

## The Asset Allocation Question

By Richard A. Ferri, CFA

*Question: How much should you invest in the stock and bond market?*

*Answer: It depends.*

*Question: Depends on what?*

*Answer: It depends on who you talk to.*

If you talk to a stockbroker he or she will likely suggest a heavy dose of stocks. Why? Because riskier investments, such as stocks and stock mutual funds, generate bigger commissions and fees than bonds or money market funds. So, it is in the best interest of the broker to recommend riskier assets.

If you talk to a financial planner, they will recommend a greater allocation toward stocks for younger investors and a lower allocation for elder investors. Why? Because old people shouldn't take risk. At least that is the underlying assumption considered standard in the financial planning industry.

If you talk to an academic about your investment mix, you are likely to get an answer based on esoteric econometric formulas using historic asset class covariance, efficient frontiers, Monte Carlo simulation, and utility curves. Huh?

This paper takes a step back from stockbroker sales hype, financial planning rules-of-thumb, and academic dissertations to focus on some practical tools that may help answer the not-so-simple question of how much you should invest the stock market. It is designed to address the questions that many average investors have about important decisions and strategies that affect their future.

My approach to the asset-allocation decision is based on the KISS principle: *Keep It Simple Stupid*. Sticking to a simple doctrine will help you keep your head during a market crisis and prevent you from making ill-advised snap decisions.

The first step in the process is to ask yourself, "What do I want my money to do for me when I am alive, and what do I want my money to do for my heirs when I'm gone?"

When asked these questions, most of us have three common answers. First, we want financial security - meaning we don't want to worry about running out of money while we are alive. Second, we want to live comfortably in retirement, which generally means living at a lifestyle that we have grown accustomed too. Thirdly and ideally, we want to leave something for our children and grandchildren if possible.

If you agree with those answers, ask yourself, "Is my investment portfolio set up to achieve these goals?" Most people have no idea.

The process of asset allocation begins by putting dollar figures on subjective goals like financial security, a comfortable retirement, and providing for children.

Ask yourself:

- *How much money do I need in my nest egg to feel financially secure?*
- *How much do I plan on spending each year while in retirement?*
- *How much do I intend to leave to my family?*

### The Five-Step Asset Allocation Method

When large corporations invest money in a defined benefit pension plan, they often use a process called liability matching. This procedure matches the investment mix in a portfolio to the expected cash outflows of a plan over the years. Personal retirement accounts are no different. If you design the portfolio to achieve your long-term investment objective based on future cash needs and risk control, then there is a strong likelihood that you will meet the liabilities when they come due. Set a course and follow it, without being swayed by the madness of the markets.

Here's how it's done:

## 1. Setting Goals

The biggest liability you have in life for a better future is a retirement fund. The size of your fund will determine the quality of life you will live during the Golden Years (assuming you make it there), and how much you will be able to help your family. So the obvious question is: *How large of a nest egg do you need at retirement?*

The answer depends in part on how much you spend each month presently. Aside from college bills and work-related expenses, most people do not increase the amount they spend each month when they retire. To find your future retirement fund liability, start by analyzing your current monthly budget.

To best illustrate this process, let's look at an example.

A 45-year old couple has one 18-year old child who is a freshman in college. The couple runs a small business, and are the only employees. They have saved \$300,000 in a pension and contribute \$20,000 per year to their retirement account. They spend about \$5,000 per month on personal living expenses, excluding college costs.

The \$5,000 per month budget is an after-tax figure, which means the couple needs about \$7,000 per month pretax. When they retire, they will likely need the same amount to live comfortably, adjusted for inflation. If Social Security survives in any form, that would generate about \$1,500 per month in income at age 65. The remaining \$5,500 per month would have to come from retirement savings, or \$66,000 per year.

