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Myths and facts about “risk parity”

Matthew C Klein [Author alerts](#)  Aug 25 09:42 9 comments

Companies often denigrate products sold by competitors, so it isn’t surprising that Alliance Bernstein is warning that the growth of so-called “risk parity” strategies is akin to the growth of the dreaded “portfolio insurance” in the 1980s — and could similarly make “the system more fragile”.

We’re sceptical. Ben Inker of GMO wrote up a more thoughtful critique a few years ago, although it also contains some important errors. More broadly, there is a common misconception that these investment products are uniquely vulnerable to rising interest rates, relative to more traditional portfolios. Our colleagues in the Markets section have a good overview.

While we don’t want to defend every investment product that markets itself as “risk parity”, since there are plenty of differences between them, we think we can usefully clear up some misconceptions and explain why these strategies make sense for certain kinds of investors.

(Disclosure: we once worked at Bridgewater, which invented what is now called “risk parity” nearly two decades ago when it created its “All Weather” strategy. Moreover, whilst there we spent a good deal of our time in a group that researched the benefits of the “All Weather” approach for institutional investors and compared the strategy to other asset allocations. This was more than five years ago. We have no financial ties to Bridgewater whatsoever. For better or worse, you’re reading the opinions of a true believer.)

What is “risk parity”?

There are three basic claims underlying all “risk parity” strategies:

1. The reward you get for taking risk should be the same across all asset classes over a long enough time horizon
2. Volatility isn’t the same across asset classes
3. You can improve the risk/reward profile of your total portfolio by owning things that don’t move together

None of these is controversial for anyone familiar with financial theory.

The first claim is simply a variation of the idea that there aren’t lots of easy ways to make money in the financial markets. If there *were* systematic differences in the risk/reward

tradeoffs across asset classes, it would be trivially simple to exploit this, which suggests that these systematic differences either don't exist or are too small to matter.

There are obviously plenty of specific points in time when bonds do better than stocks, or when stocks do better than bonds, but the only people who should worry about these things are traders who make active bets on the direction of the markets. Investors trying to build durable low-cost portfolios can't afford to have a view on today's valuations when thinking about what's best for the long run.

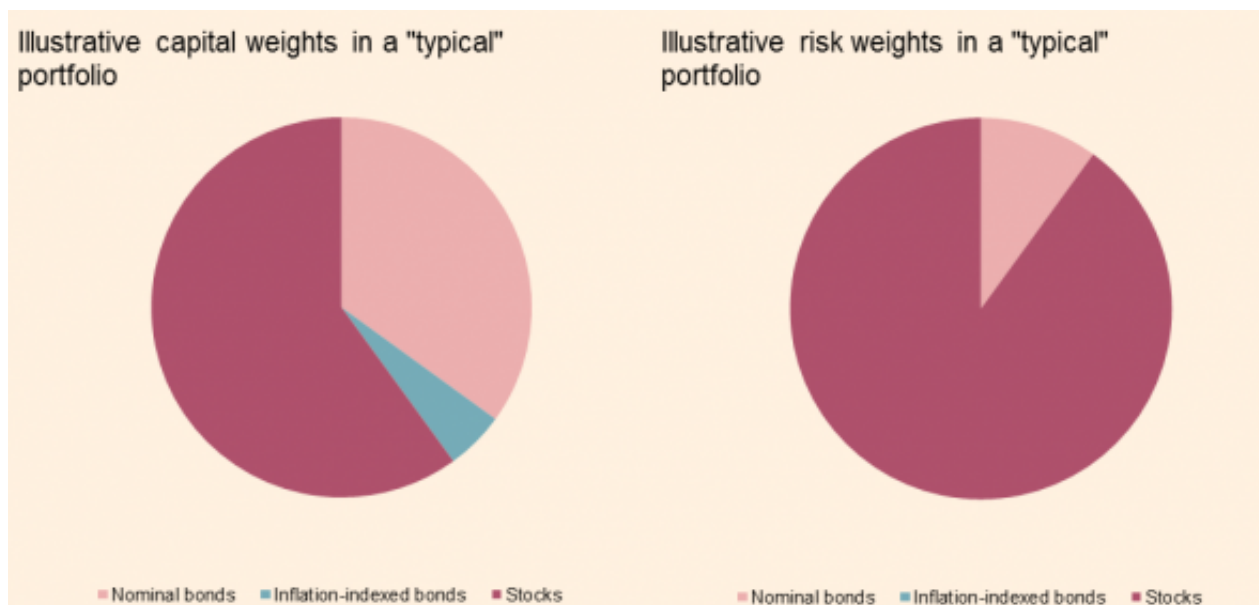
Any criticism of “risk parity” that includes assumptions about the medium-term outlook of bonds, stocks, or other assets should therefore be rejected out of hand. You shouldn't be bothering with any sort of set-it-and-forget-it portfolio if you *know* what will happen in the future, but instead making active directional bets.

