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What Happened to the Quants in 2018?

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Quantitative investment managers experienced significant and wide-ranging underperformance in 2018. The performance of Alternative Risk Premia (ARP) strategies, which claim to offer broad diversification across distinct economic drivers and to be lowly correlated to equity markets, was particularly poor. Because of their purported market neutrality, ARP strategies frequently reside in the “uncorrelated returns” sleeve of investment portfolios, making their downside co-movement with stocks in 2018 particularly painful for investors. Here, we examine the drivers of ARP performance in 2018 and the lessons learned.

Over long periods, most risk premia appear to be lowly correlated with one another, making equal weighting or equal-risk weighting seem appropriate. However, we believe this approach is naïve. The problem with this approach to portfolio weighting is that it cannot account for the conditional behavior of the premia. In order to understand conditional behavior, an investor must first dig deeper into the fundamental drivers of each premium. Not all strategies labeled as “risk premia” are, in fact, true risk premia. A true risk premium is explicit compensation for bearing a readily identifiable source of economic risk that investors are willing to pay to avoid. Selling equity volatility is a great example because the insurance-like obligation is very obvious. But many other strategies qualify with only slightly less obvious logic. Currency and commodity risk premia offer hedgers protection against adverse fluctuations so that hedgers can better plan their economic activities. Buyers of value stocks are willing to endure disclosing holdings of unglamorous stocks to their investors, whereas the sellers of such stocks are not willing to do so.

In our view, the defining feature of true risk premia is that an investor can tell exactly how rich or cheap a premium is by looking at its price. How much do I get paid to sell put options today? What is the interest rate differential between the US and Thailand? How cheap is this basket of stocks relative to the market? Investors in true risk premia weigh their opportunity relative to a discount rate that is linked to general market risk appetite. When market risk appetite changes, investors demand higher returns to invest in true risk premia, making it likely that true risk premia reprice alongside traditional assets during bad equity markets. Financial theory tells us that the likelihood of downside correlation with risk assets means traditional risk premia should be very well compensated.

Alongside true risk premia in most ARP portfolios are strategies better categorized as anomalies, that is, strategies with strong empirical support that appear to exist because of investor behavioral biases. Investors seem to copy each other and over-extrapolate from the recent past, leading to price momentum. Investors appear willing to endure lower risk-adjusted returns in order to hold higher volatility assets and thus avoid using leverage, leading to a premium for defensive assets. The behavioral biases that create anomalies do not seem to fluctuate with investor risk appetite, making anomalies an important source of diversification in risk premium portfolios. Because anomalies are not as likely to fall in tandem with other risk assets, financial theory tells us they should be less well compensated than traditional risk premia; in fact, the Capital Asset Pricing Model (CAPM) suggests they should offer no compensation whatsoever.

A subset of anomalies appear to be negatively related to investor risk appetite, as they play on investor overreaction on the downside (trend) and on investors’ rotation into higher-quality, less-levered securities when risk appetite falls (quality). Financial theory tells us that these defensive anomalies should be the least well compensated among the risk premia and, in CAPM, they would have negative expected return.

Fortunately, theory is not reality and all three flavors of alternative risk premia offer positive historical return. On the next page we show the historical relationship between risk premia Sharpe ratio and coincident changes in the CBOE Volatility Index (VIX), where the VIX is a measurement of the market price of equity downside protection. We believe the VIX is closely related to the discount rate that investors apply across all of their holdings and should offer some insight into the co-movement of true risk premia. Neutral anomalies should not have a discernible relationship with changes in the VIX, and defensive anomalies should be positively related to the price of downside protection.
The relative performance of true risk premia and anomalies is consistent with theory, with true risk premia performing better, compensating investors for their downside correlation to other risk assets.

The Relationship between Risk Premia and Equity Market Risk (1990-2018)

What happened to risk premia strategies in 2018?

We think that on average, risk premia strategies were not adequately balanced between true risk premia and defensive anomalies. A bias toward true risk premia relative to defensive anomalies would be most managers’ default position because there are more true risk premia than there are defensive anomalies and, as we have already shown, true risk premia tend toward higher risk-adjusted return. The cost of a bias toward true risk premia is large negative co-skewness with equities when investor risk appetite pulls back sharply.

As empirical support for this hypothesis, we present the average 12-month correlation between risk premia strategy returns and changes in the VIX index, which measures the market price of equity downside protection. The results are crystal clear: on average, risk premia manager returns were very sensitive to changes in risk appetite in 2018 and being short volatility, either explicitly or implicitly, was costly.
How can this be? Did managers sell a lot of volatility after phenomenal performance by short volatility strategies in 2016 and 2017? There may have been some of that, but the more likely cause of the high co-movement with equity market sentiment was larger negative equity co-skewness by the majority of risk premia strategies. This is exactly what we would expect from true risk premia when investor risk appetite falls very sharply.

The average correlation of true risk premia, neutral anomalies, and defensive anomalies to changes in the VIX is shown below. True risk premia had a correlation of almost -0.4 with changes in VIX, the lowest number in our almost 30 years of risk premia data. 2018 was also a year in which defensive anomalies were substantially protective during periods when equity volatility rose the most, despite the less-defensive performance we saw from most trend strategies. The strong performance by defensive strategies is not terribly surprising as some of the defensive strategies explicitly benefit from a flight to quality. We think it’s likely that risk premia managers were overexposed to true risk premia and thus overexposed to sharp changes in market risk appetite because defensive strategies held up well, neutral strategies performed as expected, and true risk premia became sharply negatively correlated with increasing levels of VIX. Defensive factors were under-represented in most investors’ risk premia portfolios.
The main takeaway from 2018 is that the term “risk premia” is being applied to a heterogeneous set of strategies, many of which are driven in part by a common factor, especially during bad periods for other risky assets. True risk premia strategies benefit from providing insurance-like price certainty to hedgers or buying securities that are ignored or unloved by the marketplace. Investors offering to take such positions likely use a discount rate similar to what they use for other risk assets, which drives downside correlation between true risk premia and other risk assets, especially during violent changes in investor risk appetite. If your risk premia strategy underperformed in 2018, that suggests it holds a preponderance of its exposure in true risk premia and will likely be fine in the long run but, at the same time, will likely suffer from downside correlation with equities again in the future. It’s a structural relationship, and if it wasn’t there, risk premia wouldn’t be as highly rewarded.
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Rob is the senior portfolio manager for the Risk Parity and Managed Futures strategies at the firm. He is responsible for managing our suite of liquid alternative strategies and the development and maintenance of the underlying quantitative models. Prior to joining the firm in 2018, Rob was a managing director of quantitative strategies at Salient Partners. He was the lead portfolio manager on Salient’s risk parity and managed futures strategies and co-portfolio manager on several other funds. In addition, Rob and his team built Salient’s quantitative software and hardware platform from the ground up and continue researching potential strategy improvements and new products. Prior to joining Salient in 2011, Rob taught macroeconomics and finance at Ohio State University, published academic research and served as a research assistant. In 2010, Rob interned in the Strategic Research group at the Teacher Retirement System of Texas.

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Disclosure

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