds are subject to additional risks such as increased risk of default and greater volatility because of the lower credit quality of the issues.

S&P 500 Index is an unmanaged, market value-weighted index of 500 stocks generally representative of the broad stock market.

Dow Jones Industrial Average is a price-weighted index of the 30 "blue-chip" stocks and serves as a measure of the U.S. market, covering such diverse industries as financial services, technology, retail, entertainment and consumer goods.

An investment cannot be made directly in a market index.

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