



The power of diversification in short volatility investing



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Market volatility is back

And this time it looks like it is here to stay for some time. The surge in equity volatility, but also volatility in fixed income markets, was quite significant in 2018.

Despite political turbulences and economic challenges, capital markets behaved largely unimpressed during the last years. Equity markets kept rising, interest rates kept declining and volatility remained at record lows. Investors were happy and tend to disregard looming risks in these times. It seemed like the new normal – a big thank you to the central banks around the world backing growth with cheap money.

All the more, most investors were very surprised by the events in 2018. It appears many investors were caught on the wrong foot with high equity and credit spread exposures in their portfolios.

Going forward we are convinced that it is key to diversify investments across multiple alternative risk premia to reduce dependence on capital markets behavior and economic developments.

One such risk premium is the volatility risk premium. It is a true risk premium, since it has a comprehensible economic reasoning and can be empirically verified.

We will provide an explanation for its existence and show how investors can benefit even, or particularly, in volatile times.

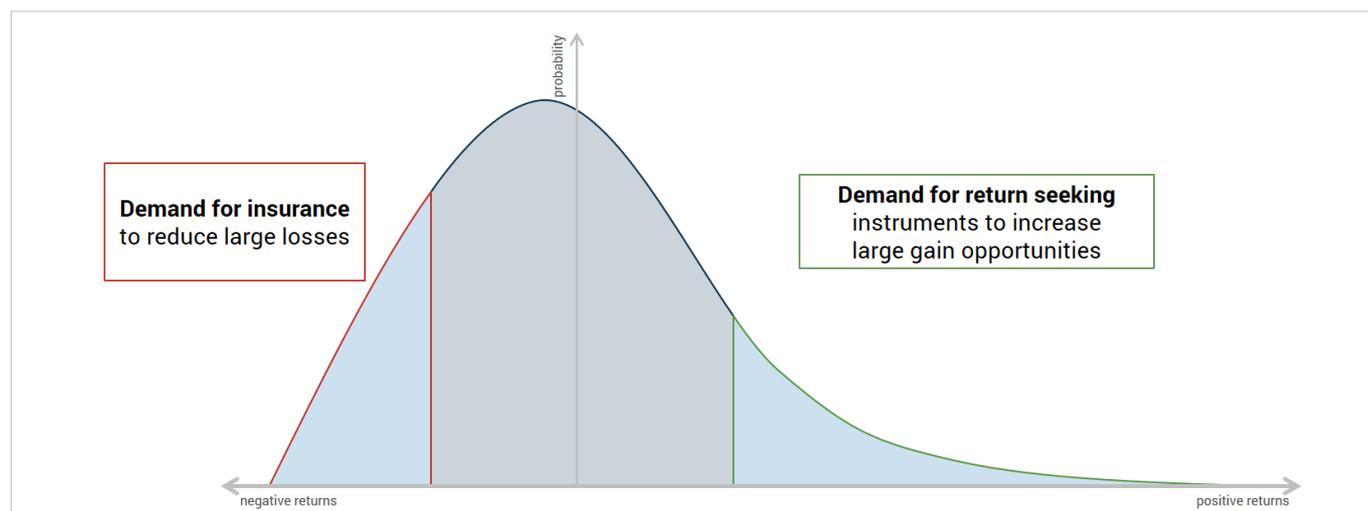
Volatility risk premium: a risk transfer

In general, investors favor positively skewed return streams. Positively skewed distributions can be characterized by a less pronounced left tail (less large losses) and/or a more pronounced right tail (more large gains).

Obviously, this is a very appealing feature, especially since equity market returns are generally negatively skewed. Although the expected average equity return is positive, we experience relatively large (yet infrequent) losses from downward moves and smaller (but more frequent) gains from upward moves.

It seems reasonable that investors seek for ways to at least partly even out this asymmetry.

Fig. 1: A positively skewed return distributionⁱ



On the one hand investors aim at limiting the downside systematic risk through buying insurance, on the other hand they seek high gain opportunities with speculative bets, e.g. lottery-like investments. This is the case for equity markets. On other markets directions can be reversed, but the overall preference for insurance-like or high return seeking investment products holds true.

To achieve this favorable return pattern investors buy put and call options. Since the demand is rather high, the options should be relatively expensive – or put differently – the average expected return of an options buying strategy should be small.

In essence, investors engage in a transfer of risk trading asymmetry against average return. They pay some premium to achieve a more symmetric overall portfolio. Thus, investments with positively skewed return streams should have a price associated and high demand leads to above average prices. This risk transfer forms the basis for the volatility risk premium in financial markets.

Volatility risk premium: why it exists

There are some **rational explanations** showing investor preference for positive skewness, e.g. considering non-quadratic utility functions or

extensions of the CAPM to higher moments (see Ilmanen for reference).ⁱⁱ

Irrational explanations mainly cite behavioral factors such as increased loss aversion and increased risk seeking appetite. One popular quoted reason is that we as human beings tend to misjudge low-probability (tail) events. We tend to assign a higher probability to large losses (and pay to insure against it) and a higher probability to large gains (and pay for the possibility to pursue it).

