

RISK PARITY-WHAT WERE WE THINKING?

or *LEARNING TO LOVE RISK PARITY IN A TIME OF LOW INTEREST RATES*

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Introduction

Risk Parity, with balanced risk exposure to many different asset classes, has demonstrated outperformance versus traditional allocations over the last forty plus years. Risk Parity now faces critics loudly proclaiming that the strategy's days of dominance are numbered as interest rates reach a potential inflection point and inevitably increase in the future. If this innovative strategy does depend on falling interest rates, as critics suggest, we must ask ourselves if the approach is nothing more than an implicit call on the direction of interest rates, or something more robust.

What was James Tobin thinking when he extended Harry Markowitz's seminal work on portfolio efficiency by introducing the use of leverage to move up the Capital Allocation Line? What was Ray Dalio thinking when he built the All-Weather portfolio? What were many of us thinking when we said this approach was a better way to invest for the long-term? Were there some conceptual underpinnings that we believe to be universal, or were we just lucky that interest rates continued their long downward trend?

At NEPC, we believe that Risk Parity is an asset allocation concept that is not biased to a particular interest rate environment, stock market direction, or inflation episode. Our view is that the core advantages which have allowed Risk Parity to perform well remain in place. We continue to recommend Risk Parity as a strategic component of diversified asset allocations or the starting point for structuring a total portfolio. While there are multiple implementations of Risk Parity, we will discuss a general approach to building portfolios with balanced risk exposures across multiple asset classes and economic regimes, collectively referenced below as "Risk Parity".¹

We can boil down the investment thesis and its advantageous role in a portfolio into three broad differentiators relative to traditional approaches:

Diversification – Risk Parity recalibrates most asset allocations away from their largest risk driver: equities.

Efficiency – As a standalone approach, Risk Parity presents an improved risk-return profile relative to a traditional asset allocation.

Resiliency – With balance across risk exposures, Risk Parity is not dependent on a single asset class to perform well. In particular, the approach is less reliant on equities and economic growth than a traditional portfolio comprised of 60% stocks and 40% bonds (the "60/40" allocation).

WE BELIEVE RISK PARITY REMAINS AN ATTRACTIVE INVESTMENT SOLUTION, EVEN IF INTEREST RATES BEGIN TO RISE.

While those three differentiators would appear to be independent of market environment, a perceived "bottom" in interest rates intensifies the focus on the impact of bond returns on a well-diversified approach. Risk Parity's critics declare that in an environment of rising interest rates, the strategy will meaningfully underperform traditional, equity dominant asset allocations. The question that must be asked is simple: should investors avoid Risk Parity, shying away from its relatively larger, risk-balanced, interest rate exposure for more concentrated sources of risk? To answer this question, we will review the three general advantages that form the overall investment thesis behind Risk Parity and ask separately whether each is still valid.

Diversification

Risk Parity attempts to deliver a more diversified set of exposures than traditional portfolios through strategic positions that are roughly risk

Figure 1: Historical Comparison – Risk Parity vs. Traditional 60/40

	Jan 1970 - Dec 2011		
	Risk Parity	60/40	Difference
Return	10.9%	8.6%	2.2%
St. Dev.	9.1%	9.8%	-0.7%
Sharpe Ratio	0.56	0.29	0.27

Source: Ibbotson, Bloomberg, NEPC

balanced across equities, bonds, and inflation-sensitive assets. As we evaluate the strategic approaches and tactical deviations among providers of Risk Parity products, we have observed roughly consistent exposures to underlying asset classes over time.² The original relationships and elements of broad diversification remain in place.

As a tool to diversify portfolio risk allocations, Risk Parity remains powerful. Even those bearish or skeptical of Risk Parity would likely not challenge this. Those objecting to Risk Parity appear to have their lasers focused on the return prospects of certain allocations within the strategy, particularly bonds, and not the risk and diversification benefits. The original thesis of utilizing Risk Parity to diversify the risk exposures of a portfolio remains valid.

Efficiency

There is evidence that Risk Parity has historically delivered a more efficient return stream than a traditional 60/40 approach (as shown in Figure 1); however we cannot simply hope that this is the case looking forward.

