Lake Hill

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Searching for True Diversification

"correlation does not imply causation"

Asset allocators are constantly searching for great investments that can both add return and diversify risk. It is one of the few ways one can differentiate with respect to peers. Proper diversification can help when equity markets become more volatile or enter a bear market. However just because a portfolio is diversified, doesn't mean it is not susceptible to losses when the stock market turns. Allocating to a cluster of strategies can only help so much. It is important to ask the simple question: Will a diversified book perform as expected in the future? Is there a direct way to hedge the downside without giving up too much of the upside?

Who needs to diversify?

Many investors need to generate income, manage to shorter term goals, and track a benchmark. Many will diversify to manage risk, in particular: downside risk. However, there is a difference between <u>managing</u> downside risk and <u>directly</u> hedging downside risk.

What's the objective of diversification?

For most investors, the equity risk premium is the single largest risk exposure to a portfolio. Equity risk can be found in nearly all asset classes, such as higher yielding currencies and certain hard commodities. When equity markets crises occur, liquidity in other financial markets contract, effecting many assets that under normal circumstances have little to no historical relationship.

The diversification of asset classes can be beneficial in calm markets, but there is no guarantee diversification will work in crisis scenarios. The only true diversification is to identify assets or strategies that will appreciate when equity markets crash.

What tools do we have to provide diversification or drawdown mitigation?

<u>Options:</u> The options market is the most direct method of hedging equity risk. For example, exchange listed puts on the S&P 500 can be purchased that directly compensate for a reduction of index price.

Fixed Income: Although duration risk has recently provided a negative correlation to equities, this has not always been the case. There is no guarantee that losses in equities will coincide with gains in bonds going forward.

Trend Followers / CTA: These strategies were positioned well for several periods of historical market corrections, but there is no assurance that these strategies would work in the future. These strategies tend to have a negative carry cost.

Commodities: Hard assets such as agriculture, metals, and energy can be negatively correlated to equities, but this is not always the case. The long-term return of commodities can be disappointing.

Hedging and diversifying with options is one of the simplest and most direct ways of protecting the downside. Purchasing puts is an easy solution. The CBOE publishes a basic index of a put overlay to an S&P (ticker: PPUT). However, there are over 5000 different strikes one could choose from, why be limited to the same strike every time? Why hold to expiration? Perhaps a process for both choosing the best strike as well as monetizing daily can provide better protection at lower cost.

At Lake Hill we use our Engine to choose the optimal option combination on any given day. We could buy a 5% out of the money put every month to protect our portfolio, however, the long-term performance result can be underwhelming. Fortunately, there are many differing options available on the S&P 500 on any given day. We use our computational power to scan the entire universe of options to purchase the most undervalued put. Our systems may also identify a combination of options that are more cost effective than buying a single put. Each day we seek to improve our portfolio by identifying the best possible portfolio of options while we actively constrain the portfolio to meet predefined risk targets.

