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Stocks, Bonds, and Long-Term Risk

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08 Sep 2015

Reviewing the Numbers

Last week's column discussed a theoretical reason, offered by Nobel Laureate Paul Samuelson, as to why stocks might not become relatively safer over time. Most people believe that stocks are too risky to own for short periods, such as one year, but are prudent investments for time horizons that stretch over decades. Samuelson says otherwise. (His argument does not convince me, but perhaps it convinces you.)

This column has a simpler topic: the empirical results. Regardless of what one thinks of Samuelson's logic, or of any other claim that time horizon does not matter for asset allocation, there's no question about the track record. Across the developed markets, stocks have been safer investments than government bonds as the time horizon lengthens--not just for a few countries, or a few decades, but for 19 markets spanning 110 years.

My source is a database assembled by the English professors Elroy Dimson, Paul Marsh, and Mike Staunton, which was then processed by Argentine finance professor Javier Estrada of IESE Business School. Estrada emailed me a few weeks ago, stating that the column *Why Not 100% Equities?* might have understated its case, because stocks not only figured to make more money than bonds over the long term, but in a real sense they might be also be safer. This column, effectively, consists of his material.

(Here are four articles that Estrada has written on the topic. In addition, he also assisted on my Samuelson column, forwarding several papers and offering his thoughts as my thesis developed. Gracias!)

The evidence is not best served by citing annualized figures. For example, the average standard deviation of annual stock returns for those 19 markets (composed of the major European countries; the U.S. and Canada in the Americas; and Japan, Australia, and New Zealand in Asia) for the period 1900-2009 was 23.4 percentage points, while that of bonds was 12.4 percentage points. Thus, from a one-year perspective, stocks were twice as risky as government bonds. However, the standard deviation of annualized stock returns for rolling 20-

year periods was 4.0 percentage points, with bonds at 4.5 points. So, for 20-year horizons, bonds seemed to be riskier than stocks.

All right, that's *something*--an indicator that the relative volatility of stocks and bonds changes with time. However, those numbers are deucedly difficult to interpret. What on Earth does a 4.5-point standard deviation of rolling annualized 20-year returns actually mean? Got me--and probably you, too. Fortunately, Estrada in several places presents the figures more intuitively.

Beating Inflation

One such effort consists of counting up when an asset posts a negative real return, meaning that it trailed inflation over the period. Although losing to inflation is not the only way of measuring long-term risk, it is certainly a very good one. Warren Buffett argues for its primacy:

The riskiness of an investment is not measured by beta but rather by the probability of that investment causing its owner a loss of purchasing power over his contemplated holding period. Assets can fluctuate greatly in price and not be risky as long as they are reasonably certain to deliver increased purchasing power over the holding period. And a non-fluctuating asset can be laden with risk.

Estrada calculates what Buffett describes, measuring the probability of the investment causing its owner a loss of purchasing power over the contemplated holding period. As you can imagine, both stocks and bonds frequently fail that test over relatively short horizons. For one year, three years, even five years, neither asset is particularly reliable. As the time horizon extends, however, stocks take charge. Below are the totals for all 20- and 30-year rolling periods from 1900 through 2009, for the U.S. and for the global market. (Note: The global market results are not the averages for each of the 19 countries, but rather the result of the world market portfolio.)

Stock and Bond Market Performance, 1900–2009, Probability of Negative Real Returns

	20 Years (%)		30 Years (%)	
	Stocks	Bonds	Stocks	Bonds
U.S.	0	43	0	27
World Market	2.2	40	0	28

Source: Dimson, Marsh, Staunton, and Estrada.

That, friends, is a thrashing. Stocks in the U.S. did not suffer negative real returns over either period, while the world stock portfolio failed the test 2% of the time for 20 years but not over the 30-year periods. Bonds, in contrast, were roughly 40% losers for the shorter period and 25% to 30% losers over 30 years. As far as the goal of preserving purchasing power, stocks have absolutely crushed government bonds.

