PORTFOLIO STRATEGIES WORKSHOP

Planning Assumptions: Will the Real Long-Term Return Please Stand Up?

By Maria Crawford Scott

Joe and Lisa Maples are in their late 30s, and recently decided that they had better become more serious about building up their savings for their retirement.

Right now, they have about $45,000 in savings from their employer-sponsored retirement plans. They have no real need for income from their investments—they have no children, and both are working—and all of their savings are invested in stock mutual funds, primarily large-company index funds. However, they plan to invest a small portion in a long-term bond fund in future years.

The Maples have set a tentative goal of building their savings to around $2 million by the time they retire, in about 30 years. The key to their planning, however, is coming up with an estimate of the long-term rates of return they expect to earn on their stock and fixed-income investments.

Joe and Lisa have no idea how to forecast future returns, and they decide that a reasonable approach would be to use long-term historical returns. Lisa proceeded to research the historical returns associated with the Standard & Poor's 500. To her dismay, she found a wide variation in long-term returns:

- First, she found statistics that were published five years ago, but which covered 50 years, from 1942 to 1991: It showed a 12.9% annual return for the S&P 500.
- Then she found a more recent update of the publication, which still covered 50 years but from 1946 to 1995: It showed an 11.9% annual return.
- She decided to examine a more recent period, the last 35 years (1962 to 1996), and she found a more modest return: 10.8%.
- Examining an even more recent period, the last 20 years (1977 to 1996), she found a very substantial rate: 14.4%.

These various rates of return may seem relatively similar, but the Maples will be investing over a long period of time—at least another 30 years. A difference of only one percentage point can make a huge difference in their end results.

For instance, if Joe and Lisa invested their entire $45,000 current savings in stocks over a 30-year time period and earn a historical rate of return, they would end up with:

- $1.7 million assuming a 12.9% return,
- $1.3 million assuming an 11.9% return,
- $976,000 assuming a 10.8% return, or
- $2.5 million assuming a 14.4% return.

That's quite a range. How much additional money do they need to save each year to reach their $2 million goal, if they were fully invested in equities?

- $994 annually if they assume a 12.9% annual return,
- $2,904 annually if they assume an 11.9% return,
- $5,346 annually if they assume a 10.8% return, and
- Nothing if they assume a 14.4% return.

So, which return assumption should they use?

The temptation, clearly, is to use the 14.4% figure. But the Maples recognize that only covers a relatively recent "long-term" period, in which stock returns were particularly favorable.

The next temptation would be to use the 12.9% figure, covering 1942 to 1991. Joe and Lisa can even come up with a plausible rationale for using it. After all, the figure fully covers 50 years, and it excludes the volatile '20s and '30s, an economic environment that is unlikely to be repeated due to reforms and changes in U.S. financial institutions.

OK—the rationale is plausible, but perhaps not the best. After all, that time period does include World War II, and today's economy is not likely to be subject to those forces, either. But the more recent 50-year figure of 11.9% is one whole percentage point lower than the earlier 50-year figure. How can five years make so much

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difference? And does that mean that long-term plans have to be revised substantially every few years if the numbers change?

The stock market is volatile, and adding an extraordinary year here and deleting a horrendous year there will affect even long-term returns. The problem is, you can find almost any historical long-term return you'd like.

But if you want to use a figure in your planning, you will have to be able to receive that return in the future to achieve your goal. Historical rates of return are merely the starting point upon which to base an estimate of future returns. You must also add some judgment concerning the future.

Being Judgmental

Stock returns are affected by expectations concerning future growth in earnings; for the market as a whole, that translates into expectations concerning the growth of the U.S. economy. Fixed-income returns are affected by expectations concerning inflation, which is affected by economic conditions, but also by Federal Reserve policies. Stocks tend to produce higher rates of return than bonds both before and after inflation, but during high rates of inflation, both stocks and fixed income will suffer.

Table 1 shows rates of returns for the S&P 500 by decade since the 1960s. Returns were particularly low for stocks during the 1970s when inflation hit double-digits; conversely, returns skyrocketed during the 1980s as inflation was tamed. Those high rates of return have persisted as the relatively stable economic environment has shown continued growth.

Table 1 also shows returns for the Lehman Brothers long-term Treasury bond index since the early 1970s.

Table 1.
Recent Historical Returns:
The S&P 500 and Long-Term Gov't Bonds

S&P 500	
1960–1969	7.7%
1970–1979	5.7%
1980–1989	17.4%
1990–1996	14.4%
Lehman Brothers Long-Term Treasury Bond Index*	
1973–1979	4.0%
1980–1989	12.8%
1990–1996	9.7%

**Treasury bonds greater than 10 years maturity. The index started in 1972.*

Source: Chase Investment Performance Digest, 1997 edition, published by Chase Global Data & Research; $25.95 ($4 shipping and handling); 800/639-9494

Long-term bonds produced low returns during the '70s due to high rates of inflation and rising interest rates; they sky-rocketed as inflation and interest rates dropped substantially in the 1980s. In the 1990s, interest rates have been volatile, and yearly returns have varied from –7.6% in 1994 to 30.6% in 1995, with a high overall average return of 9.7% annually since 1990.

Unless you expect the future economic environment to resemble either the high inflation, unstable conditions in the 1970s, or the accelerated growth due to reversing conditions in the 1980s, you would not want to base future return expectations solely on these time periods, or on long-term returns that are strongly weighted with these periods.

Consistent Relationships

Relationships are another consideration. While absolute numbers have varied, some long-term return relationships have been relatively steady.

