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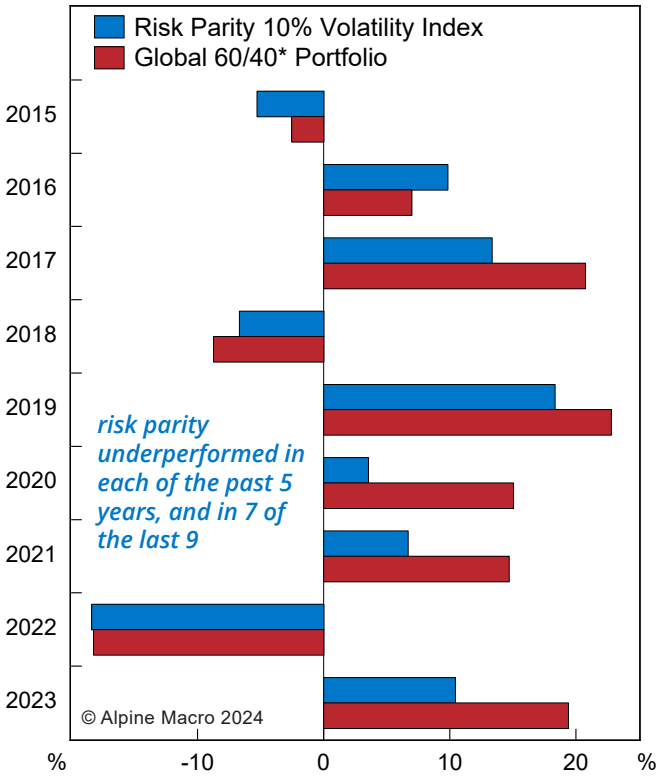
Risk Parity: Curb Your Enthusiasm

- A traditional 60/40 portfolio dominates all basic risk parity strategies in out-of-sample testing over ultra-long time horizons.
- Risk parity performance is highly dependent on the interest rate environment, as it affects both bond returns and the cost of leverage.
- Incorporating leveraged commodity positions into a risk parity strategy offers no advantages, as their long-term risk-adjusted returns are undermined by inflation.
- The "original sin" of risk parity is its assumption of equal risk-adjusted returns across assets or superior returns from low-volatility assets.
- Risk parity strategies are not ideal as core portfolio holdings, as they are not genuinely "all weather" but rather serve as alpha overlays.

Chart 1 Risk Parity Is Stuck In A Rut



*Comprises 60% MSCI ACWI IMI Index and 40% Bloomberg Global Aggreate Bond Index
Source: Bloomberg Finance L.P., Hedge Fund Research

Risk parity has recently lost its shine, trailing a conventional 60/40 benchmark in each of the last five years (Chart 1). This raises concerns about the strategy's "all weather" claims and the touting of "risk diversification" as a fundamental leap over standard balanced portfolios (Box 1).

This report seeks to determine whether the recent underperformance is merely a blip or indicative

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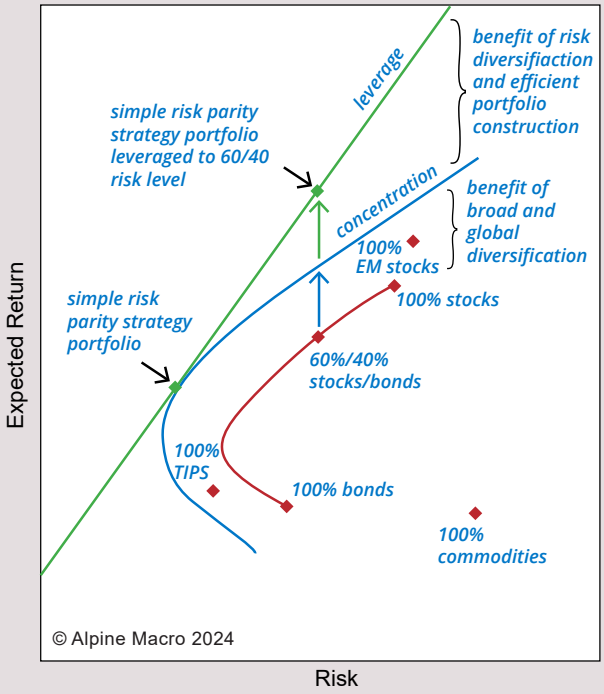
Box 1: A Brief Primer On Risk Parity

