

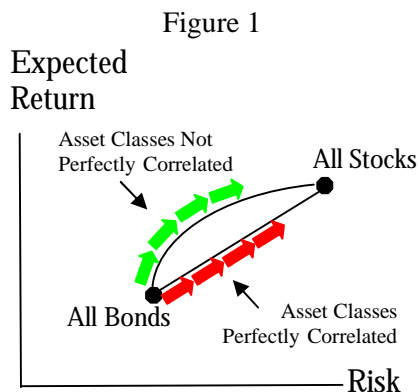
## Asset Allocation in the Long and the Short Run

### Introduction

An investment's expected returns and risk are primarily determined by its allocation to stocks and bonds. Studies have shown over 90% of the variation in historical returns to managed portfolios can be explained by variations in their *asset allocation*.

In well diversified portfolios, expected return and risk go together; the greater the risk, the higher the expected return. If returns to asset classes are perfectly correlated expected return grows linearly with risk.

But returns to asset classes are not perfectly correlated, and so by combining investments in different asset classes expected return can be increased more rapidly than risk.



An alternative and equally correct view of diversification across asset classes is that it allows investors to reduce risk without equivalent reductions in expected return.

### Asset Mis-Allocation in the Long Run

Investors with long time horizons are often urged by financial advisors to hold mostly stocks in their portfolios, even though this allocation dramatically increases the risk of large losses.

The rationales given for this asset allocation recommendation are 1) that time diversification should make portfolios less risky over longer time horizons and 2) that investors must hold mostly stocks to ensure they can live off their portfolio for decades.

In companion note, we explain the fallacy of time diversification. The claim that early retirees should hold mostly stock in their portfolios because they will be living off their investments for a long time is equally fallacious.

### Stocks Help, Up to a Point

At low levels, allocations to stock reduce risk of running out of wealth in the long run. As Figure 1 illustrates, at some point the additional increases in expected return achieved for taking additional risk taper off.

Monte Carlo simulations<sup>1</sup> can be used to compare risk of different asset allocations over various time horizons for different expected return, standard deviation, inflation and withdrawal assumptions.

Table 1 reports the results of such a simulation. For reasonable assumptions, allocations beyond 50% increase risk in the short run without further reducing long run risk. A 100% allocation to stock has the same risk after 30 years as a 47% stock / 53% bond portfolio but 14 times the risk of running out within 10 years.

Table 1

	Probability of Running Out of Money		
Stocks	30 Years	20 Years	10 Years
0%	99%	43%	0%
20%	80%	33%	0%
40%	65%	35%	1%
47%	63%	36%	1%
60%	61%	38%	3%
80%	61%	42%	8%
100%	63%	46%	14%

### Conclusion

The advice that young retirees invest heavily in stock to ensure they don't outlive their assets seriously overstates the case for equities. Asset allocation recommendations, especially to investors living off their wealth should include analysis of risk over the investor's entire expected life.

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<sup>1</sup> For a brief discussion of Monte Carlo simulations see our September 15, 2005 Practice Note.