

Piece by Piece

Take a close look at the risk and performance over four decades of seven asset classes in a diversified portfolio. **By Craig L. Israelsen**



The sermons of diversification preachers are about as old as that tale of the buttonwood tree on Wall Street. But in case some of your clients aren't persuaded, consider the performance data in the chart titled "Pick Your Period," on page 86.

For instance, from 2001 to 2010, a diversified portfolio returned an average of 5.6% annually vs. 1.4% for a portfolio consisting only of large-cap U.S. stocks. Moreover, the volatility of the stock portfolio was 21.2% vs. 15.1% for the multiasset portfolio. The goal of building a multiasset diversified portfolio is to create better risk-adjusted performance for the investor.

The multiasset portfolio in this analysis holds seven assets: large-cap U.S. stocks, small-cap U.S. stocks, non-U.S. stocks, U.S. bonds, cash, real estate and commodities. Each of the seven assets is weighted at 14.33%, and the portfolio is rebalanced at the end of each year.

When examining what each asset

class brings to the performance of the multiasset portfolio, it's important to consider the contribution of each individual asset to overall risk and return. To measure this, we used the multiasset portfolio over the 41-year period from 1970 to 2010 as the benchmark for performance and risk. The portfolio had an average annualized return of 10.5%, while its standard deviation was 10.46%.

RETURN VS. RISK

We removed each asset class one at a time, producing various six-asset portfolios. The performance of each is compared against the performance of the whole portfolio. Assuming a lump-sum investment on Jan. 1, 1970, the results are summarized in the "Heaven and Hell" chart (page 87).

The upper-left quadrant in the chart represents investment nirvana — indicating that return is up, while risk is down. On the other hand, the lower-right quadrant is investment hell — lower return with more risk.

When U.S. bonds (light brown dot) were added to a multiasset portfolio, overall return eased by roughly 20 basis points, while risk plunged by about 160 basis points. The other individual asset in the southwest quadrant (lower return, lower risk) is cash.

Adding an equally weighted allocation of cash to a multiasset portfolio lowered portfolio return by 66 basis points, but also slashed portfolio volatility by about 170 basis points. More specifically, the 41-year average annualized return of an equally weighted six-asset portfolio (without cash) was 11.18% with a standard deviation of 12.14%. After adding cash to create an equally weighted seven-asset portfolio, the average annualized return was 10.52% and the standard deviation was 10.46%.

There were no assets in the southeast quadrant, which indicates that all seven resulted in either risk reduction or return enhancement. Four of the five equity assets (large-

PICK YOUR PERIOD

The goal of building a multiasset diversified portfolio is improved risk-adjusted performance over time.

Annualized Performance of Various Asset Classes and a Multiasset Portfolio

Time Period	Large-Cap U.S. Stock	Small-Cap U.S. Stock	Non-U.S. Stock	U.S. Bonds	Cash	Real Estate	Commodities	Equally Weighted Multi-Asset Portfolio*
3-Year (2008-2010)	-2.86	2.22	-7.02	5.90	0.60	0.01	-12.84	-0.76
5-Year (2006-2010)	2.29	4.47	2.46	5.80	2.31	2.32	-5.70	3.19
10-Year (2001-2010)	1.41	6.33	3.50	5.84	2.27	10.41	1.77	5.59
15-Year (1996-2010)	6.76	7.64	4.70	6.04	3.29	10.84	4.22	7.40
20-Year (1991-2010)	9.14	10.83	5.85	6.89	3.59	11.52	3.59	8.35
25-Year (1986-2010)	9.94	9.10	8.18	7.46	4.31	9.26	7.31	8.96
30-Year (1981-2010)	10.71	10.04	9.25	8.92	5.38	10.91	6.43	9.76
41-Year (1970-2010)	9.99	11.01	9.45	8.29	5.87	11.43	9.98	10.52

Standard Deviation of Annual Returns (%)

10-Year (2001-2010)	21.18	23.95	26.02	2.30	1.80	25.13	27.53	15.10
20-Year (1991-2010)	19.51	20.01	20.75	5.04	1.97	20.53	26.70	11.58
30-Year (1981-2010)	17.51	19.08	23.48	7.07	3.46	19.00	23.95	10.82
41-Year (1970-2010)	17.91	22.36	22.73	6.66	3.33	19.88	24.92	10.46

*Multiasset portfolio is annually rebalanced.

Source: Morningstar Principia (raw data)

cap U.S. stock, small-cap U.S. stock, non-U.S. stock and real estate) had performance attributes placing them in the northeast quadrant, indicating that they increase both return and risk in a multiasset portfolio. Of these four, real estate had the best impact on the portfolio because it increased return proportionately more than risk.

NEARLY MAGICAL COMMODITIES

As the lone occupant of the northwest quadrant, commodities demonstrated a rare attribute among the

seven portfolio components. Commodities were an ideal teammate, enhancing overall return while reducing volatility. In fact, when moving from a six-asset portfolio without commodities to a seven-asset portfolio with commodities, return jumped by more than 40 basis points while risk shrank by roughly 130 basis points.

The beneficial impact of including commodities in an equally weighted multiasset portfolio certainly isn't magic. Instead, it's a manifestation of the value of adding an asset class

that tends to generate equity-like returns, but marches to a different drummer with respect to the timing of those returns.

That's because the return pattern of commodities has a low correlation to the other six assets – which is beneficial to the overall portfolio. Obviously, no one knows if the pattern of low correlation between commodities and the other portfolio ingredients will continue.

A NEW MODE

It's also important to evaluate results on how each of the seven assets contributes to a portfolio in distribution mode, such as a retirement portfolio with annual withdrawals. The distribution phase is a much more challenging environment in light of the systematic withdrawals that place stress on the portfolio.