While historical results provide some insight, it is far more beneficial to utilize forward looking analysis. We can compare the efficiency of Risk Parity (based on the allocations of five of our Preferred-rated Risk Parity managers) to a traditional 60/40 global allocation by calculating the expected Sharpe ratio of each allocation.³

Since our assumptions incorporate current low rates and the market's expectation of higher future interest rates, the results in Figure 2 allow us to answer the question: is Risk Parity expected to outperform a traditional portfolio in a low and potentially rising rate environment?

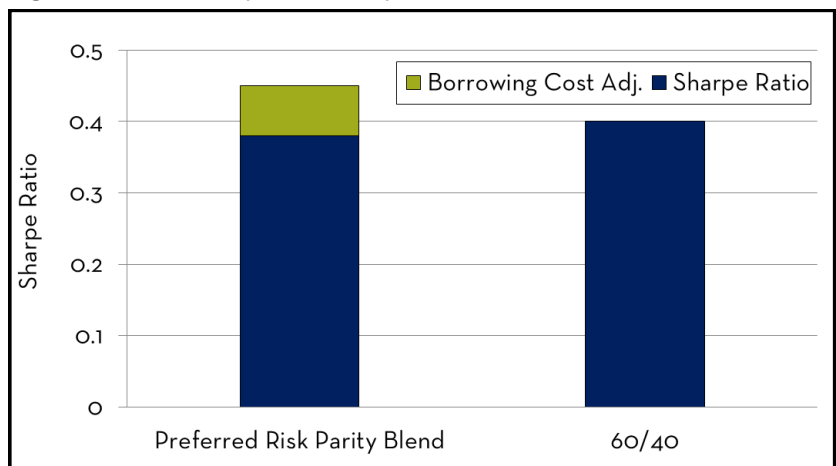
Based on our forward looking assumptions, we can answer with a definitive and resounding, "Well, sort of..." The results are somewhat mixed. With larger (but risk-balanced) exposure to bonds, a set of asset classes with much lower expected Sharpe ratios compared to history, Risk Parity's expected Sharpe ratio is more muted.

Instead of the superior Sharpe ratios demonstrated historically by Risk Parity, looking forward we see relatively comparable efficiency between Risk Parity and a traditional global 60/40 portfolio. Using our 5-7 year expectations, we could conclude that Risk Parity does not boast the portfolio efficiency advantage that it has historically enjoyed. Our 5-7 year assumptions reflect market expectations of rising rates as currently priced into

forward yield curves. Adjusting Risk Parity return expectations for current low borrowing costs shifts Risk Parity back to a position of superior efficiency over the 60/40 portfolio.⁴ Risk Parity will likely continue to have more efficient expectations than traditional allocations as short-term rates remain low.

We must also evaluate these results while considering the overall confidence we have in the predictions. The return and volatility used in calculating these results assumes all asset classes perform as modeled by NEPC. While we and many market participants go through a painstaking process to produce reliable assumptions, we must humbly maintain awareness that the economy and markets will march along a path that none of us can predict. Perhaps most importantly, the array of potential results is incredibly wide.

Figure 2: Portfolio Sharpe Ratio Comparison



Source: NEPC

That range of outcomes is a result of markets pricing assets based on a predicted set of economic results: global growth, trade, inflation, health of credit markets, etc. As results materialize that are different from the market's expectations, prices adjust. Asset classes react differently to these changing results. This is the beauty of Risk Parity – the balance of risk across asset classes reduces dependence on the materialized results. Conversely, the 60/40 allocation, with its outsized risk allocation to equities, absolutely depends on solid economic growth, healthy credit markets, and stable inflation.