Now that we know the couple's income needs in retirement, we can work backwards to determine a nest egg. I tell people that they can withdraw about 5% of their retirement fund each year and never run out of money. This assumes that the financial markets cooperate and that we do not see multi-year negative returns in both stocks and bonds. It also assumes plowing back into the account any excess return over 5% per year as an inflation hedge. In order for our couple to draw \$66,000 per year out of their retirement fund, they would need a nest egg of \$1,320,000 at retirement in today's dollars (5% of \$1,320,000 equals \$66,000).

Obviously, there are many considerations that go into the nest egg figure, such as special needs of family members, health care concerns, current and future tax rates, gifts given or received, possible inheritances, proceeds from the sale of homes, businesses, and other assets, etc. Those events could have major positive or negative effects on cash flow and should be worked into the equation. Unfortunately, there is not enough space in this article to cover all contingencies, so I'll stick with the basics.

## 2. The Inflation Adjustment

A nest egg of \$1,320,000 would suffice if our couple were to retire today. However, they are not going to retire for a number of years, so the figure needs to be adjusted for expected inflation. For this example, I will assume a 2½ % annual inflation rate over the next 20 years. Compound \$1,320,000 by 2½% over 20 years and you come up with a new nest egg target of \$2,160,000. This also means 20 years from now the couple will withdraw about \$108,000 per year, which is 5% of \$2,160,000.

## 3. The Savings Plan and Required Return

Now that we know how much the couple needs at retirement, we can create a savings plan to get there. We have all the facts and figures, except a required investment return. What rate of return does the couple need on their retirement savings to reach \$2,160,000 in 20 years?

There are four parts to this equation, and we already know three of the inputs:

- 1) *How much is needed at retirement?* (\$2,160,000)
- 2) *How much has the couple saved?* (\$300,000)
- 3) *How much will be put away for retirement each year?* (\$20,000)
- 4) *What minimum required rate of return is needed to achieve the retirement goal?* (Unknown)

Using a financial calculator or Microsoft Excel you can calculate a required return for the couple. In an Excel spreadsheet:

Step #1	Go to the "Function" key and select "RATE." Enter the amount needed at retirement as the future value (FV = \$2,163,000 a positive number).
Step #2	Enter the amount the couple has now as the present value (PV = -300000 - a negative number).
Step #3	Enter the expected annual savings as a payment (PMT = -20,000 - a negative number).
Step #4	Finally, enter the number of years until retirement in the NPER box (Nper = 20). Hit "OK," and you should get a percent return of 7.5%. This is the minimum required return the couple needs to reach \$2,160,000 in 20 years.

A 7.5% return is a reasonable expectation, and an asset-allocation plan can be created that has a high probability of achieving that number. On the other hand, if the couple's required rate of return was 10% or greater, something needs to change in their plan. Either they need to save more money each year, work longer in life, spend less in retirement, or plan on leaving less inheritance to the children (my personal favorite option). It is possible that the markets will deliver 10% or greater returns over the next 20 years, but it is not probable, and it is foolish to plan for it. I never use a return higher than 8%.

#### 4. An Asset Allocation Decision

Now we finally get to the fun stuff: selecting stocks and bonds. We know the couple needs a minimum return of 7.5% compounded over 20 years to meet their target of \$2,160,000. Using expected returns of various asset classes, what allocation between stocks and bonds gives them the highest assurance of producing the 7.5% return, while keeping risk as low as possible?

#### Estimates of Returns (Stocks and Bonds) and Inflation Rate

Benchmarks	Estimate (2000-2020)
Large Stocks	8.0%
Small Stocks	10.0%
Treasury Bonds	6.0%
Corporate Bonds	7.0%
Inflation Rate	2.5%

Source: Portfolio Solutions, LLC (9/1/2000)

The estimates of financial market returns noted above are based on my own company's projections, which may or may not be accurate. If the couple can achieve a 7.5% return in the financial markets by taking no risk, than that is what they should do. After all, why take risk if you do not have too? I do not believe every investor must own stocks in their portfolio just for the sake of owning stocks. The risk this couple has is not having enough money to retire in twenty years. If that risk can be eliminated, why add market risk when it is not needed? Unfortunately, the risk-free rate of return on a 20-year Treasury bond is currently 6%, so some market risk is required to achieve a 7.5% return.