Risk parity is an investment strategy that allocates capital based on the risk contributions of different asset classes, rather than their performance potential alone. It aims to improve upon the traditional 60/40 stock-bond mix by addressing its inherent risk imbalance. In a standard 60/40 mix, the stock allocation carries the vast majority of the risk – between 85-95% – due to their higher volatility compared to bonds. As a result, it is claimed that traditional portfolios offer only the *illusion* of diversification, as risk is heavily concentrated in equities.

To rectify this imbalance, risk parity seeks to evenly distribute risk across asset classes. In a basic two-asset portfolio, this means increasing the bond allocation until its risk contribution equals that of stocks. Achieving such balance often requires the use of leverage, which theoretically lifts the Markowitz efficient frontier to produce portfolios with higher Sharpe ratios (**Chart B1**). The expected benefit of this "risk diversification" is more consistent performance and reduced tail risk.

Chart B1 What We Talk About When We Talk About Risk Parity



Note: Chart is for illustrative purposes; source: AQR

While a risk parity portfolio might start with just equities and long-dated bonds, in practice it includes a variety of assets that perform differently across economic environments. Leverage is used to scale these assets, enabling investors to meet specific volatility targets while pursuing higher returns.

of a deeper flaw in the risk parity approach. It will also offer key insights for asset allocators on how to approach the integration of risk parity strategies into their portfolios.

A Re-examination Of The Rosy Narrative

The natural starting point for evaluating risk parity is to examine how the strategy would have fared historically against a 60/40 benchmark. While numerous studies claim that risk parity strategies outperform, the methodologies used have often been less than ideal.

One major issue is that many studies have been sample-specific. They have frequently focused on the most recent decades, which were characterized by declining inflation and interest rates. This

Table 1 Simple Risk Parity Strategy Falls Short Over The Ultra-Long Term

January 1955 to July 2024	2-Asset Risk Parity Portfolio*	60/40 Portfolio*	Relative Performance of 2-Asset Risk Parity
Annualized Return (%)	7.3	9.1	***-1.8***
Annualized Volatility (%)	9.8	9.8	
Sharpe Ratio	0.36	0.55	***-34%***

*Comprised of S&P 500 and U.S. 10-year Treasuries

environment flatters the risk-adjusted returns on bonds, whose large allocations are a cornerstone of risk parity strategies.

