Know Your Options:

Options on Futures as Strategic Investment Vehicles

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Case Studies for Options Investment Strategies

The financial markets are continually evolving and the changes this evolution brings can unleash positive effects for particular types of investments. In the case of options on futures, a growing awareness about these instruments has led to a significant increase in activity, creating a virtuous cycle where rising volume and liquidity create better pricing—and better pricing leads to even greater opportunities. The advent and explosive growth of electronic trading in underlying futures markets and increasing participation from retail investors—coupled with regulatory changes that encourage and incentivize the use of listed derivatives by making them more cost effective than over-the-counter alternatives has led to the expansion of trading opportunities in these markets. Also, liquidity and volume continue to improve during non-US trading hours, allowing customers to trade almost 24 hours a day. As a result, volume has exhibited strong growth across multiple asset classes over the past several years, and corporate and institutional investors are finding ever-greater success in utilizing options on futures as risk management tools.

A good case in point is options on futures offered by CME Group. With a breadth of offerings that can be utilized in six major asset classes, options on futures that trade at the CME Group provide vivid examples of the many ways that these products can be used in virtually unlimited combinations to manage risk, express a market opinion, or synthesize both. This paper discusses examples in foreign exchange, metals, equities, grains, energy and interest rates that illustrate the power, flexibility, and efficiency that investing with options on futures can deliver.

Foreign Exchange

"The Company uses derivative instruments such as foreign currency forward and option contracts, to hedge certain exposures to fluctuations in foreign currency exchange rates"

- Apple Inc 2017 10-K

With an estimated daily turnover of over $5 trillion, foreign exchange (FX) is considered to be one of the largest financial markets in the world. Not surprisingly, FX is also the first successful financial futures product introduced at CME Group, with a history that stretches back nearly 50 years.

The word "exchange" is important here because it indicates that one currency is being exchanged for another, US dollars for Australian dollars, for example. This is important for a money manager, for instance, because their performance will be measured in their local currency. This additional foreign currency exchange risk can be managed using options on futures and may even offer an opportunity to enhance returns.

As an example, when a US-based long/short equities portfolio manager running a global large cap allocation strategy takes an AUD $100 million position in Australian equities, the fund effectively becomes long the Australian dollar (AUD) in addition to its equity position and is therefore exposed to movements in the AUD/USD exchange rate. Options can be utilized to either cover this risk, potentially enhance the return from this investment, or some of both.

The fund manager believes that the AUD/USD exchange rate will remain stable and therefore decides to employ a strategy that will help to boost the returns on the investment. The manager elects to sell 3-month, out-of-the-money AUD calls as a way to enhance the return of the investment and even provide a small amount of downside protection if the AUD/USD exchange rate falls.

If the current spot market price for AUD/USD is at $0.7300, this means the AUD $100 million equity position involved an investment of USD $73 million. To enhance portfolio returns and guard against a small drop in the AUD/USD rate the manager decides to sell 1,000 of the 0.7500 calls at a price of 0.0053. The premium for this trader is USD $530,000. The table below shows the result of this short call combined with the long exposure to the AUD at a variety of exchange rates:

Exhibit 1: Long AUD Plus Short 3-month 0.7500 Call Potential Outcomes at Expiration

AUD/USD Rate At Expiration	Long AUD Profit/Loss	Short 0.7500 Call Value	0.7500 Call Premium	Net Currency Profit / Loss
0.7100	(0.0200)	0.0000	0.0053	(0.0147)
0.7150	(0.0150)	0.0000	0.0053	(0.0097)
0.7200	(0.0100)	0.0000	0.0053	(0.0047)
0.7250	(0.0050)	0.0000	0.0053	0.0003
0.7300	0.0000	0.0000	0.0053	0.0053
0.7350	0.0050	0.0000	0.0053	0.0103
0.7400	0.0100	0.0000	0.0053	0.0153
0.7450	0.0150	0.0000	0.0053	0.0203
0.7500	0.0200	0.0000	0.0053	0.0253
0.7550	0.0250	(0.0050)	0.0053	0.0253
0.7600	0.0300	(0.0100)	0.0053	0.0253

Source: TABB Group

Exhibit #1 shows a variety of outcomes at expiration. There are three general outcomes if the option position is held to expiration:

- If the AUD/USD rate moves lower, below 0.7300, the value of the investment will incur a loss equivalent to the drop in the exchange rate. However, the first 0.0053 of this price drop is offset by the premium received from the short call option position.