As shown in "Nest Egg Protection," on page 87, commodities enhanced return while reducing drawdown loss in a retirement portfolio that started with an initial balance of \$500,000 on Jan. 1, 1970. Assume the initial withdrawal at the end of 1970 was 5% of the starting balance. Annual withdrawals increased by 3% each year until the end of 2010.

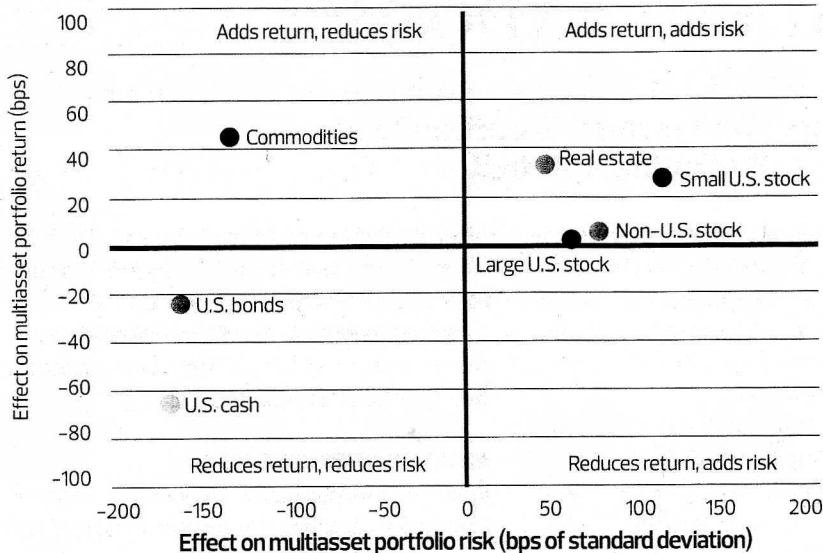
The location of each asset class within the four-quadrant risk-return map is similar to the accumulation portfolio. In this analysis, U.S. large-cap stocks actually slipped over the border into the southeast quadrant – the unenviable zone that reflects a reduction in return and an increase in risk, as measured by the worst-case three-year portfolio drawdown over the 41-year period.

For example, a six-asset retirement portfolio that did not include U.S. large-caps had an internal rate of return of 10.83%, while a seven-asset retirement portfolio that included

HEAVEN AND HELL

The upper-left quadrant represents investment nirvana — return is up, while risk is down. The lower-right quadrant is investment hell — less return with more risk.

Impact of individual assets in a multiasset portfolio 1970–2010
Lump sum investment on 1/1/1970



U.S. large-caps had an internal rate of return of 10.77%.

Moreover, the worst-case three-year loss (or portfolio drawdown) in the six-asset retirement portfolio that lacked U.S. large-caps was 13.32%, compared with a retreat of 14.9% for a seven-asset retirement that included U.S. large-cap stocks. This difference represented a significant increase in loss exposure for the portfolio: 158 basis points.

THE BENEFITS OF DIVERSITY

To be clear, this analysis does not advocate avoiding U.S. large-cap stocks. Rather, it highlights the importance of building portfolios with diverse components — and ones that have low correlation to each other.

Historically, one such asset class has been commodities. Generally, this type of component ends up in the northwest quadrant of the risk/return, which indicates that it bolsters return and lowers risk.

Of course, not all asset classes add the same value to a broadly diversified portfolio. Bonds and cash tend to lower both performance and risk. Equity assets tend to increase return as well as risk.

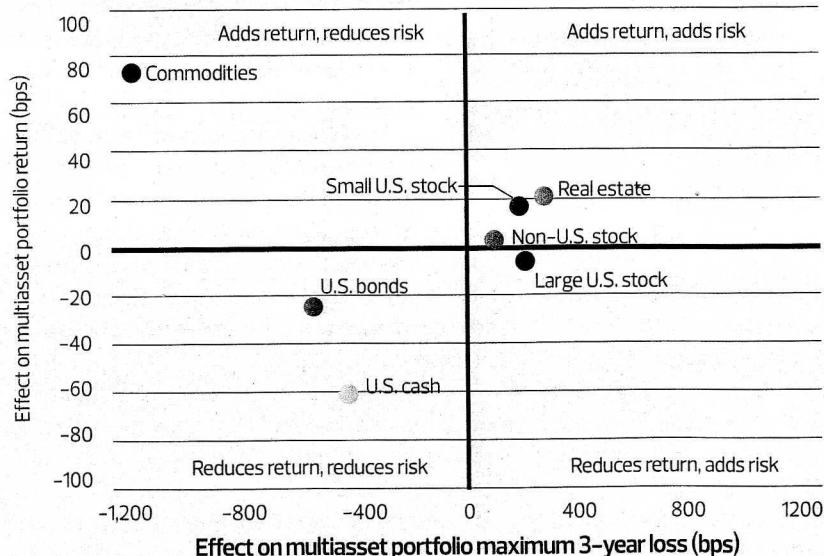
Of the seven asset classes studied, only commodities proved themselves to be a part that contributed more to the sum by simultaneously enhancing return and lowering risk. Advisors may want to consider the pros and cons of adding them to their diversified client portfolios. **FP**

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NEST EGG PROTECTION

In withdrawal mode, U.S. large-cap stocks slip over the border into the southeast quadrant, reflecting a drop in returns and an increase in risk.

Impact of individual assets in a multiasset portfolio 1970–2010
Retirement portfolio with annual withdrawals



Source: Morningstar Principia (raw data)

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