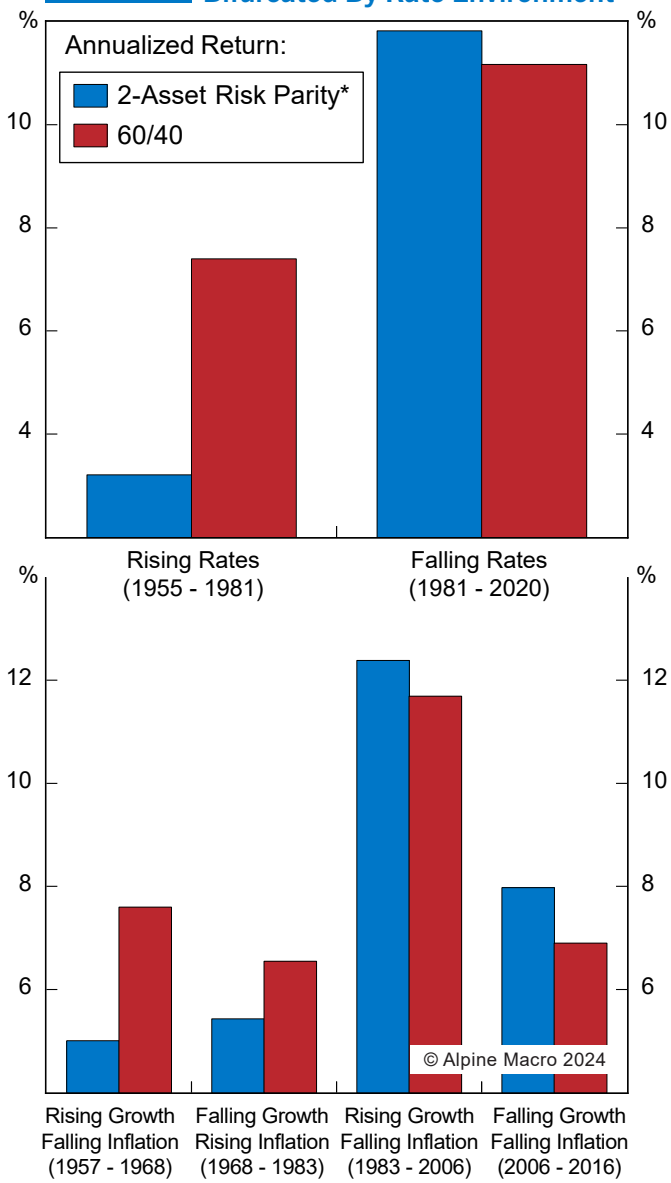
Another concern is the use of short 'lookback windows', typically only one year, to assess realized volatilities and correlations. This introduces significant instability in determining asset weights and leverage ratios, leading to drastic portfolio adjustments. Such volatility in allocations can exceed the risk tolerance of institutional investors, who generally prefer more gradual allocation shifts.

We sought to address both issues. Our "out-of-sample" total return simulation, using a simple 2-asset stock/bond risk parity portfolio, spans nearly eight decades. This allows for a capturing of a broad spectrum of economic and market environments.[1] We also utilized 5-year rolling windows for volatility estimation, which significantly reduces quarterly allocation swings.

Table 1 compares the long-term performance of this basic risk parity strategy to a reference 60/40 portfolio. The results are underwhelming, with the strategy delivering *1.8% less* in annualized returns after adjusting its volatility to match that of a 60/40.

What accounts for this underperformance? Breaking down the returns by economic regime offers some clues.

Chart 2 Risk Parity Performance Is Bifurcated By Rate Environment



*Volatility adjusted to a 60/40 portfolio over each time period

1 Though it is technically possible to extend the simulation even further back, doing so would be impractical due to the lack of high frequency data for the 10-year bond yield.

Table 2 Additional Asset, Worse Story

January 1975 to July 2024	3-Asset Risk Parity Portfolio*	2-Asset Risk Parity Portfolio*	60/40 Portfolio*	Relative Performance of 3-Asset Risk Parity
Annualized Return (%)	9.0	9.3	10.0	***-1.1***
Annualized Volatility (%)	10.4	10.4	10.4	
Sharpe Ratio	0.44	0.47	0.54	***-19%***

*Comprised of S&P 500 and U.S. 10-year Treasuries; S&P GSCI is added for the 3-asset risk parity portfolio

Chart 2 splits results pre- and post-1981, corresponding to periods of broadly rising and falling rates. Intuitively, risk parity performs poorly before 1981, when rising bond yields and higher leverage costs deliver a double whammy. Conversely, the strategy outperforms, albeit only modestly, when bond yields and bond volatility were dissipating.