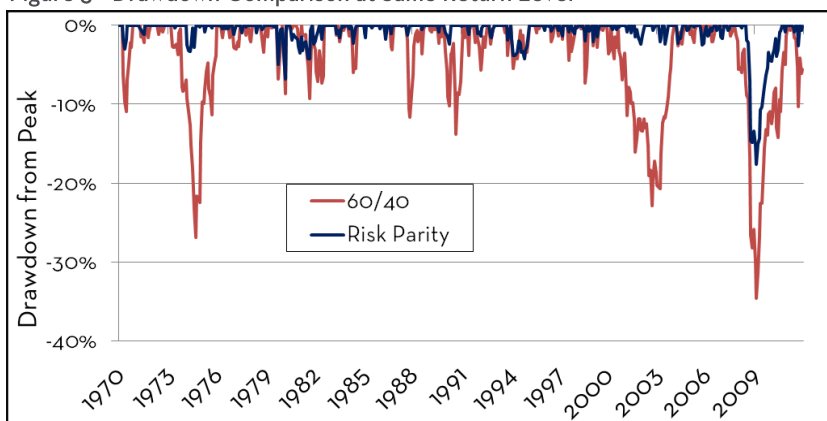
While the Sharpe ratio outlook for Risk Parity may be less exemplary relative to its own history, essentially on par with that of the 60/40 portfolio, one must think of the expected Sharpe ratio as not a bullet number, but as a single reference point in a range of outcomes. Risk Parity allows for a similar expected Sharpe Ratio while limiting the downside compared to the 60/40 portfolio. The argument for efficiency in Risk Parity strategies has changed, from one of superior expected Sharpe ratios to higher confidence in a portfolio with similar baseline expectations. Despite this modification in the argument, Risk Parity's expected efficiency and risk balance remains compelling despite the current outlook for markets, particularly bonds.

are likely to provide meaningful protection for Risk Parity when most other assets are challenged. Neither stocks nor bonds benefit from rising inflation so inflation sensitive risk exposure is essential in a rising inflation environment.

Figure 3 compares historical drawdowns from peak value of the Risk Parity approach and a 60/40 allocation.⁵ Due to its broader diversification and balance, the Risk Parity allocation demonstrates resiliency, protecting capital better across market environments.

All That Sounds Great, But What Happens When Rates Rise?

Figure 3 - Drawdown Comparison at Same Return Level



Source: Ibbotson, Bloomberg, NEPC

Historical relationships and results provide little comfort when we look out on a market environment shaped by unprecedented low interest rates, monetary stimulus, and tepid developed country growth. Can Risk Parity offer the same diversification, efficiency, resiliency as it has historically?

An important note before focusing on the path of interest rates and the impact on Risk Parity strategies is the actual implementation of the approach. The execution of Risk Parity is often active, with an investment manager expressing market views by over or under-

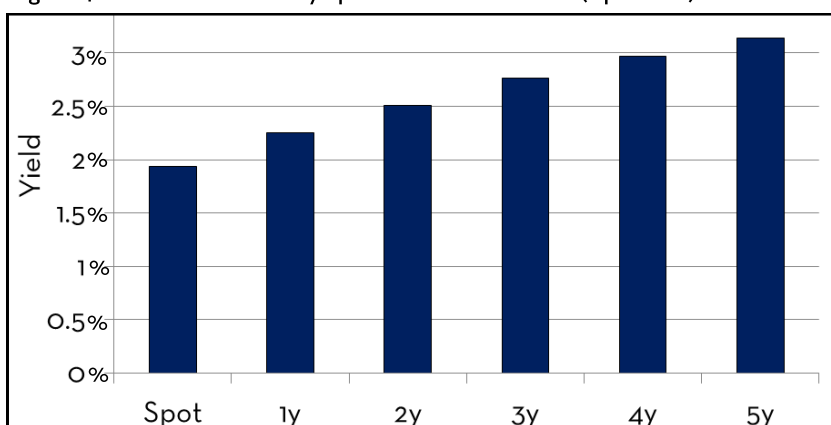
Resiliency

The case for Risk Parity has never been driven by exciting upside in return expectations. Risk Parity's true appeal comes not from a promise to participate in the performance of the highest flying asset class at any given time, but to steadily collect a balanced set of risk premiums. As a result, the strategy will never have too much exposure to one risk or set of risks, thus limiting the potential drawdown in markets where one particular asset class, like equity, underperforms.

weighting asset classes relative to a risk-balanced strategic starting point. With bond valuations perceived by many as rich, some active Risk Parity managers are underweighting bond exposure and instead structuring creative, synthetic equity hedges in place of the strategic protection from equity risk that nominal bond allocations traditionally provide. These approaches may prove effective, but they do step outside of the basic Risk Parity concept. Investors in these strategies should ensure their comfort with such alternative portfolio constructions.