There are two caveats.

First, while the world stock portfolio had reassuringly low failure rates, several countries did not. The stock markets of Japan, Germany, and Belgium had approximately 25% failure rates over each period. Finland, France, Italy, Norway, and Spain also had some problems. Although U.S. stocks were blessedly free of negative long periods, and the world market's performance was due to diversification and (largely) the strength of the U.S., stocks were certainly dangerous over the long haul in many places.

Mitigating that bad news, at least in a relative sense, was that bonds were worse. Save for Switzerland's 20-year period, when stocks delivered negative real returns 11% of the time and bonds 7.7%, stocks always bested bonds, for both periods. Often the numbers were not even close. For example, Italian stocks failed 13.6% of the 30-year test, but bonds flopped on 79% of occasions. France was also at 13.6% for stocks; for government bonds, the figure was 59.3%.

Stocks struggled primarily for two reasons: The country either lost a war, or the country lost its battle with inflation. Each of those effectively is a government problem, and thus government bonds were typically worse trouble than were stocks. Because companies continue to go about their businesses through wars and inflation, and generally keep some of their value even if the country loses the former, stocks fared better through the national disasters.

The second caveat is stronger than the first: These countries were the economic winners. A list of the largest stock markets in 1900, the largest economies, or the highest 19 countries by GDP would not have led to such favorable results for stocks. (The latter list is pretty close, though.) Then again, the bond numbers would have been worse as well. Still, the point remains--zero failures for stocks to keep up with inflation over long periods, as shown in the chart above for three of the four cases, is an ambitious goal. I would not expect to see that over the next 120 years!

Shortfall Risk

With apologies to Buffett, measuring success according to the probability of falling behind inflation leaves out a great deal of information. We know neither the profitability of the winning trials nor the size of the shortfalls. While it seems unlikely, bonds presumably could

compensate for their troubles in keeping pace with inflation by scoring particularly large gains when they do succeed, or by avoiding particularly large losses when they fail.

Estrada also has numbers to address those questions. He calculates the cumulative returns for stocks and bonds over various periods, including the medians, the amount at the lowest tenth percentile, and the amount for the single lowest percentile. (These amounts are nominal--that is, not adjusted for inflation.) Below is an abbreviated version of those numbers, once again showing the U.S. and world portfolios, this time for rolling 10-, 20- and 30-year periods.

Stock and Bond Market Performance, 1900–2009, Cumulative Returns

	10 Years (%)		20 Years (%)		30 Years (%)	
	Stocks	Bonds	Stocks	Bonds	Stocks	Bonds
U.S., Median	188	111	347	121	629	161
World Market, Median	169	113	315	121	606	134
U.S. Lowest, 10th Percentile	75	69	141	66	308	60
World Market, Lowest 10th Percentile	75	50	113	52	244	60
U.S. Lowest, 1st Percentile	67	58	119	54	229	55
World Market, Lowest 1st Percentile	51	38	88	44	187	53

Source: Dimson, Marsh, Staunton, and Estrada.

Again, it's a clear victory for stocks, which beat bonds across the board--each of the long periods (of course, stocks would often trail for shorter periods), both the U.S. and world portfolios, and across all three measured percentiles. Stocks won even at the lowest percentile, when when 99 periods out of 100 were better.

Summary

These findings, of course, are far from a guarantee that stocks will be safer than bonds for future long-term periods. The past, we hope, offers some suggestions about what to expect, but future market returns do not draw from a bucket of past market returns. In other words, there is not only market risk, but also market uncertainty--the possibility that the future may be so different than what we envision as to make nonsense out of our carefully accumulated data.

It seems to me that the historic woes of war and inflation remain the likeliest culprits for future bear markets, and that in such cases stocks should once again be superior to bonds,

but of course I have no certainty of that. Investing in risky assets requires faith. The necessity for faith cannot be erased by even the most favorable historic results--but, perhaps, those figures can make the burden tolerable.

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