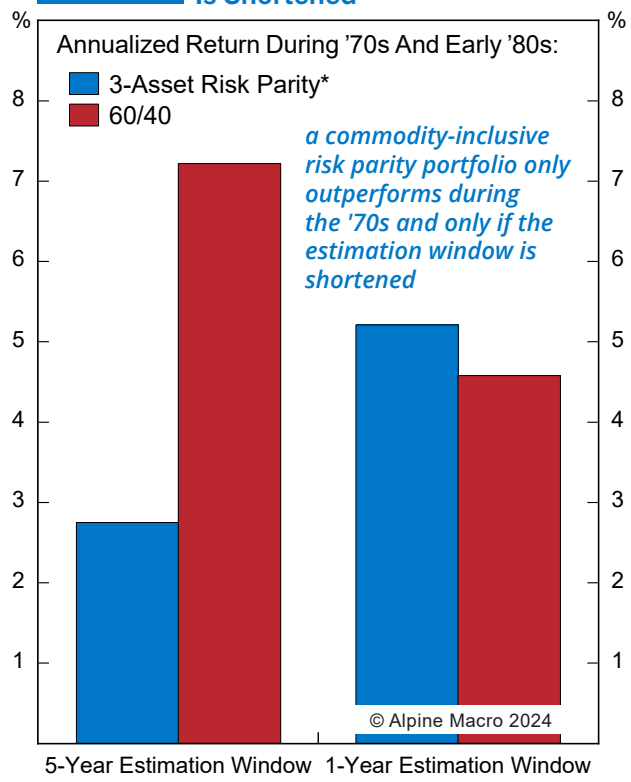
The strategy's dependence on bonds becomes more apparent when viewed through the lens of growth and inflation. It is no coincidence that risk parity thrived against the 60/40 during 2006-16, a period marked by falling growth and inflation that heavily favored bonds.

Bottom Line: A basic 2-asset risk parity strategy would have underperformed a traditional 60/40 portfolio over an ultra-long time horizon. This is primarily due to its susceptibility to rising rates and the associated costs of leverage that are not accounted for in many studies.

Is Risk Parity Really "All Weather"?

So far, a potential drawback of our naïve risk parity approach is the limited diversification provided by a two-asset portfolio. While equities and bonds

Chart 3 3-Asset Risk Parity Only Outperforms If Estimation Window Is Shortened



*Volatility adjusted to a 60/40 portfolio over each time period; sample periods are 1971-1981 for 1-year estimation window, 1975-1981 for 5-year estimation window

generally capture growth and disinflation factors, they struggle as hedges in inflationary environments, especially over shorter timeframes. This is why many risk parity strategies expand their opportunity set to include commodities.

To refine our simulation, we incorporate commodity total returns beginning in 1970. While this adds complexity, the core principle remains: calculate trailing correlations, betas, and volatilities to determine each asset's marginal risk contribution, and then adjust leverage to equalize these contributions.

The key finding is that long-term underperformance is even more pronounced in the 3-asset risk parity portfolio than the 2-asset version (Table 2). Additionally,

this portfolio fares worse during the 1975-81 inflationary period. In fact, it only beats a 60/40 portfolio during this time if the lookback estimation window is shortened from 5 years to 1 year (**Chart 3**).[2]

Although it may seem counterintuitive that a more risk diversified portfolio does worse on a volatility-adjusted basis, consider two points:

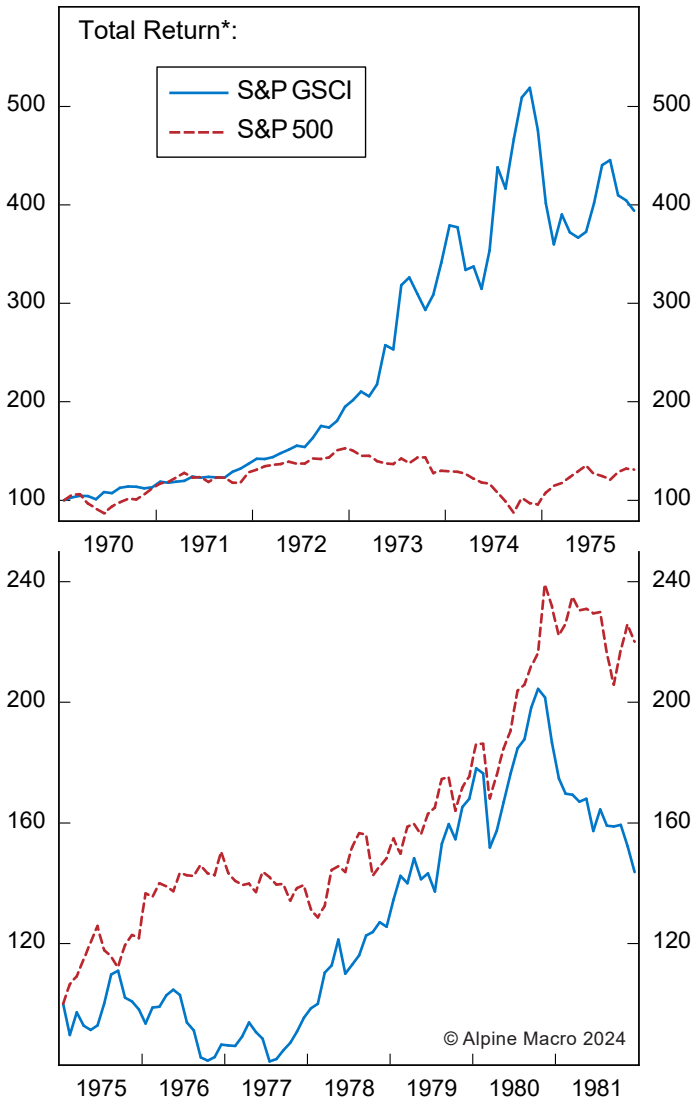
- Over a multi-decade period, inflation tends to erode broad commodity prices. With declining real values and notoriously high volatility, outsized allocations to commodities can significantly drag on portfolio performance over time.

- Investors tend to overstate the commodity rally of the inflationary 1970s. While commodities surged in the first half of the decade, they lagged well behind equities in the latter half and into the early 1980s (**Chart 4**).

We have previously shown that a portfolio can benefit from hedging *short-term* inflation spikes with energy-related commodities, as long as allocations are kept modest.[3] Therefore, the heavy emphasis on having broad commodity exposure in "real-world" risk parity strategies appears misplaced.

Bottom Line: Incorporating leveraged commodity positions into a risk parity strategy does not yield benefits, as inflation is corrosive to their long-term risk-adjusted returns.

Chart 4 Commodities Were A Better Inflation Hedge Only In The Early 1970s



*Series are rebased to 100 in January 1970 and January 1975, respectively

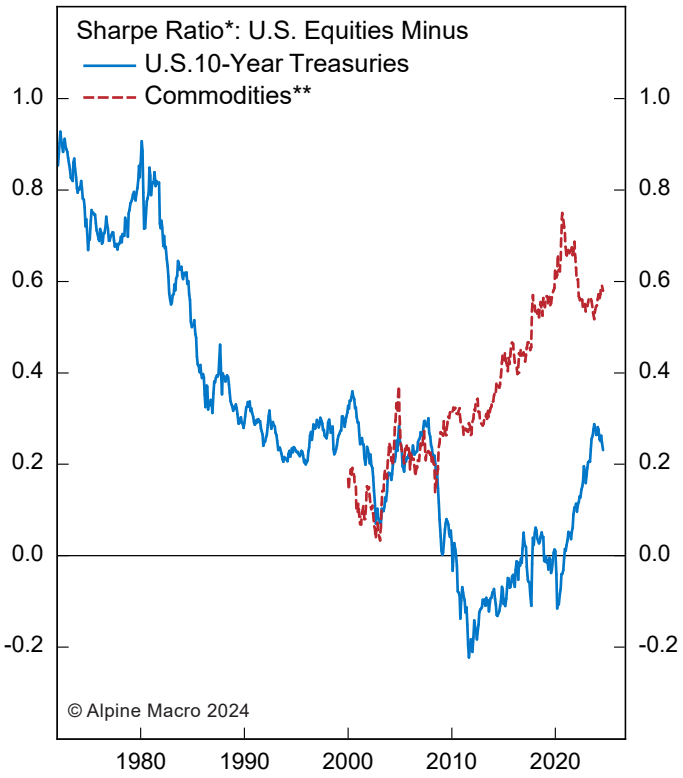
Risk Parity's Original Sin

Our analysis suggests that 2- and 3-asset risk parity portfolios are unlikely to outperform a 60/40 portfolio on a volatility-adjusted basis over the long term. Granted, these findings are influenced by our use of basic bond and commodity proxies due to data limitations. In practice, risk parity portfolios typically include a wider range of investments, and assessing

2 Nevertheless, shortening the window does not result in the 3-asset risk parity portfolio outperforming the 60/40 over the entire sample period (1975-present).