Risk Parity is a portfolio of equally sized, diversified and complementary risk exposures. Balanced allocations to these offsetting asset classes lead to consistency of returns. Consistent returns produce resiliency - limiting drawdowns and underperformance in adverse market environments. Critics of Risk Parity generally construct a straw man portfolio made up of only exposure to equities and nominal bonds. Allocations to inflation-sensitive assets are critical to the diversification of Risk Parity. Exposures such as inflation-linked bonds and commodities

Figure 4 - US 10 Year Treasury Spot and Forward Yields (April 2012)



Source: Bloomberg

Risk Parity's performance in a potential rising rate environment should be evaluated based on the strategy's overall diversification and balance, not simply the large notional exposure to bonds. However, when zooming in on expectations for bonds within the Risk Parity portfolio, it is critical to evaluate the impact of rising interest rates relative to what is already priced by the market. An examination of forward yield curves indicates the market is already pricing in a rising rate environment. Figure 4 (previous page) suggests the market already expects a 1.2% increase in the 10 year US Treasury over the next five years. To the extent rates do rise, the new level must be higher than what is already priced in before having a negative impact on bond prices.⁶

Conversely, if rates rise less than forecasted by the market, bonds actually perform better than expected. We may not be in a rising rate environment today, but the market certainly says we will be. That possibility is already priced into markets, therefore, the impact on returns is actually more limited than one would expect.

Importantly, rising interest rates and disappointing fixed income returns are by no means a foregone conclusion in the near term. Figure 5 highlights an often overlooked reality – rates can go lower! A continued, long-term, global deleveraging places downward pressure on interest rates. While the future is unknown, the evidence has built towards a continued deleveraging instead of a broad and sustained recovery.

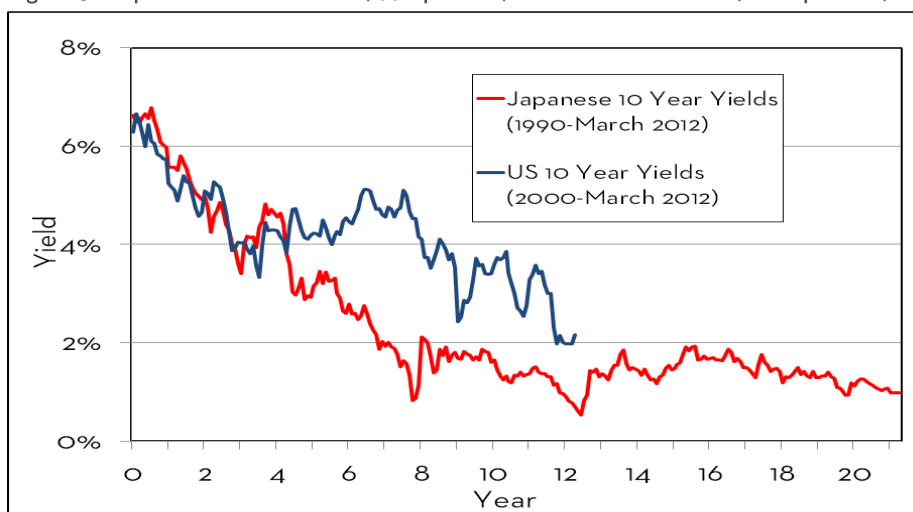
So, what if interest rates do move higher than what the market already expects? We can paint a few different pictures of environments that would lead to rising rates and consider how Risk Parity might perform in each of those.

Strong Global Growth – In this environment, growth-sensitive assets like equities, commodities and credit would likely provide strong performance. The total performance of Risk Parity would depend on how much rates rise (particularly relative to market expectations of rate increases) and why they rise. While Risk Parity would likely underperform 60/40 in this scenario, absolute performance would likely still be strong as Risk Parity benefits from the positive performance of equities and commodities to offset losses from nominal and inflation-linked bonds.

Rising Inflation – This environment is likely challenging for stocks and bonds. Risk Parity's exposure to inflation-linked bonds and commodities would be beneficial. While rates are rising, leading to negative results for nominal bonds, it is also likely a challenging environment for equities. The balance and diversification of Risk Parity, particularly its exposure to inflation-sensitive assets (generally under-represented in traditional allocations) likely allow it to outperform traditional allocations in this environment.