Using the estimates, a logical asset allocation for this portfolio would be a 60% stock, 40% bonds mix with the two broad asset classes further divided between large- and small-cap stock index funds, government and corporate bond index funds. The breakdown is as follows:

## Logical Asset Allocation Recommendation

Index Fund	Allocation	Return Contribution
Large Stocks	50%	4.0%
Small Stocks	10%	1.0%
Treasury Bonds	20%	1.2%
Corporate Bonds	20%	1.4%
<b>Total</b>	<b>100%</b>	<b>7.6%</b>

Technically, a 60% stock, 40% bond allocation is the correct answer. It is also the textbook solution taught in Financial Planning 101 because there is a high probability the mix will achieve the minimum required return of 7.5%. Most investors will accept this mix because they have heard somewhere along the line that a 60/40 mix is “normal” and even “prudent.” Most stockbrokers go along with the allocation because it places 60% in higher-commission stocks or stock-based products. So, logically and mathematically, everything looks fine, all the experts agree it looks fine - but there are serious problems beneath the surface.

One problem is the cost of implementation. The total return of the portfolio recommended above is based on the gross returns of markets, not the net of fee and commission return of mutual funds and investment advisors. An adjustment needs to be made to lower the expected return of the portfolio by the commissions and fees. This will likely lower the expected return of the portfolio around 6.5%, below the 7.5% required. To make up the shortfall, our couple may find they need to take more risk later in life (i.e. - increase the stock allocation to 75%).

A second problem comes during investment selection. If the couple invests in actively managed mutual funds or individual stocks, the results could be far different than those of the market. To avoid the high cost, unpredictable returns, and confusion of an actively managed stock portfolio, the couple should use no-load index mutual funds. Index funds deliver the return of the markets, with minimum fees.

Finally, there is a deeper problem with the suggested allocation. Does the asset mix truly fit the personality of the investor?

### 5. Fitting the Portfolio to the Investor

Up to this point we have taken a purely technical approach to discovering the best asset allocation for the couple. Now comes the hard part. Can the couple accept the 60% stock, 40% bond allocation we found to be technically correct, or will they feel the need to reduce their allocation to stocks during stressful times in the market? To find out, we need to switch hats from financial engineer to behavioral psychologist.

We live in a macho capitalistic country and cherish our financial freedom. Taking financial risk is part of our national heritage. As a result, when people are asked how much financial risk they can handle, most people tend to answer on the brave side. Being afraid to take financial risk is considered a weakness in our culture, and we are reminded of this fact by the media every day. No one wants to admit they are afraid to invest in the stock market.

A look back in history shows that most Americans handle stock market risk well, right? Wrong! Most people fold under pressure and bail out of bear markets. A majority of long-term investors duck and run during a prolonged market crisis. Most individual investors sold stocks during the crash of 1929, the deep bear market of 1973-74, and again on Black Monday in 1987. Despite a lot of brave talk, the fact is Joe and Jane average investor cannot handle a lot of financial risk. The next prolonged bear market will *not* be different.

How can we determine if the technically correct 60% stock, 40% bond asset allocation fits our couple's psychological risk tolerance so they can withstand the next bear market? Many stockbrokers and financial advisors believe the answer to that question can be found by using a routine risk questionnaire. They ask 8 to 12 simple questions, then feed the answers into a computer that spits out a “personalized” risk profile and investment recommendation. This method is great if you are selling high-cost investment products, but practically useless if you are trying to find an individual's risk tolerance. The canned questionnaires are so impersonal and simple-minded that they cannot possibly be used to make a lifelong investment decision. Questionnaires should instead be used as a springboard for an in-depth discussion of risk. Skilled financial advisors spend more time with clients before making investment recommendations.