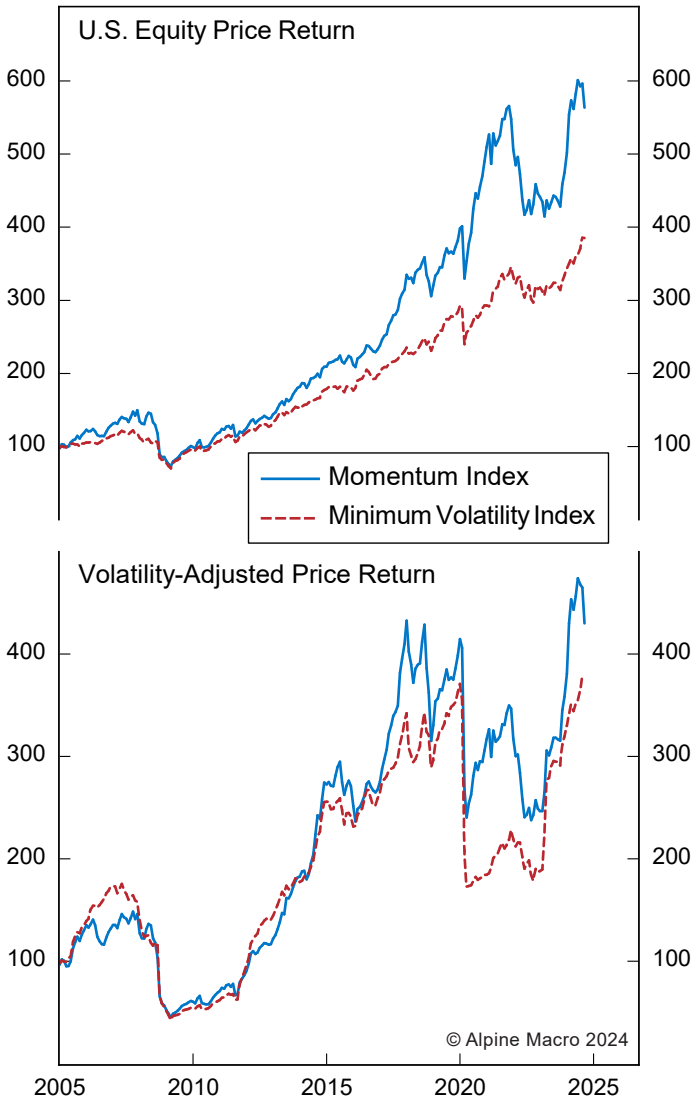
3 Alpine Macro *Global Asset Allocation* "A Guide To Inflation-Proofing Portfolios" (May 16, 2024)

Chart 5 No Stability Or Equality In Sharpe Ratios



*Shown on a rolling 30-year basis
**S&P GSCI Index

Chart 6 Do Low-Vol Assets Really Have Higher Risk-Adjusted Returns?



*Based on the large and mid-cap index; rebased to January 2005 = 100; source: MSCI, Alpine Macro calculation

the impact of additional assets lies beyond the scope of this report.

Nevertheless, the shortcomings of risk parity strategies can be traced to a fundamental flaw in their design. Proponents often claim that Sharpe ratios across asset classes are roughly equal over the long term. This core assumption underpins the strategy's premise that distributing risk evenly across asset classes through leverage creates more "efficient" portfolios.

