Omega Analysis

The Evolution of Risk Parity

Omega Analysis' business is the robust engineering development of solutions to practical problems in finance backed by decades of experience in cutting edge mathematical sciences research.

Omega Metrics® technology for risk management, trading strategy development, portfolio construction and performance analysis is based on Omega Analysis' fundamental research advances in mathematics and statistics.

Omega Metrics® Risk Technology produces Smarter Beta in Risk Parity portfolios. Our Market Trend information adds alpha by reducing exposure to downturns and by Increasing exposure to market rebounds.

Smarter Beta

Omega Metrics® Risk Parity portfolios improve on the traditional diversified portfolio of bonds and equity. Actively balancing risk exposure rather than capital exposure is a natural idea. The out-performance of our Risk Parity Beta portfolio is entirely due to our ability to measure risk accurately. Because Risk Cycles lead market booms and busts, maintaining a constant risk target through the Risk Cycle automatically increases market exposure as booms grow and decreases it as they peak and turn to busts.

Adding Alpha Through Trend Analysis

Reliable market trend information allows us to add alpha. Equity exposure can be reduced to zero in downturns and increased in the value phase as the next upturn begins.

Figure 1 and Table 1 show the impact of this approach using only off the shelf components–the S&P 500 Index and the Vanguard Total Bond Market Index.

Figure 1
1987-2015

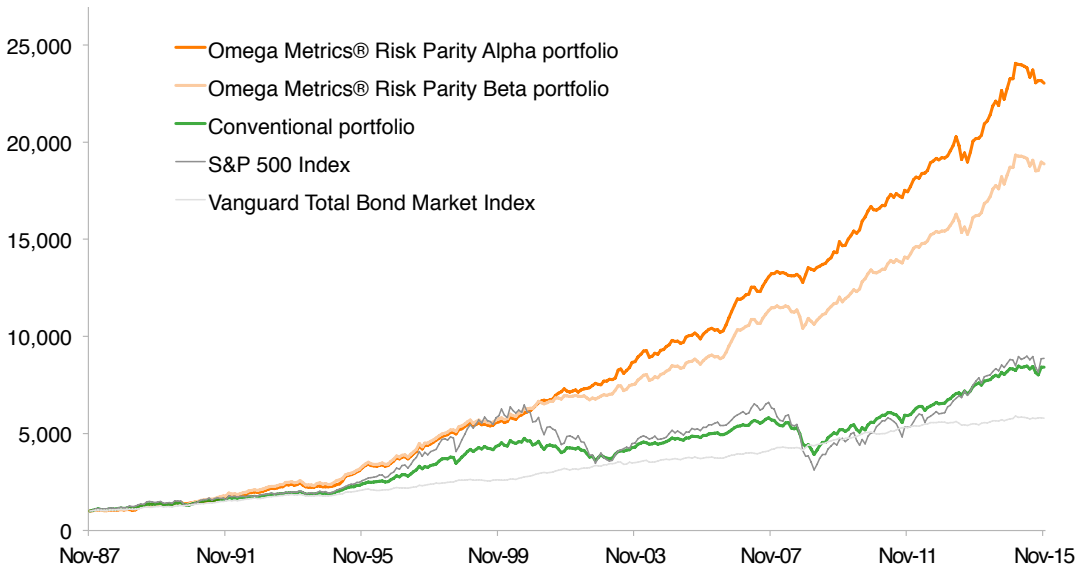

Table 1
1987-2015

	Omega Risk Parity-Alpha	Omega Risk Parity-Beta	Conventional Portfolio	S&P 500 Index	Vanguard Total Bond Index
Ann. Mean	11.9%	11.1%	7.9%	8.1%	6.5%
Ann. Std. Dev.	6.9%	6.9%	8.9%	14.4%	3.8%
Correlation to S&P 500 Index	0.50	0.66	0.99	1	0.14
Beta wrt. S&P 500 Index	0.24	0.31	0.61	1	0.04
Maximum Monthly Loss	-5.0%	-5.4%	-10.8%	-16.9%	-3.3%
Maximum Drawdown	-9.0%	-10.1%	-32.7%	-52.6%	-5.0%

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The Conventional Portfolio

The Conventional Portfolio–traditionally a 60-40 mix of equities and bonds–is designed to capture the long-term gains of equity investment while dampening the damage from its inevitable drawdowns through diversification into bonds.