This is not all, it gets even better. Some **additional behavioral traits and structural features** in the financial industry lead to higher option prices and increase the attractiveness of the volatility risk premium:

- Long memory after significant market events increases demand for insurance
- Overconfidence in own forecast skills increases demand for lottery-like payoffs
- “Crash-o-phobia”: the global crash of the stock markets in 1987 (Black Monday) significantly increased the demand for market crash protection for the first time and on a sustained basis. The financial crisis in 2007/2008 further intensified this trend.

- Risk budgets in institutional mandates increase demand for put option payoff profiles
- Performance fee structures lead to implementing return seeking products and leverage
- Constraints on equity investments lead to a growth of derivative products with high return seeking opportunities

Since the long-run performance of insurance-like or lottery-like investment strategies is low, long-term investors should consider systematically selling such products and benefit from elevated prices – meaning providing financial insurance (selling put options) and offering high-reward speculative returns (selling call options). Bearing the risk and offering the possibility for this risk transfer in capital markets is well rewarded.

Volatility risk premium: truly multi-asset

Reading about volatility/variance risk premium is mostly limited to equity markets. However, there is great benefit in harvesting the risk premium across other markets like fixed income or currencies. Likewise on these markets, investors hedge their portfolios against serious downside risk and engage in return-seeking speculation.

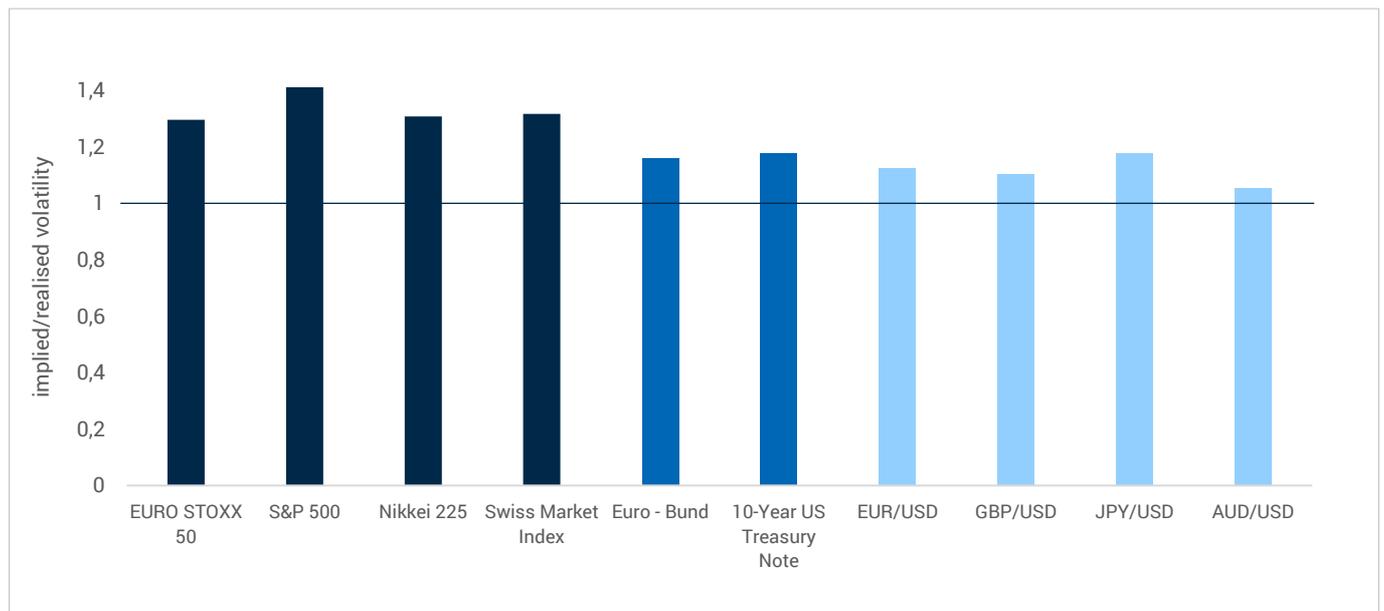
Selling put and call options on equity market indices is a well-known short volatility strategy by now. Yet, there are only a few investible strategies out there offering the access to short volatility premiums on other markets. True, the dynamics of fixed income and currency markets are somewhat different, e.g. the asymmetry is not as pronounced in bond markets.

Nevertheless, there is a significant return pick-up here. And there is the benefit of diversifying the volatility strategy beyond equity markets exposure.

For example, contrary to expectations there is currently little volatility pick-up to be earned on equity markets around the Brexit uncertainty. The volatility on the UK equity market index moves in line with overall equity markets and is still very much lower than levels seen in 2008, 2011 and 2015/2016.

On currency markets, the volatility pick-up around the uncertainty related to the future development of the British Pound, on the contrary, is very attractive. Volatility on GBP/USD has abruptly doubled in November 2018 and has stayed at elevated levels since. Selling volatility here has

Fig. 1: Ratio implied/realised volatilityⁱⁱⁱ



been a very profitable strategy lately, partly compensating negative returns from global equity markets in 2018.