Surprise Rate Hike – This event would likely be concurrent with a combination of strong global growth and rising inflation. An unexpected increase

Figure 5 – Japanese 10 Year Yields (1990-present) vs. US 10 Year Yields (2000-present)



Source: Bloomberg

Looking at the interest rate path of Japan over the last twenty-plus years, it is clear that the current environment could persist for more than a decade. With rates remaining low or falling further, and equity markets moving sideways due to sluggish growth, Risk Parity is likely to outperform traditional allocations dependent on strong equity returns.

in short-term interest rates presents headwinds for all asset classes. All investing is an implicit comparison to cash. An investor can take market risk with the expectation of a positive return, expecting to earn a risk premium, or choose to avoid investment risk and keep money in cash. A surprise rate hike essentially positions cash as more attractive, making all assets a bit less attractive. It is the "surprise" that matters more than the increase in rates. If short-term interest rates increase, but those increases are in line with expectations, this likely has limited impacted on asset returns since that path is already priced into markets. It is the unexpected change in rates, and the corresponding adjustment in asset prices that has larger implications for investment portfolios.

Unexpected increases in interest rates are a challenge for all portfolios, not just Risk Parity. Perhaps Risk Parity would be more adversely impacted as the implications for the bond market are more mechanical and instantaneous in pricing than equities, but the adjustment is essentially the same. Prices would adjust to a more attractive safe investment.

Importantly, following that adjustment in prices, it is unclear which assets would benefit with strong returns. Risk Parity's balanced risk exposure would allow the strategy to participate meaningfully in whatever asset class races out of the gates post-market adjustment.

Two periods stand out for the influence the United States Federal Reserve had on markets due to significant (and relatively unexpected) interest rate increases – the early 1980s and 1994. Shown in Figure 6, both of these episodes are highlighted by a 12 month period in which the Fed Funds rate increased and Risk Parity underperformed a traditional allocation.⁷ Notably, this underperformance was short-lived. If we look out three years after these rate increases, we see Risk Parity has roughly kept pace with the 60/40 allocation. Risk Parity may experience negative returns if interest rates rise, however, as markets adjust, Risk Parity will be positioned to participate in higher future performance over subsequent periods.

Figure 6 – Comparison of Rising Fed Funds Periods

	Starting Fed Funds	Ending Fed Funds	Risk Parity	60/40
7/1980-6/1981	9.1%	19.0%	-13.4%	4.9%
3 years following (ann.)			11.4%	10.5%
1/1994-12/1994	3.0%	5.5%	-5.0%	1.1%
3 years following (ann.)			13.9%	14.0%

Source: Ibbotson, Bloomberg, St. Louis Fed, NEPC

Rising Sovereign Risk – We have already witnessed the bonds of individual sovereigns such as Greece, Ireland, and Portugal behave like risky credits. Increased riskiness in a sovereign entity can cause meaningful increases in the borrowing costs for the country and major negative price implications for existing bonds.

The intended role of nominal sovereign bonds in a Risk Parity portfolio is as balanced providers of positive performance when risk is not rewarded in other asset classes such as equity, commodities, or credit. If certain bonds develop characteristics of a risky credit instrument, they are no longer playing their intended role. Those bonds instead function like other risky assets and will generally have increased correlations to growth sensitive assets like equities. The Risk Parity approach does not aim to hold global government debt at any price or yield. To the extent sovereign risk increases for certain countries, Risk Parity managers should be willing to remove certain positions for fear those bonds will not play their originally intended role.

Consideration of individual country positions within the bond allocation in a Risk Parity program underscores that the total asset allocation

should not be evaluated in a myopic way, considering only the performance or size of its nominal bonds exposure. Nor should Risk Parity be a “set-it and forget-it” approach, where all assets are held regardless of valuation, liquidity, or changing risk profile. Instead, Risk Parity should be judged based on its ability to provide multiple types of exposures, coverage for different economic regimes, some amount of downside protection, and resiliency across market environments.