Figure 2 shows the benefits of this approach over the past three decades using the S&P 500 Index and the Vanguard Total Bond Market Index. The Conventional Portfolio lagged behind equities in the three major market booms since 1987 but it has also reduced the losses in the subsequent busts. Nevertheless, the strong cyclical features of the equity market are clearly visible.

A Dangerous Tradition

The traditional mix of equities and bonds leaves almost all the risk concentrated in the equity component. When equity markets crash their losses can swamp the diversification benefit of the bond component–leaving a drawdown that can take a very long time to recover from. For investors who need growth this is a serious setback. For those who need income, it can be catastrophic.

Risk Parity Portfolios

This has led to the strategy of designing investment portfolios in which risk rather than capital is allocated equally between the component assets. In its simplest form a 'Risk Parity' portfolio of equity and bond investments distributes risk equally between the equity component and a levered bond component with much better results than the conventional capital weighted allocation, especially through periods of market turmoil.

To construct a Risk Parity portfolio we must select component assets, balance their risk and maintain that balance over time. The success of this approach therefore depends both on the manager's ability to choose component assets and *also on the quality and predictions of his risk measurement tools.*

Risk Targeting

Omega Analysis' advances in statistical technology provide risk measurements of unprecedented accuracy. The predictive power of these measurements has been confirmed in large scale historic data sets and, day after day, in real time, for several years across asset classes in financial markets worldwide.

This technology reveals predictable Risk Cycles which *lead* market booms and busts. Maintaining a constant risk level through the Risk Cycle *automatically increases market exposure as booms grow and decreases it as they peak and turn to busts.*

We demonstrate the power of this approach–and the information content of our risk measurements–by constructing the Omega Metrics® Risk Parity Beta portfolio from two 'off the shelf' components: the S&P 500 Index and the Vanguard Total Bond Market Index, in an out of sample simulation over almost 3 decades using our proprietary tail model.[1]

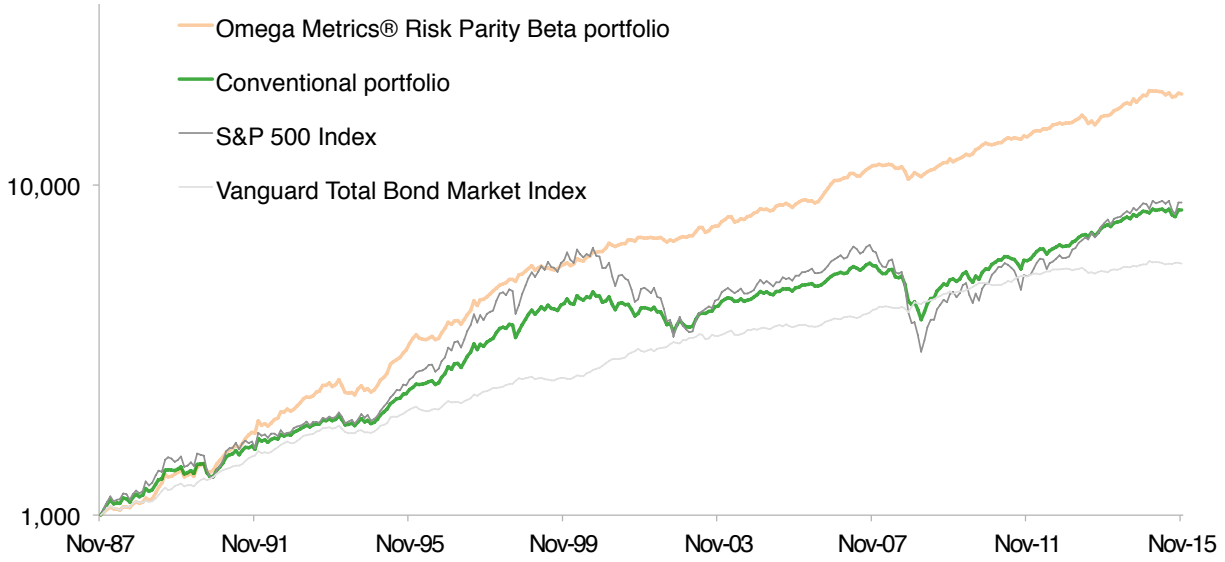

Figure. 2. NAVs plotted on log scale. The Omega Metrics® Risk Parity Beta portfolio targets a constant Expected Shortfall level through the boom and bust cycles over the past 28 years. It increases annualised return from 7.9% to 11.1% while reducing annualised volatility from 8.9% to 6.9%. The worst drawdown has been cut from 33% to only 10%.