This view oversimplifies reality, as Sharpe ratios can vary widely across asset classes depending on market conditions. **Chart 5** highlights the lack of stability or rough equality in the Sharpe ratios among equities, bonds, and commodities. Bonds have only shown better risk-adjusted returns in recent decades, coinciding with the peak performance of risk parity strategies. As expected, commodities have never had better risk-adjusted returns than stocks over any extended period.

Some take it a step further, claiming that lower-volatility assets, particularly within stocks, outperform

their higher-volatility counterparts on a risk-adjusted basis. This is linked to "leverage aversion," whereby investors generally shy away from using leverage to boost returns and instead opt for riskier assets. As a result, low-volatility assets may become under-priced relative to their risk.

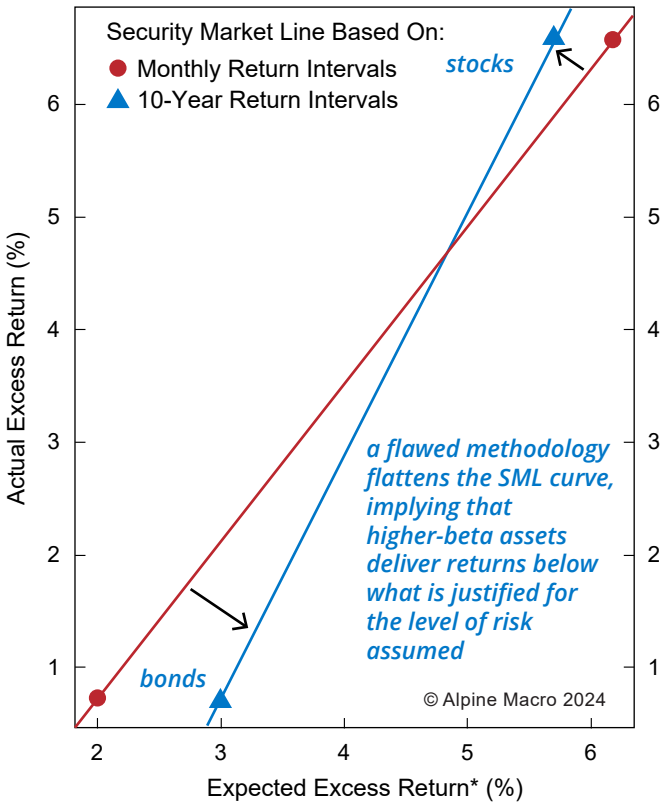
We are skeptical of this "low beta anomaly":

- **Chart 6** compares the returns of momentum stocks and "minimum volatility" stocks, which occupy opposite ends of the beta spectrum. Even after adjusting for volatility, the former still manage to outperform the latter. The aim here is not to trumpet the merits of momentum stocks, but to emphasize the lack of statistically significant evidence that low-volatility stocks consistently deliver superior risk-adjusted returns.

- A technical explanation may also account for the perceived low relative returns of high-beta assets. Standard practices for estimating Sharpe ratios sometimes fail to adjust for serial correlation in monthly returns. After correcting for this, the security market line[4] steepens, showing that stocks' risk-adjusted returns align more closely with theoretical expectations (**Chart 7**).

Bottom Line: A key assumption underpinning risk parity strategies is that risk-adjusted returns are roughly equal across assets, or that low-volatility assets offer exceptional risk-adjusted returns compared to higher-volatility ones. Both claims are open to scrutiny as evidence suggests that Sharpe ratios vary across asset classes depending on market conditions, and perceived anomalies like the low beta effect may stem from methodological shortcomings.

Chart 7 SML Not As Flattish As Risk Parity Proponents Claim



*Calculated by multiplying each asset's beta by the market risk premium
Note: A 60% S&P 500 and 40% U.S. 10-year Treasuries portfolio was used as a proxy to calculate beta and the market risk premium; sample period is 1954 - 2024