At a first glance, volatility risk premium in equity markets seems more attractive. Let's take a proxy for the volatility risk premium: the difference between the implied volatility (a measure for the degree of expected return variation of market participants in the future) and the realised volatility (actual ex-post measured return variation over the same time frame).

Expressed in absolute figures, this difference is highest on equity markets. This is because volatility is generally higher and crises are more pronounced as compared to fixed income and currency markets. However, when normalising and taking the ratio of implied over realised volatility it's a totally different story.

Figure 2 on the previous page allows two interesting observations:

- For all underlyings the ratio is above 1. This means the volatility risk premium to be earned is positive for all equity, fixed income and currency underlyings (implied volatility > realised volatility).
- In relative terms the volatility risk premium is similar across underlyings and asset classes.

Hence, harvesting the volatility risk premium is a function of leverage. We can lever the strategies on the different underlyings by varying the amount of sold options in such a way that all contribute potentially equally – in absolute terms.

The volatility risk premium, however, is not constant as may be inferred from figure 2. Not only is the volatility itself time-varying, but also the volatility of volatility (see Huang, Schlag et al. for further reference)^{iv}.

The premium is richer in high volatility environments, yet its uncertainty is also higher.

The best environment for harvesting the volatility risk premium is a relatively elevated but decreasing market volatility. Here the mean reversion effect of volatility returning to its long-term average increases the richness of the risk premium. In a low market volatility state the risk premium is relatively low, yet more stable.

Finally, there are times when the volatility risk premium temporarily reverses leading to losses in a short volatility strategy. Via active management, it is possible to capture an attractive risk premium throughout a volatility cycle.

Implications for investors

What is the benefit? A short volatility strategy on equity underlyings behaves already somewhat different to equity markets.

Decisive for its performance is not the direction of the market, but the amplitude/strength of the market move. Such a strategy can achieve positive returns in sideways markets, in steadily rising markets and steadily falling markets in form of recessions.

Abrupt and disproportionately large moves (possibly in either direction) can lead to temporary losses. Diversifying across underlyings from other asset classes further reduces the dependence on equity market behavior – a desired goal for most investors.

A fixed income short volatility strategy can provide attractive returns in markets with moderately rising interest rates – potentially good news going forward.

A currency short volatility strategy can provide attractive returns in non-trending markets.

And finally, there is the benefit of stabilising overall performance in combining all strategies in a global multi-asset short volatility strategy.

Market volatility and uncertainty is nothing to fear, it can be an opportunity. In the medium to long term, the volatility risk premium should work in your favor irrespective of the economic state or monetary cycle.

Volatility risk premium at 7orca

The findings above are implemented in our multi-asset short-volatility mutual fund 7orca Vega Return. With our fund we provide investors affordable access to a broad and global volatility risk premium with all the mentioned diversification benefits.

Although the fund is likely to continue to be affected by abrupt and large market movements in both directions, empiric analysis demonstrates rapid and short recovery phases – an additional advantageous feature of volatility risk premium strategies.

The fund follows a quantitative and non-forecasting options selling strategy to systematically harvest the volatility risk premium on equity, fixed income and currency markets. A dynamic exposure management enriches the volatility strategy with a market rotation model.

We vary the amount of options per underlying depending on the attractiveness of the respective volatility environment. Thus, we are able to stabilise the overall volatility risk premium across volatility regimes, exploit opportunities in markets when present, while limiting risks in others.

ⁱ Source: 7orca Asset Management AG. For illustrative purposes only. As of 23.01.2019

ⁱⁱ Ilmanen, Antti (2012): Do financial markets reward buying or selling insurance and lottery tickets? Financial Analysts Journal, Volume 68, Number 5.

ⁱⁱⁱ Source: Bloomberg, 7orca Asset Management AG's own calculation. Ratio of 30 day forward implied

volatility and 30 day ex-post realised volatility. Period: 01.01.2006 – 31.12.2018

^{iv} Huang, Darien; Schlag, Christian; Shaliastovich, Ivan; Thimme, Julian (2018): Volatility-of-volatility risk, SAFE Working Paper, No. 210, SAFE - Sustainable Architecture for Finance in Europe, Frankfurt am Main.

Disclaimer

The investment strategy presented in this document is aimed exclusively at professional clients according to the German Securities Trading Act (WpHG) and can only be implemented for such clients (typically in a fund structure). All assumptions, forecasts and information are based on the standardised set-up of the 7orca Vega Return strategy, which was implemented at average market costs. Further information on this standard investment process can be found in the Generic RfP, which is available from 7orca Asset Management AG upon request. Due to the different investor needs and situations as well as the resulting specific pricing, further individual costs for administration and custody are not taken into account. However, 7orca Asset Management AG will be pleased to provide you with a specific offer that reflects your individual requirements and conditions. **Past performance is not a reliable indicator of future results.** All information in this document has been compiled to the best of our knowledge based on the data available to us. However, no civil liability can be assumed in this respect. References to specific financial instruments are purely exemplary and should under no circumstances be construed as recommendations in the sense of investment advice. A publication of 7orca Asset Management AG. As of 23.01.2019

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