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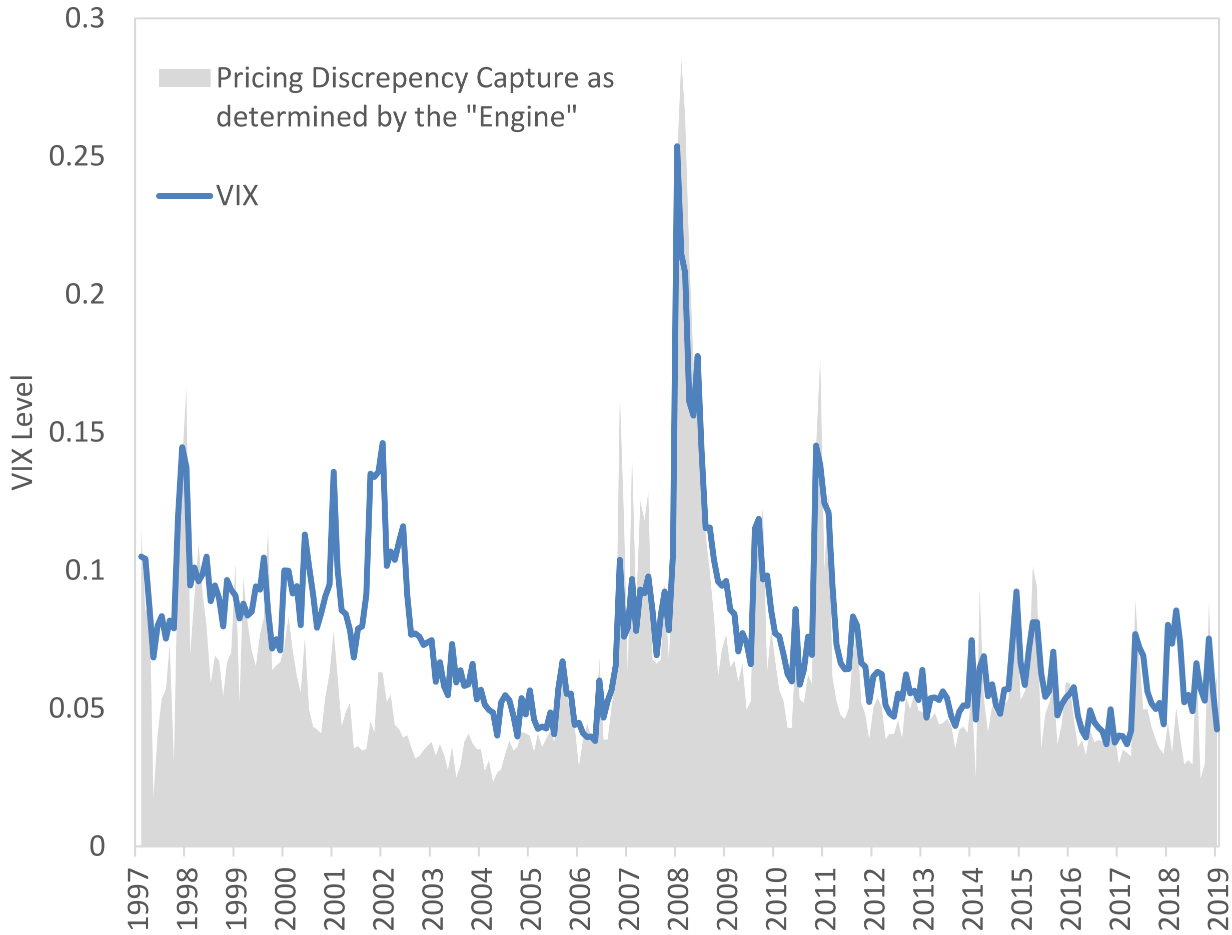
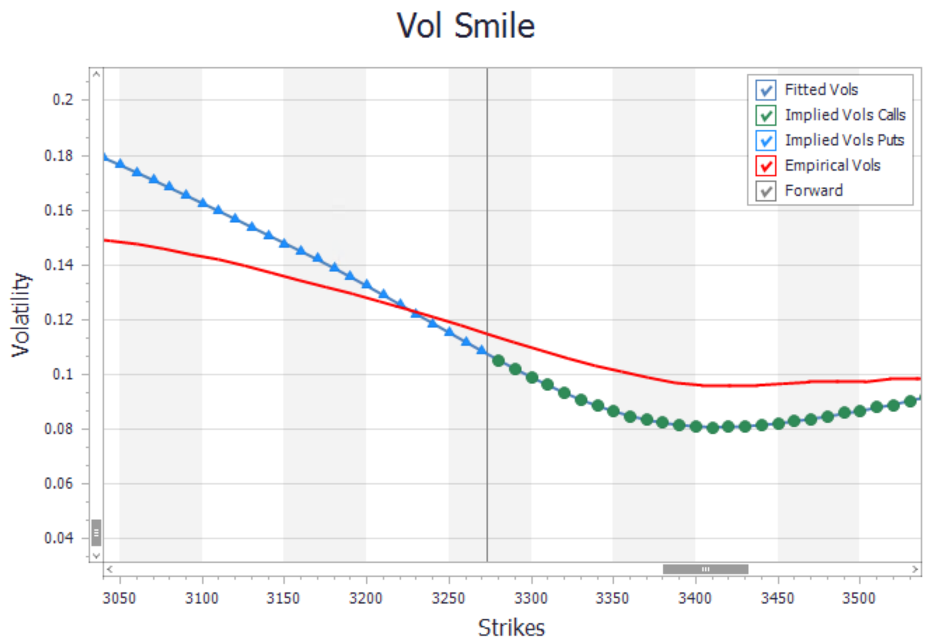


Source: CBOE, Lake Hill Proprietary Engine

The Engine can also be used to capture mispricings on the volatility smile or skew. As market participants create supply and demand variability, different strikes will be affected that cause a divergence from fair value. The Engine is designed to take advantage of these effects, while maintaining a risk budget. The amount of discrepancy in the volatility skew tends to go up and down with the VIX. This is a benefit to our strategies since profits tend to increase as the VIX or 'fear' in the market rises.

For example, currently the engine is buying upside calls to hedge the downside. As more market participants sell calls as part of an over-writing strategy, we are buying cheap call options on the upside while delta hedging – a method of hedging the downside.



Source: Lake Hill Proprietary Engine

In the figure above, the calls [green dots] are trading cheap in comparison to the fair value [red line]. We are therefore buying calls and shorting with futures to hedge downside risk. This is equivalent to a purchased put, but at more advantageous pricing.

Investors need to generate income and manage shorter term goals. Diversification has been a popular tool but only equity options can directly hedge downside risk. The Engine can do so while simultaneously providing potential alpha, especially during times of elevated VIX levels.

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Futures, options and derivatives products inherently involve substantial leverage and also greatly increase the risk of loss. There is no additional portfolio leverage applied to generate the returns.

Risk Factors: Hedge funds and Managed Accounts have certain inherent risks associated with them, including but not limited to the following:

(i) the funds and managed accounts are speculative and involve varying degrees of risk, including substantial degrees of risk in some cases; (ii) the funds and managed accounts may be leveraged and may engage in other speculative investment practices that may increase the risk of investment loss; (iii) the funds' and managed accounts performance may be volatile; (iv) an investor could lose all or a substantial amount of his or her investment; (v) the investment managers have total trading authority over the funds, the funds are dependent upon the services of the investment managers, and the use of a single advisor could mean lack of diversification and, consequently, higher risk; (vi) the funds may have varying liquidity provisions and limitations and there is no secondary market for investors' interests in any of the funds and none is expected to develop; (vii) there are restrictions on transferring interests in the funds; (viii) the funds' fees and expenses may offset the funds' trading and investment profits; (ix) the funds may not be required to provide periodic pricing or valuation information to investors with respect to individual investments; (x) the funds are not subject to the same regulatory requirements as mutual funds; and (xi) the funds are subject to conflicts of interest.

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