One of the best studies of long-term return patterns was conducted by Jeremy Siegel, finance professor at Wharton, published in an article in the Financial Analysts' Journal (excerpted in the June 1992 *AAII Journal*, and later expanded upon in the book "Stocks for the Long Run," Irwin Professional Publishing). Prof. Siegel examined the returns of stocks and bonds since 1802—his findings are certainly classified as "long term"—and he found that the long-term return of stocks relative to inflation (the "real" rate of return) is remarkably consistent, at an average 6.6% annually (see Table 2).

Given the changes in the U.S. economy and financial institutions, it would be difficult to argue that returns in the 1800s would have any bearing on stock returns today. More pertinent are his findings covering 1926 through 1992, which he divided into subperiods. For the overall period 1926–1992 and one subperiod, 1946–1992, he found that the real rate of return for stocks remained relatively steady at 6.6%. The more recent subperiod, 1966 through 1992, fell below the 6.6% long-term real return, dragged down primarily by the abysmally low returns of the 1970s and 1980s, when high rates of inflation affected all financial assets. An even more recent subperiod, 1982 through 1992, indicates a very high real rate of return, 11%.

What about fixed income?

Mr. Siegel's analysis found much less consistency for bonds over the time period (see Table 2). In fact, he found that real rates of return had tended to drop over the entire period. Treasury bills have produced virtually no real return since 1926, while long-term bonds produced real returns of 1.7% since 1926. Only within the past decade have real rates of return for fixed income been high. The findings also indicate that real returns on fixed income tend to be lower than the real return on stocks. These relationships should be built into any fu-

Table 2.
Long-Term Real Rates of Return
(1802–1992)

	Stocks*		Long-Term Gov't		Treasury Bills		
	Return (%)	Real Return** (%)	Coupon (%)	Real Return** (%)	Coupon (%)	Real Return** (%)	Inflation (%)
1802–1992	8.1	6.7	4.7	3.4	4.3	2.9	1.3
1926–1992	9.9	6.6	5.1	1.7	3.8	0.5	3.1
1946–1992	11.4	6.6	6.0	0.4	4.9	0.4	4.5
1966–1992	10.1	4.2	8.1	1.6	7.0	1.3	5.7
1966–1981	6.6	0.4	7.2	–4.2	6.9	–0.2	7.0
1982–1992	15.4	11.1	9.6	10.6	7.3	3.3	3.8

**From 1802 thru 1870, consists of stocks of financial firms and railroads; from 1871 through 1925, consists of all NYSE-listed stocks; from 1926 to 1992, consists of all New York, American and Nasdaq stocks.*
***Return after inflation*

Source: "Stocks for the Long Term," by Jeremy Siegel, Irwin Professional Publishing.

ture return expectations.

For instance, if you assume inflation rates will be relatively steady, say, 3.5%, you should assume a rate of return for stocks that puts the real return no higher than 6.6%. As a quick calculation, you could simply add your inflation assumption to the real rate; the more accurate equation, shown in the accompanying box below, produces a long-term rate of return "guesstimate" for stocks of 10.3%.

Fixed-income real returns have been less consistent, but they have been lower than stocks for all periods—you would certainly not want to use a real return assumption that is close to the one used for stocks. An assumed inflation rate of 3.5% and the 1.7% real return of long-term government bonds since 1926 produces a long-term rate of return "guesstimate" for bonds of 5.2%.

Prof. Siegel's results, and a simple examination of the returns of the 1970s and 1980s, indicate that these relationships fall apart during periods of very high inflation. Thus, if you feel inflation will kick up substantially—higher than 4%—most likely all financial assets will suffer, and assuming very low rates of return for both stocks and bonds would be prudent.

The Real (After-Inflation) Rate of Return Equation

$$(1 + \text{Real Return}) = \frac{(1 + \text{Return})}{(1 + \text{Inflation})}$$

Note: Returns should be in decimal form

Example: What return equates to a real (after-inflation) return of 6.6%, assuming inflation is 3.5%?

$$1.066 = \frac{(1 + \text{Return})}{(1.035)}$$

$$1.066 \times 1.035 = 1 + \text{Return}$$

$$1.1033 - 1 = \text{Return}$$

$$0.1033 \text{ or } 10.33\% = \text{Return}$$

The Maples' Predictions

What do the Maples ultimately decide?

Joe and Lisa are assuming that a relatively stable economic environment will continue, and assume an inflation rate of 3.5%, slightly higher than 1996's rate of 3.3%.

Although they recognize that a stable environment is healthy for stocks, they assume that the current extraordinarily high rates of return on stocks will not continue throughout their 30-year investment horizon. Assuming that real rates of return will fall to their long-term averages, they decide to use a 10% long-term return figure for stocks—still within the range of the long-term averages Lisa researched, but clearly a reasonably conservative figure.

For their long-term bonds, they assume that the high rates of return in recent years will not continue and that bonds will produce real returns that are lower than those of stocks over their 30-year horizon. They settle on a 5% long-term return figure, based on the 1.7% long-term real return since 1926, which also appears reasonable, but conservative, relative to the historical averages.

So, which long-term rate of return is the "right" long-term rate of return?

Does it matter? The important point is to attain your financial goal. But in order to do this, your goal needs to be based on return expectations that are within reach, not on wishful thinking or crystal ball projections.

Long-term historical returns serve as a useful guide, but they need to be tempered with judgment:

- Make sure your expectations are not based on historical returns that are heavily weighted by short-term economic environments that are unlikely to be sustained during your investment horizon.
- Make sure that your return assumptions include relationships that are consistent with past long-term relationships.
- Be aware of the limitations—no one can predict the future with any degree of accuracy, so make sure your plans are conservative, flexible and don't depend on pinpoint accuracy.