Once an allocation has been thoroughly explored, it is a good idea to run it through a Stress Test. This helps the client understand how they will react to losses in the portfolio during particularly difficult periods in the market. People react differently than they imagined when they start losing a lot of money month after month, and year to year, all the time getting closer and closer to retirement. The object of the test is to break the clients' spirit (remember our couple), to simulate a bear-market scenario where they may say, "Stop. This is not going to work for me. Do something different. I do not like what I see happening to my portfolio. You're fired!" All of those things clients say in real life which signals that someone made a mistake in their asset allocation.

The stress test period I use is 1973-74. That was a particularly painful period for stock investors. It also occurred in recent history, so most people still remember. To give you an example of a 73-74 Stress Test, I have included one for our couple on a separate page.

In summary, the 60% stock, 40% bond allocation was technically correct for the couple, but proved too stressful during a down period in the market. As a result, they would have sold stocks at the bottom of the 73-74 bear market. So, it's back to the drawing board again. Either the couple needs a more conservative asset mix, or they need to change their retirement assumptions.

We were able to change the asset mix to reduce the risk of the portfolio while maintaining the 7.5% required return. In the stress-test example, a reduction in stocks to 40% and a switch to 60% corporate bonds would have accomplished the goal. Once the reduction was in place, we ran the stress test again. This time the couple stayed with the portfolio during the entire 73-74 simulation, and re-balanced the account at the end of each year. This put them in an ideal position to benefit from a strong rally in stocks and bonds from 1975-76. The best asset allocation is the one that will be stuck with during all market conditions.

### **Wrapping it Up**

Should you reduce your exposure to stocks later in life, like the textbooks say? The answer is "Yes" if you saved only enough to retire, and "No" if you have accumulated significantly more than you need. A person who has accumulated more than they need to live on for the rest of their life will be investing the excess for their heirs. That portion of the wealth has a different timeframe and therefore a different asset mix than the retirement money. This article was written more with the first case in mind; however, the rules can be applied to different levels of wealth.

I apologize for the length of this article. Asset allocation is not a one-minute subject, and there are many misconceptions floating around. I believe asset allocation is the most important portfolio decision you will make and is worth taking the time and effort to understand the process.

The true essence of asset allocation is to develop a mix that satisfies your investment objectives while keeping your risk low enough so you will not make emotional decisions during a bear market. Those who maintain a comfortable and consistent asset allocation to stocks during all market conditions will find themselves much further ahead than those who assume too much risk and ultimately surrender to the pressure.

There are many issues we have not discussed in the paper - such as the best method for re-balancing the mix, value verses growth stocks, U.S. verses International, etc. In my opinion, many of those issues are style decisions that may or may not value to a portfolio. The real issue is getting the overall stock and bond mix right. If you can hone in an appropriate asset allocation and maintain it for most of your life, you are 90% home.

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## The 1973-74 Asset Allocation Stress Test

By Richard A. Ferri, CFA

Imagine holding a majority of your portfolio in stocks during the 1973-74 bear market when large cap stocks fell over 40% and small cap stocks fell by 45%? Would you have stayed in? Most investors didn't. The 1973-74 Stress Test is a great planning tool. Every investor should try this test to see how his or her portfolio reacts to a severe bear market.

In this example, we will use a portfolio of 60% stock and 40% bonds. Historically that allocation has a good chance of producing a 7.5% required return over a 20-year period. Let us assume it is the beginning of 1973 and our clients, a self-employed couple in their mid 40s, have been investing according to our 60/40 allocation since the late 1960s. Assets have grown to \$700,000 and they continue to add \$20,000 per year. Here the 60% stock, 40% bond allocation at the beginning of 1973:

### Initial Portfolio Allocation

January 1973

Stocks (60%) S&P 500	Bonds (40%) 5 Year Treasury	Total Account
\$420,000	\$280,000	\$700,000

Going forward, 1973 turned out to be a terrible year. The stock market fell almost 15% and the economy was on shaky ground. Our clients lost over \$50,000.