A straightforward comparison of stocks and corporate bonds should make the second claim obvious. Within any given company, bondholders have priority when it comes to getting paid, which limits their downside relative to shareholders. Also, as Warren Buffett explained back in 1977, bonds have shorter duration than equities, which is one reason why equities have historically been a poor hedge against accelerating inflation. Remember that bonds actually did better than stocks in the Great Inflation.

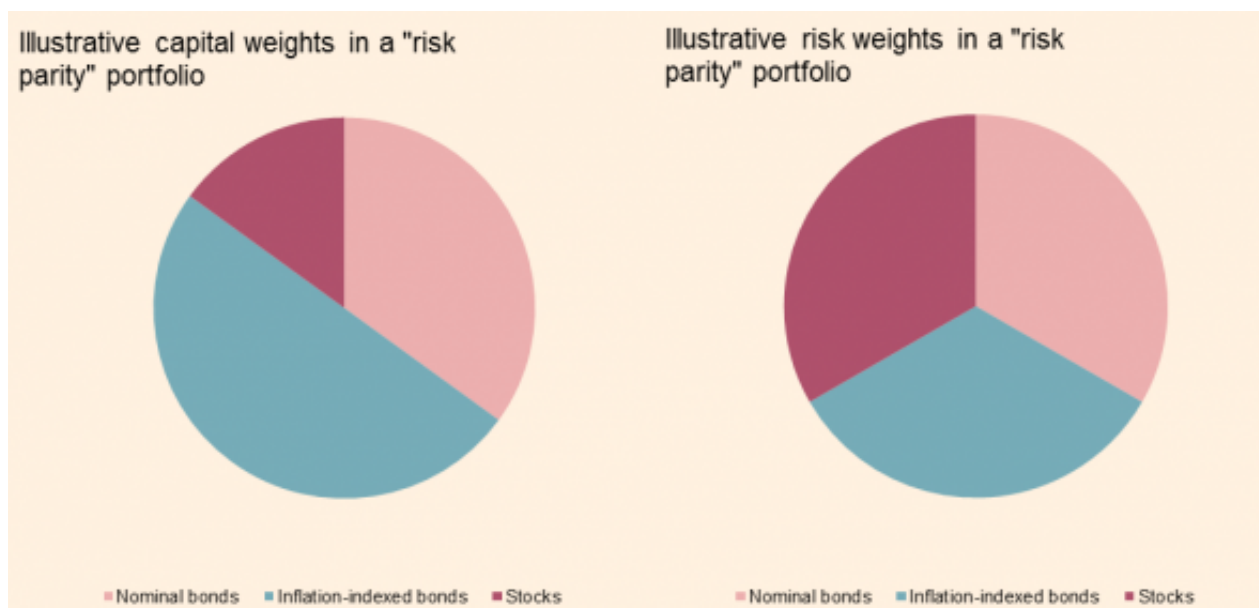
Put this together and it's not surprising that, historically, investors have gotten a lot less upside — and downside — from holding bonds than equities. Government bonds should be even less volatile since any scenario where the state can't meet its obligations is probably not a good one for shareholders. Similarly, inflation-indexed bonds are immune to one of the major threats faced by owners of other fixed-income instruments, so it makes sense that they're even less volatile (adjusted for duration).

