A New Guardrail Against Risk

By Bill Harding and Marta Norton

Measuring a portfolio's equity-market sensitivity leads to informed risk-management decisions.

It's been nearly 22 months since the market's nadir in March 2009, but advisors continue to ask us, "What did you learn from the credit crisis?"

Although the crisis was replete with lessons, it laid bare some of the weaknesses of traditional approaches to risk management. Namely, that correlations are not static but fluctuate, especially amid a crisis. Thus, any risk assessment must consider not just the portfolio's composition and risk profile, but also the ways that they may change.

This has a real-world relevance for us. We manage a variety of diversified portfolios and saw first-hand the impact that dynamic market conditions, and fluctuating correlations, can have. For example, our multiasset-class portfolios were far more sensitive to the equity market amid the crisis than traditional risk models would have suggested. Why? The returns of asset classes such as bonds and commodities became much more correlated with stocks during the second half of 2008 and early 2009 as investors fled risky assets en masse.

Consider, for example, the six-month correlation of the Barclays Capital U.S. Aggregate Bond Index to the S&P 500. It rose from a negative 0.49 in June 2008 to a positive 0.63 in December 2008. Investors flooded the Treasury market in search of a safe haven but fled the credit risk found in corporate bonds, mortgage-backed securities, and agencies. Even commodities, touted for their lack of correlation to traditional stocks and bonds, began to move in step with the broad equity market amid the flight to safety. The Dow Jones UBS Commodity Index saw its correlation to the S&P 500 climb from a negative 0.43 in June 2008 to a positive 0.82 in December 2008. These correlations were especially unwelcome given that stock prices were gyrating wildly at that time.

Thus, equity-market risk rose synchronously across asset classes. As shown in Exhibit 1, the beta of the Barclays Capital U.S. Aggregate Bond Index rose from negative 0.08 in June 2008 to a positive 0.22 in December 2008, signaling that the investment-grade bond market had become more sensitive to equity-price movements. Similarly, the Barclays Capital U.S. Corporate High Yield Index's beta rose from 0.44 to 1.09 over the same stretch. The Dow Jones UBS Commodity Index saw its beta spike from negative 0.56 to 0.69 between June 2008 and December 2008.

We can illustrate the magnitude of these changes in the beta of Income and Growth Tax-Deferred, a balanced strategy that we manage. The portfolio invests about 60% of its assets in stocks and the remainder in bonds and alternatives. As shown in Exhibit 2, the portfolio's six-month beta shot up from 0.55 in June 2008 to 0.65 in December 2008. Exhibit 2 also shows the contribution that each asset class made to the portfolio's beta. Surprisingly, the contribution to beta from the portfolio's equitylike portion was fairly stable; it actually slipped a hair during late 2008 and early 2009. On the fixed-income side, however, the beta contribution shot up from negative 0.001 in June 2008 to 0.12 in December 2008. This is partly due to our decision to increase our high-yield bonds stake in late 2008—high yield tends to be more sensitive to the equity market. But the betas of our other bond funds also contributed meaningfully to the overall portfolio's higher beta during that time period. For example, the equity beta of our investment-grade bond funds increased from negative 0.01 in June 2008 to 0.06 in December 2008.

The moral of the story is that the portfolio's asset allocation was inadequate in explaining its equity-market sensitivity. Consequently, when stocks tanked in late 2008 and early 2009, it dragged our portfolio down to a far greater extent than either we or our clients expected.

Finding the Drivers of Risk

Although target asset allocations continue to play a large role in our portfolio-construction process, we've incorporated guardrails to help us identify the drivers of market risk and use an appropriate risk/reward profile for the conditions.

One such guardrail is examining the equity-market sensitivity of a portfolio's underlying fund positions. By estimating each fund's contribution to the portfolio's overall equity-market-sensitivity and comparing it with the fund's target percentage weighting in the portfolio, we can make more-informed risk-management decisions.

To illustrate, we calculated each fund's trailing six-month beta relative to the S&P 500 Index as of Sept. 30. We then used the fund's target weight in the Income and Growth Tax-Deferred portfolio to calculate its contribution on an absolute basis and relative to the overall portfolio beta. For example, as shown in Exhibit 3, Aston/River Road Dividend All Cap Value ARIDX had a trailing six-month beta of 0.77. Based on its 9% weighting in the portfolio, the fund would have accounted for about 14% of the portfolio's overall beta of 0.49. (Weightings are subject to change.)