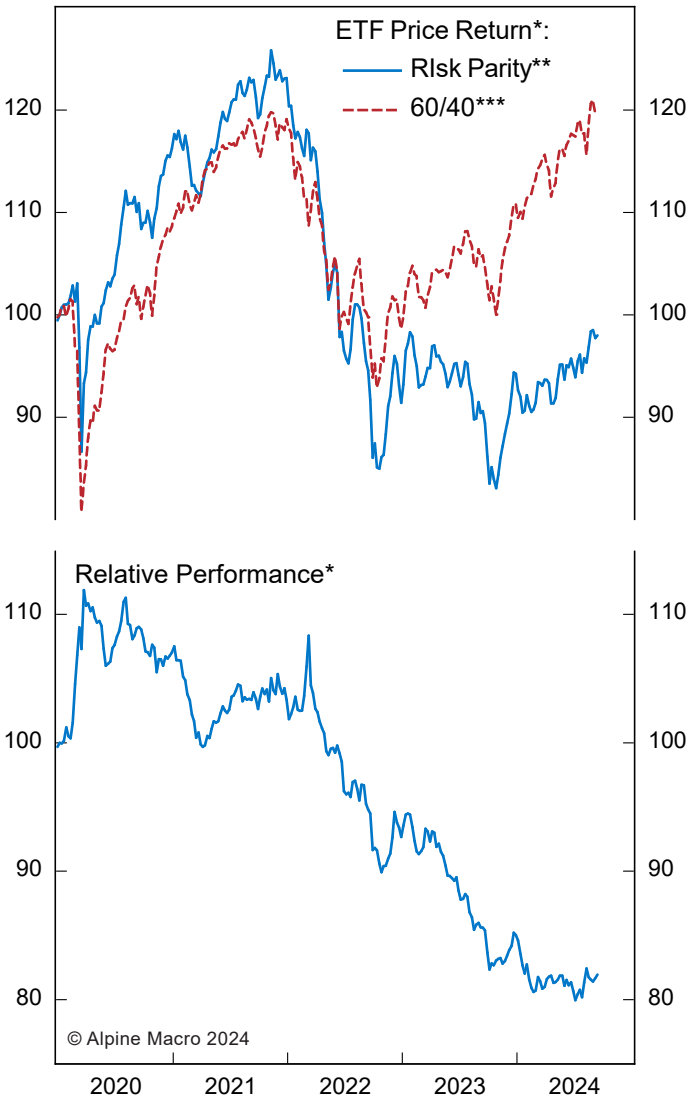
Asset Allocation Takeaways

The discussion above underscores why "naïve" risk parity strategies often fall short when compared to a traditional 60/40 portfolio.

That said, the topic is highly complex, and we acknowledge that risk parity portfolios managed

4 The Security Market Line (SML) illustrates the relationship between an asset's expected return and its systematic risk, measured by beta, according to the Capital Asset Pricing Model (CAPM). We employ a variant of the SML to compare the expected excess returns of equities and bonds against their realized excess returns.

Chart 8 Investors Should Avoid Retail Risk Parity Products



*Series are rebased to January 2020 = 100
**Ticker: RPAR
***Ticker: AOR

by sophisticated asset managers have a better chance of delivering sustained outperformance. This edge stems from their use of advanced quantitative techniques for volatility forecasting and targeting, efficient leverage management, access to illiquid or niche asset classes, and fewer regulatory constraints.

For asset allocators, the key takeaways are:

- Risk parity strategies are not well suited as core portfolio holdings, as they are not truly "all weather". Moreover, the large and frequent allocation shifts required for more effective execution may exceed the risk appetite of most institutional investors. Instead, they are better used in smaller allocations to enhance diversification.

- Funds pursuing risk parity should engage with specialized alternative investment managers, who are more adept at capturing shifts in asset correlations and volatilities. The strategy should be viewed as an alpha overlay rather than a passive investment.

- Investors should avoid retail risk parity products, which exhibit wide return dispersion despite targeting similar volatility. Many use fixed-weight allocations, an inferior method of achieving the risk diversification that risk parity promotes. The significant underperformance of the RPAR (risk parity) ETF compared to the AOR (60/40) ETF since 2020 is largely due to its inability to adjust bond holdings lower during the inflationary and Fed tightening shocks (**Chart 8**).

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