(We won't get into the third claim since it's one of the most basic and important findings of finance: the only “free lunch” in all of economics.)

“Risk parity” simply combines these three claims into an argument about asset allocation. Since stocks tend to be more volatile than bonds, a typical portfolio of 60 per cent stocks and 40 per cent bonds is going to have almost all of its upside and downside determined by the performance of the equity component over time. This is not a diversified portfolio. Some oversimplified pie charts:



If you seriously believe in the three uncontroversial claims we listed above, you should want your portfolio to look something more like this:



A portfolio resembling our hypothetical "risk parity" allocation ought to have a far better risk/reward tradeoff over time than the typical portfolio, since each of the three components responds in systematically distinct ways to economic conditions.

To the extent that we can trust back-testing, there is significant evidence that "risk parity" strategies do far better than traditional 60/40 portfolios across long stretches of time and across countries.

However, there are downsides.

People who have to pay US taxes get thwacked by the large allocation to inflation-indexed bonds, because the Internal Revenue Service perversely treats the regular increases in the value of the principal paid at maturity as taxable income every single year. This means you can end up owing more in tax than you actually got in cash income, and the problem gets worse the faster inflation gets. (The best way around this is to keep your TIPS in a tax-

sheltered 401k account or IRA.)

More seriously, the expected absolute return of this portfolio is not particularly high. As the saying goes, you can't eat risk-adjusted returns. The satisfaction you get from knowing that your Sharpe ratio is higher than those poor fools with their 60/40 portfolios is not going to pay for the promises you made your pension beneficiaries.

“Risk parity” strategies get around this by borrowing. Lever up the illustrative portfolio allocation shown above, which probably has an expected return of around 3 per cent above T-bills over time, and you can produce something with comparable absolute returns to the typical portfolio with far less risk. Or you take the same amount of risk and get the benefit of far higher returns. Using leverage does eat into the risk/reward tradeoff a little bit (it's just maths) but not nearly enough to offset the benefits of genuine diversification.

“Risk parity” funds are not all alike

We should note that actual “risk parity” portfolios in the real world look a bit different than our illustrative pie chart because they contain several other components, most notably commodities and emerging market debt and currencies. (Whilst we're personally sceptical there's an enduring risk premium in commodities, the merits of a long-only commodity exposure shouldn't affect your views on the merits of “risk parity” in the abstract.)

You can get a flavour of how all these components can get put together in a real portfolio by perusing the detailed risk allocations of the publicly-traded AQR Risk Parity Fund, although we stress that it's not representative of all “risk parity” strategies. There are two significant drivers of differences among the most popular iterations.

First, different “risk parity” strategies have different ways of measuring risk, which relates to how capital is weighted across assets and the leverage applied to the total portfolio. Some funds look at volatility over, say, a three-year window and update their positions and total leverage accordingly. That could be useful if you believe there are frequent structural changes in riskiness and that the future tends to resemble the recent past. Others, including “All Weather”, prefer to use constant capital/risk ratios based on the longest possible data series available in an effort to avoid getting misled by short-term market movements, which also leads to a constant leverage ratio for the total portfolio.

Second, there are big differences in how risk gets allocated. In the AQR fund, roughly equal weight is given to “equity”, “nominal interest rate”, “credit/currency”, and “inflation”. By contrast, Bridgewater's “All Weather” strategy aims to balance risk across economic environments. They divide risk into four groups based on whether real growth and inflation come in above or below expectations. For example, a real growth disappointment should be good for nominal government bonds and inflation-indexed bonds, while a positive growth surprise should be good for credit spreads, stocks, and commodities. One practical consequence of these differences is that inflation-indexed bonds have a much larger

allocation in “All Weather” than in AQR’s fund despite the similar intellectual underpinnings, while the AQR fund has a hefty risk exposure to the oil price.

Separating the myths from the facts

The most common — and least sophisticated — criticism of “risk parity” is that it’s just a levered bet on bonds.