[1] Unlike volatility, which treats large gains as well as large losses as equally risky, Omega Metrics® Expected Shortfall accurately predicts downside risk at a given probability level.

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Smart Beta

In 'Constructing Risk Parity Portfolios' we showed the benefit of using Risk Cycle technology to build a Risk Parity portfolio which not only allocated equal risk to equities and bonds but maintained that constant risk level throughout the cycle. Using only the S&P 500 Index and the Vanguard Total Bond Market Index as components the Omega Metrics® Risk Parity Beta portfolio dramatically outperforms the standard 60-40 equity bond mix with the same components.

This advantage is entirely due to our ability to measure risk accurately. Because Risk Cycles lead market booms and busts, maintaining a constant risk level through the Risk Cycle automatically increases market exposure as booms grow and decreases it as they peak and turn to busts.

Adding Alpha

But there is additional, alpha generating, information in the Risk Cycle. Omega Metrics® Equity Trend Indicators identify the transitions between boom and bust periods.

Reducing equity exposure to zero in downturns and increasing it in the value phase as the next upturn begins significantly enhances the performance of the Risk Parity Alpha portfolio as Figure 3 shows.

The alpha added increases the annual return from 11.1% to 11.9% while improving the Shape ratio. It also reduces the worst monthly loss from 5.4% to 5.0% and the worst drawdown from 10% to 9%.

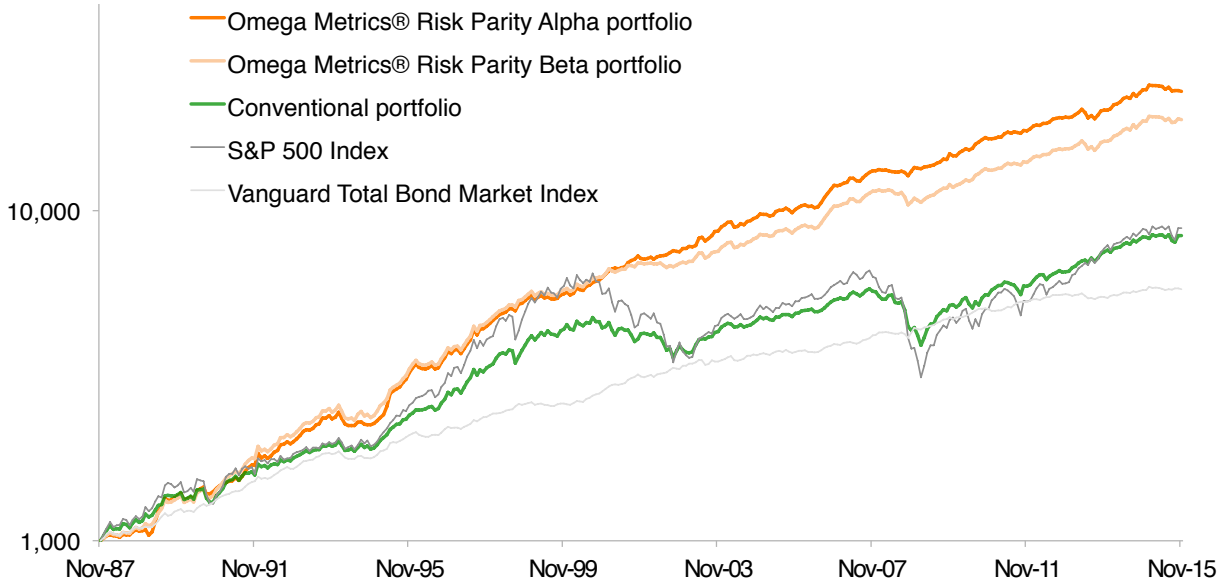

Figure. 3. Omega Metrics® Risk Parity Alpha portfolio (log scale). Annualised return relative to the Conventional portfolio is increased from 7.9% to 11.9%,volatility is reduced from 8.9% to 6.9% and the worst drawdown is cut by more than two-thirds.

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