This information is helpful on several levels. Foremost, it acts as a check on our portfolio-construction process. We can gauge whether a portfolio has too large an allocation to certain strategies, like concentrated growth or deep value, which could push its beta higher than intended. This is pertinent to our more-conservative portfolios, where we not only make greater use of fixed-income and alternative asset classes but also skew toward lower-beta stock funds that make liberal use of cash or favor stodgier, dividend-paying companies that trade at a discount.

We've long considered a strategy's aggressiveness in determining its suitability for a portfolio. Now, however, our review of each fund's contribution to the portfolio's overall beta acts as a check on our fundamental analysis, making the process more systematic.

We also find that this analysis yields more-precise insights into how a portfolio responds to market changes. For example, we can better tell if a portfolio is running "hot" or "cold" given its target asset allocation, attribute its

Exhibit 1 Rising Market Sensitivity

Trailing Six-Month Beta to the S&P 500 Index

Market Index	6/30/08	9/30/08	12/31/08	3/31/09	6/30/09	9/30/09	12/31/09	3/31/10	6/30/10	9/30/10
Russell 1000 Growth	1.07	1.12	1.07	0.98	0.81	0.92	0.89	1.03	0.99	1.06
Russell 1000 Value	0.96	0.96	1.02	1.07	1.19	1.17	1.16	1.01	1.05	0.97
Russell 2000	1.06	1.03	1.46	1.25	1.22	1.42	1.34	1.22	1.27	1.25
MSCI World ex-US	1.05	1.13	1.17	1.09	1.13	1.50	0.96	0.86	0.93	1.06
MSCI Emerging Mrkt	1.33	1.39	1.48	1.52	1.23	1.99	0.96	1.02	0.96	1.00
DJ UBS Commodity TR USD	−0.56	0.12	0.69	0.76	0.52	0.49	0.03	0.52	0.53	0.74
S&P Developed Property	1.07	1.07	1.69	1.51	1.60	1.90	0.89	0.90	1.02	0.93
BarCap Aggregate Bond	−0.08	0.06	0.22	0.17	0.08	0.02	0.18	−0.06	−0.09	−0.04
BarCap US Corporate High Yield	0.44	0.66	1.09	0.70	0.37	0.91	0.26	0.04	0.31	0.32

Data as of Dec. 14, 2010

Exhibit 2 Morningstar's Income and Growth Portfolio: A Beta Analysis

	6/30/08	9/30/08	12/31/08	3/31/09	6/30/09	9/30/09	12/31/09	9/30/10
Allocation (%)								
Domestic Equity	35.1	34.1	31.0	30.9	32.0	32.7	33.3	35.0
International Equity	12.6	11.5	14.9	14.9	16.3	17.5	16.0	15.0
Other*	13.1	13.6	10.1	8.0	7.8	7.4	11.1	14.0
Total Equity Like	**60.8**	**59.2**	**56.0**	**53.8**	**56.1**	**57.6**	**60.4**	**64.0**
Invest Grade Fixed	33.8	35.3	34.8	37.2	34.8	33.3	31.6	28.0
High Yield	3.2	3.2	7.2	8.1	8.3	8.3	7.0	7.0
Cash	2.1	2.3	2.0	1.0	0.9	0.8	1.0	1.0
Total Fixed and Cash	**39.1**	**40.8**	**44.0**	**46.2**	**43.9**	**42.4**	**39.6**	**36.0**
Beta Portfolio	0.55	0.59	0.65	0.52	0.44	0.57	0.48	0.49
Beta Contribution								
Domestic Equity	0.354	0.341	0.317	0.266	0.232	0.273	0.234	0.277
International Equity	0.124	0.115	0.143	0.123	0.150	0.212	0.164	0.134
Other*	0.076	0.074	0.072	0.039	0.024	0.019	0.008	0.036
Total Equity Like	**0.554**	**0.530**	**0.531**	**0.429**	**0.406**	**0.503**	**0.406**	**0.448**
Invest Grade Fixed	(0.011)	0.044	0.060	0.059	0.030	0.020	0.052	0.021
High Yield	0.010	0.013	0.061	0.037	0.009	0.051	0.021	0.020
Cash	0.000	0.000	(0.000)	(0.000)	(0.000)	0.000	(0.000)	(0.000)
Total Fixed and Cash	**(0.001)**	**0.057**	**0.121**	**0.096**	**0.039**	**0.071**	**0.073**	**0.041**
Portion of Portfolio Beta								
Equity Like	100.1%	90.3%	81.5%	81.7%	91.2%	87.6%	84.8%	91.6%
Fixed Income and Cash	-0.1%	9.7%	18.5%	18.3%	8.8%	12.4%	15.2%	8.4%

*Alternative, commodity and REITs.