This bet supposedly looks smart in retrospect only because bonds have done very well since the early 1980s as nominal interest rates collapsed. However, the argument goes, that kind of performance can’t happen again unless rates keep falling far below zero. Some people go further and argue that interest rates are bound to rise from today’s levels (we think we’ve heard that one before), which will hit “risk parity” investors on the asset side at the same as borrowing costs hit the funding side of the strategy.

First of all, “risk parity” isn’t about levering up bonds. Rather, it’s about constructing the best possible risk/reward tradeoff you can at the portfolio level and then levering *that*. In our experience, the bonds were bought outright, some of the most liquid ones were used as collateral to borrow in the repo markets, and the exposure to equities and commodities was bought with futures. There was generally some cash left over that could be used to cover margins and redemptions. The idea was to minimise trading costs while preserving liquidity.

We struggle to imagine how this arrangement could ever lead to forced sales. Recall that the biggest players managed to endure the collapse of the repo markets in 2007-8 with aplomb.

Besides, even investors who don’t think they use leverage are still using leverage. The average public company carries a lot of debt. When you buy shares in the big banks — a significant chunk of any stock index — you’re basically getting a long-only credit portfolio levered 20-to-1, plus some legal liabilities thrown in for fun. Institutional investors that allocate to private equity also get plenty of leverage thrown on top of already-volatile equity. In fact, some of them expressly consider this part of the appeal of a PE allocation. By comparison, taking a very conservative portfolio and multiplying it by 2.5 seems...pretty safe.

(For more on the role of leverage in “risk parity” we strongly recommend this paper and blog post by AQR’s Cliff Asness and colleagues, as well as this study from Blackrock.)

It’s true that the fixed-income allocation in “risk parity” portfolios is big relative to what you find in the typical 60/40 mix, but that’s simply a reflection of the fact that the typical mix is a huge, implicit — and unjustified — bet that stocks offer far better risk/reward tradeoffs than bonds. “Risk parity” doesn’t make this massive bet on equities, and therefore does relatively worse than the 60/40 portfolio when stocks do a lot better than bonds, such as in the late 1990s. That tells us *nothing* about which portfolio makes the most sense for long-term investors.

This explains why, contrary to the popular misconceptions, “risk parity” portfolios also do well if you start before the 1980s. We don’t even need to rely on back-testing to demonstrate this, since, as we noted before, nominal bonds actually did better than stocks during the Great Inflation. Had inflation-indexed bonds existed back then, a balanced portfolio would have done even better.

“Risk parity” isn’t inherently allergic to rising interest rate environments, either. After all, even a pure government bond portfolio can do okay in a rising interest rate environment depending on the pace of interest rate increases, the slope of the curve, etc. Remember that if you’re targeting a constant maturity you’ll end up replacing lower-yielding bonds with higher-yielding ones. (For more on what this means specifically for “risk parity”, read this.)

This isn’t to say that “risk parity” portfolios are immune to losses. Only money maintains its value — in nominal terms. Once you factor in inflation there is no such thing as a perfectly riskless asset. (The government could create such an asset in limited quantities if it wanted to, which would be a useful public service, but it hasn’t.) What should matter to investors and critics is *when* each kind of portfolio loses money and *how big* the losses can get under the most extreme circumstances.