Stocks (60%) S&P 500	Bonds (40%) 5 Year Treasury	Total Account
\$357,000	\$293,000	\$650,000
	Plus new cash	+ \$20,000
	<b>Total at year end</b>	<b>\$670,000</b>

It was now time to meet with the couple, add another \$20,000 for this year's contribution, and re-balance the portfolio. The couple is reluctant, but decides to go along with the plan.

### New Portfolio Allocation

January 1974

Stocks (60%) S&P 500	Bonds (40%) 5 Year Treasury	Total Account
\$402,000	\$268,000	\$670,000

1974 proved to be the one of the worse years in the stock market history. Large stock market fell over 26% and the economy was stalled. After taking the country off the gold standard, the President resigned. The Arab oil embargo was in full swing and the value of the dollar was sinking.

### Portfolio Value

December 1974

Stocks (60%) S&P 500	Bonds (40%) 5 Year Treasury	Total Account
\$295,000	\$283,000	\$578,000
	Plus new cash	+ \$20,000
	<b>Total at year end</b>	<b>\$598,000</b>

Nevertheless, it was now time to meet with the couple, add another \$20,000 for this year's contribution, and re-balance the portfolio.

**Proposed New Portfolio Allocation  
January 1975**

Stocks (60%) S&P 500	Bonds (40%) 5 Year Treasury	Total Account
\$359,000	\$239,000	\$598,000

The end of the road! You did not need to call the client this year because they called you! Their business is on the rocks because of the recession, and they are in financial trouble. They no longer want to have so much in stocks because they are losing so much money. They want safety, safety, safety! The couple will consider leaving \$100,000 or so in the market, if things get better.

***A More Conservative Approach***

Let's go back to the beginning of 1970. Instead of choosing a portfolio of 60% stocks and 40% bonds we recommend a portfolio of 40% stock and 60% in short-term corporate bonds. Our clients agreed to our allocation and we invest their \$700,000 as follows:

**Initial Portfolio Allocation  
January 1973**

Stocks (40%) S&P 500	Bonds (60%) 5 Year Treasury	Total Account
\$280,000	\$420,000	\$700,000

Recall that 1973 was a terrible year and the stock market fell almost 15%. Our client lost some money, but not too much.

**Portfolio Value  
December 1973**

Stocks (40%) S&P 500	Bonds (60%) 5 Year Treasury	Total Account
\$239,000	\$431,000	\$670,000
	Plus new cash	+\$20,000
	<b>Total at year end</b>	<b>\$690,000</b>

In order to put it back to a 40% stock 60% corporate bond position, our client needs to buy stocks and sell corporate bonds. We call the clients and they agree.

**New Portfolio Allocation  
January 1974**

Stocks (40%) S&P 500	Bonds (60%) 5 Year Treasury	Total Account
\$276,000	\$414,000	\$690,000

1974 was worse than the 1973 as large-cap stocks fall more than 26%.

## Portfolio Value December 1974

Stocks (40%) S&P 500	Bonds (60%) 5 Year Treasury	Total Account
\$205,000	\$435,000	\$640,000
	Plus new cash	+ \$20,000
	<b>Total at year end</b>	<b>\$660,000</b>

Nevertheless, it was now time to meet with the couple, add another \$20,000 for this year's contribution, and re-balance the portfolio.

## Proposed New Portfolio Allocation January 1975

Stocks (40%) S&P 500	Bonds (60%) 5 Year Treasury	Total Account
\$265,000	\$395,000	\$660,000

We call our clients and explain that it is time to balance the portfolio back to 40% stock, 60% corporate bonds. The couple is reluctant, because business is not good. But they decide to stick with the plan and give us permission to re-balance the portfolio. The 40% stock, 60% corporate bond allocation will work for this client because it is not beyond their risk tolerance. The portfolio passes the 73-74 Stress Test.

Lesson learned: the best performing portfolio is not the one with the largest allocation to stocks, it is the one with a level of stocks that an investor feels comfortable with during all market conditions. This is what a proper asset allocation will do for you.

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