Beta is measured relative to the S&P 500 Index over rolling six-month periods. Beta contribution is calculated as the beta of the underlying positions within each asset class multiplied by their weighting in the portfolio. Data as of Dec. 1, 2010

Exhibit 3 Beta Breakdown: Each Fund's Contribution

Morningstar's Income and Growth Portfolio

Name	Fund Beta	Fund Weight	Beta Contribution	Contribution % of Port
Aston/River Road Dynamic Equity Income	0.77	9.00%	0.070	14.2%
Osterweis	0.69	8.00%	0.055	11.3%
Wasatch-1st Source Monogram Income Equity	0.96	8.00%	0.077	15.7%
T. Rowe Price Capital Appreciation	0.63	7.00%	0.044	9.0%
Metropolitan West Total Return Bond	0.03	7.00%	0.002	0.4%
PIMCO Total Return Fund	0.02	7.00%	0.001	0.2%
IVA Worldwide	0.55	6.00%	0.033	6.7%
DoubleLine Total Return Bond	-0.02	6.00%	(0.001)	-0.2%
Marsico Global	1.08	5.00%	0.054	11.0%
Templeton Global Bond	0.38	5.00%	0.019	3.9%
Arbitrage	0.13	5.00%	0.006	1.3%
Dodge & Cox International Stock	1.19	4.00%	0.048	9.8%
Artio Global High Income	0.38	4.00%	0.015	3.1%
Calamos Market Neutral Income	0.35	4.00%	0.014	2.8%
T. Rowe Price Mid Cap Growth	1.06	3.00%	0.032	6.5%
Vanguard Inflation-Protected Secs	-0.02	3.00%	(0.001)	-0.1%
Aquila Three Peaks High Income Fund	0.16	3.00%	0.005	1.0%
Eaton Vance Glbl Macr Absolute Return	-0.02	3.00%	(0.001)	-0.1%
PIMCO CommodityRealRet Strat	0.82	2.00%	0.016	3.3%
Janus Money Market	0.00	1.00%	(0.000)	0.0%
Portfolio	0.49			

Data as of Dec. 1, 2010

Budgeting Beta

By understanding the equity-market exposure of a portfolio's underlying fund positions, investors can get a better handle on their risk-management techniques. This beta analysis:

- Acts as a check on the portfolio-construction process.
- Yields insights into how a portfolio responds to market changes.
- Can be incorporated into the tactical investment decision-making process.

About Morningstar Investment Services

Morningstar Investment Services brings fee-based advisors the resources of an independent, experienced investment team. Its range of customizable stock, ETF, and mutual fund portfolios is guided by proprietary methodologies and leverages Morningstar's research. For more information, visit http://global.morningstar.com/mis or call +1 877 751-4208.

market-sensitivity based on the contribution of each position, and make adjustments.

Finally, we incorporate this beta analysis into our tactical investment decision-making process. If we thought that valuations were high across asset classes and were troubled by fundamentals in the market, we might ratchet-down a portfolio's market sensitivity by, say, trimming our stake in higher-beta funds.

Part of the Risk-Budgeting Package

Risk goes well beyond equity-market sensitivity. It is also exposure to factors such as interest rates and the likelihood of default or bankruptcy. Ultimately, risk is the possibility an investment suffers a permanent decline in value. So, while we are taking steps to better measure and monitor our portfolios' short-term equity-market sensitivity, they augment, but don't replace, other measures. Performance-related risk metrics such as downside capture and maximum drawdown still inform our manager due-diligence process.

We're also careful not to lose sight of the forest for the trees while using risk-budgeting techniques like these. A single-minded focus on managing volatility could put an investor on the wrong foot as market conditions evolve. Had we only considered beta in early 2009, we likely would have been lowering the risk of our portfolios just as very attractive opportunities in high-yield bonds, stocks, and other hard-hit asset classes were beckoning.

We nevertheless think that understanding the equity-market exposure of our portfolios is an important addition to our risk-management efforts. By closely monitoring a strategy's equity-market sensitivity, we can better anticipate changes in market conditions and then make adjustments to help ensure that a strategy remains true to its mandate and consistent with our clients' expectations.

Bill Harding, CFA and Marta Norton, CFA, are investment managers at Morningstar Investment Services, a wholly owned subsidiary of Morningstar, Inc.