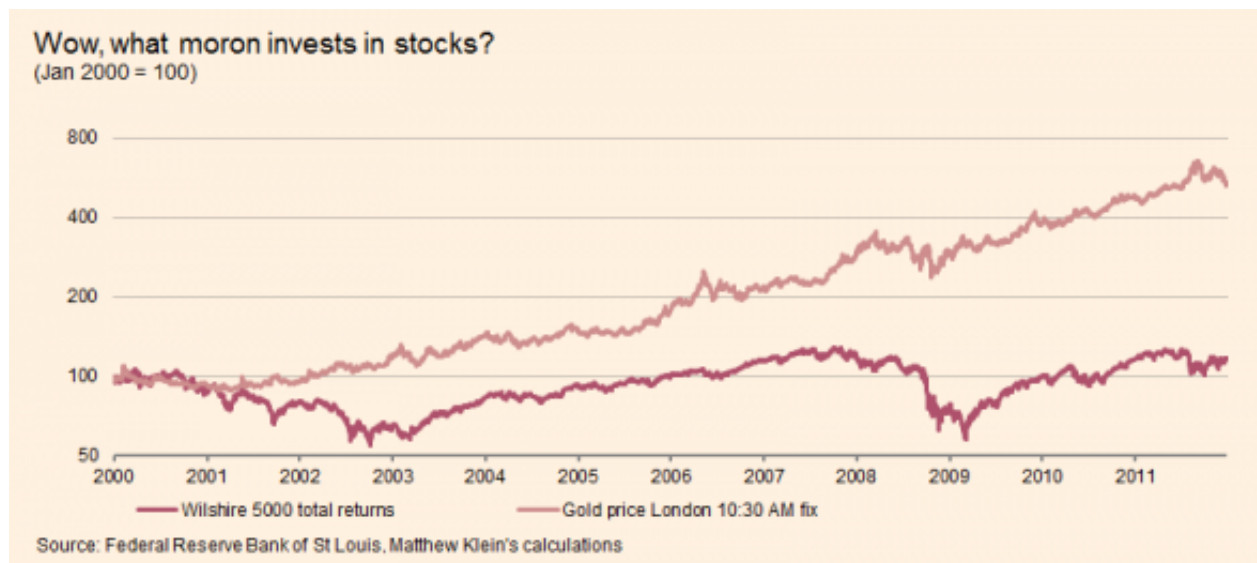
The “when” is easier to answer definitively than the “how much”. The whole appeal of “risk parity” strategies is that they provide a balanced exposure to risky assets without prejudice for certain kinds of assets over others. In other words, it’s a pure measure of the performance of aggregate financial risk. Most of the time, you get rewarded for taking risk, although you rarely get rewarded for taking every kind of risk at the same time. Sometimes you get rewarded for holding duration, sometimes you get rewarded for owning equity, etc.

There are times, however, when cash is king and everything does badly relative to money. Put another way, the real returns on money zoom upwards, or, put yet another way, real short-term interest rates spike. Either it’s a financial crisis, like the early 1930s and 2008, or it’s policy-induced, as in the great Volcker tightening of the early 1980s. As it happens, those are the three episodes when, in the back-tests and in reality, “risk parity” strategies lost the most. Of course, the 60/40 portfolio got crushed during all those episodes, too.

Unsurprisingly, there were some relatively mild losses for “risk parity” in the summer of 2013 when real rates spiked and emerging market fixed income got hammered during the “taper tantrum”. Clueless critics were everywhere that summer, clucking about how “All Weather” and other “risk parity” strategies failed to protect investors because the portfolios had the temerity to go down during a period when US large cap stocks were rising.

Some perspective is in order. Despite the supposedly catastrophic or embarrassing losses, AQR’s publicly-traded fund was actually up (barely) in 2013, while “All Weather” didn’t even lose 4 per cent over the course of the year. When the 60/40 portfolio does badly the drawdowns are closer to 40 per cent.

To see how senseless it is to judge the merits of “risk parity” by comparing it against US equities in a single year, consider a comparison of the returns from holding a broad portfolio of US equities, with all dividends reinvested, against the returns from a long-only investment in gold, from 2000 through the end of 2011:



We think there is logic in holding a small gold allocation in a broader portfolio, but only a fool would determine his long-term asset allocation strategy just using simplistic performance comparisons like the one above. (Starting the clock at the trough in 2002 doesn't make stocks look that much better, by the way.)

No asset allocation mix guarantees against losses, but some offer superior risk/reward ratios over time. Reasonable people can quibble about the best ways to allocate risk across assets and how the portfolio's leverage is managed over time. But the essential logic behind “risk parity” is sound. The criticisms leveled against these strategies are either wrong-headed, or just as applicable to any constant portfolio allocation, including the typical 60/40 portfolio.

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