Conclusion

Risk Parity should be viewed as a core approach to asset allocation. The strategy seeks to capture diversified risk premia and deliver stable, consistent returns across market environments. Early adopters of Risk Parity were attracted to its diversification qualities, its overall efficiency of delivering a high expected return with moderate and balanced volatility, and its ability to perform resiliently across various market environments.

As we look forward, we believe that the key tenets of the investment thesis for Risk Parity remain largely intact.

While critics cry that Risk Parity will disappoint when rates rise, we recognize that Risk Parity's key differentiation is in its diversity and balance of risk. Rising interest rates may present a challenge for one part of the Risk Parity portfolio. But the interest rate sensitive allocation remains only as an equal risk portion of the Risk Parity portfolio, along with equi-

ties, inflation-linked bonds, commodities, credit, and other exposures. Expected stronger performance from some of these asset classes should provide protection for Risk Parity strategies if rates do rise meaningfully.

The concern about rising rates and the impact on Risk Parity is likely overblown. In fact, the consensus that rates will rise in the future should not be accepted as inevitable. Both current market pricing of future rates and the global economic challenges that must be resolved before yields are likely to rise make the impact and likelihood of higher future rates more muted than consensus would suggest.

We believe a larger concern for investors should be potential equity drawdowns, and their erosive impact on more traditional asset allocations. The apprehension should be redirected – away from concern of rising rates and the impact on Risk Parity to uncertainty around economic growth and investors' dependence on equities to drive long-term portfolio growth. For this reason, we believe Risk Parity remains an attractive investment solution, even if interest rates begin to rise.



Footnotes

¹ For more detail on Risk Parity, please see Risk Parity: In the Spotlight After 50 Years, available at www.nepc.com.

² At lower interest rates, the duration of bonds increases. In other words, the interest rate sensitivity, and thus volatility, of bonds is magnified since small changes in yield produce larger changes in price. This increased level of volatility can lead Risk Parity investors to reduced notional exposures to bonds, while maintaining a similar risk exposure to bonds and similar diversification characteristics of the overall Risk Parity portfolio.

³ Risk Parity allocation constructed using roughly equal risk allocations to growth, interest rate, and inflation sensitive assets. The 60/40 allocation is 60% Global Equity, 20% US Core Bonds, and 20% Global Bonds. Allocations remain static through simulation. All analysis relies on NEPC's 2012 5-7 year assumptions. The forecasts are based on fundamental, forward looking analysis of all asset classes including spot yields and market forward curves for bond yields, indicating a forecast of rising intermediate and long-term rates as well as rising short-term financing costs.

⁴ Our 5-7 year projections rely on market pricing as a starting point. For bonds, this means our expected return is a build-up of the market's expectation of interest rates as implied by the forward yield curve. In the same way, 5-7 year short-term borrowing costs, or LIBOR, are simply a reflection of the market's expectation for short-term rates over the forecast horizon. With higher rates in later years, our 5-7 year expectation for LIBOR is 1.75%, while current borrowing costs reflect low short-term interest rates of less than 1.0%. With leverage as part of the Risk Parity strategy, this difference in borrowing costs has a meaningful impact on the expected Sharpe Ratio of the strategy. Lower borrowing costs will lead to a higher Sharpe Ratio.

⁵ In order to compare exposures to negative returns, we scaled the Risk Parity and 60/40 returns to the same total returns over the 42 year history. An additional subtle advantage of Risk Parity is the ability to scale the portfolio to different levels of targeted risk or expected return through leverage. Because Risk Parity historically earned higher returns at roughly the same level of volatility, its return profile is made more conservative by scaling down to the same annualized return as the 60/40 allocation.

⁶ Bob Prince, co-CIO at Bridgewater Associates, had the best analogy I have heard on this, describing forward interest rates as the "point spread" that one would get for betting on a football game in Las Vegas. Higher interest rates are the favorite and must "cover the spread" before starting to negatively impact bond returns.

⁷ The 1980/1981 Risk Parity underperformance gets Risk Parity critics foaming at the mouth. It is meaningful underperformance, no question. My response to this one is simple – let's get to 9% Fed Funds and see what that path looks like before we worry about getting to 19% in a year. An increase from 3% to 5.5% seems a much more reasonable proxy for a future path of rates.

