The World Conference on Management, Business, and Finance

07-08 December 2023 Dubai, United Arab Emirates

Skew Risk Parity

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Abstract

Risk parity allocates to broad asset classes inversely proportional to their estimated risk, measured as total realized volatility, ignoring the difference between upside risk and downside risk. We introduce the notion of a skew risk parity portfolio as a mild generalization of risk parity. Skew risk parity distinguishes between upside and downside risk, allocating more to assets whose ratio of upside to downside risk is more attractive. Whereas risk parity effectively assumes expected returns are proportional to volatility, skew risk parity allows for a dynamic ratio of expected return to risk that changes period to period. We show that skew risk parity outperforms and dominates risk parity by between 42 and 191 basis points per year over many years, depending on the exponential weight and transformations placed on the attractiveness signals, and also exhibits higher realized ratios of upside-to-downside risk, while providing the same diversification and risk management benefits, and with only reasonable deviations in weights from risk parity. Further, skew risk parity signals substantially outperform risk parity signals in forecasting future returns, across years and a variety of extreme historical scenarios. Investors should evaluate how their on-going underperformance costs of remaining with risk parity compares to the one-time technology costs of implementing skew risk parity.

Keywords: risk parity; options; compound returns; financial engineering; skewness