- If the AUD/USD rate moves above the call strike price of 0.7500, the investment benefits from the rise of 0.0200 and also the premium of 0.0053 that was received when the options were sold. Note that any potential currency benefit is limited to a rise to 0.7500 due to the short call position. In this example the portfolio manager based the trade on an outlook that the AUD/USD exchange rate would be little changed.
- A final potential outcome involves the AUD/USD rate moving higher, but not above 0.7500. The position would benefit from the gain in the currency since it is not greater than the short call strike price of 0.7500. Also, the 0.0053 taken in when the option position was initiated will add to portfolio performance.

Bear in mind that the exchange rate is only one portion of the investment and the overall return on the trade will likely be determined by the performance of the underlying equity that was purchased, as well as the overall performance of the stock market. However, this use of options illustrates how these instruments can be used to create greater precision in breaking out specific risk elements in an investment and potentially enhancing returns by generating additional income from the premium collected when selling an option.

Metals

Options on futures are particularly useful because of the flexibility that they offer. A prime example of this flexibility is illustrated with two examples of how a copper mining company can use options to both protect and/or increase their profitability.

A mining company has a natural long position in the underlying metal that it extracts, just as a farmer is naturally long grain and an energy company is long oil or natural gas. Further, a publicly listed mining company may face pressure from investors if the price of their common stock underperforms relative to the performance of the underlying commodity. If this is the case, a common option strategy that provides certainty about the future price of a commodity is a ***collar***.

A premium-neutral collar involves the sale of an out-of-the-money call that partially or completely funds the purchase of an out-of-the-money put. With this trade, the mining company will participate in any gains up to the strike of the upside call minus any premium paid or plus any premium received. There is downside risk in the position to the strike price of the put option that is purchased to complete the collar. With a collar, the firm will obtain certainty for the maximum and minimum price they will receive for their production over the life of the option position.

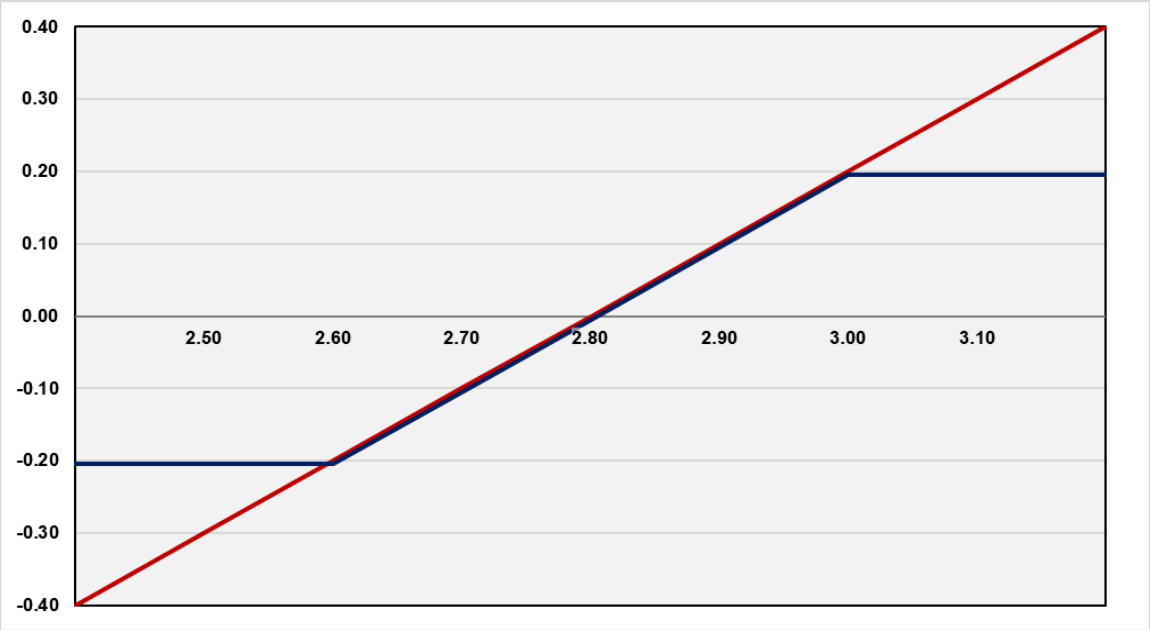
Assume the current price of copper has recently fallen from $3.00/pound to $2.80. A producer believes that prices will rebound to the previous level of $3.00 but is also worried about the potential for a further drop in the price of copper. To protect against significantly more downside, the producer decides to

purchase an appropriate number of 3-month puts with a strike price of $2.60 for 0.036. This cost of protection is going to be mostly offset by selling a 3-month call with a strike price of $3.00 for 0.033, reducing the cost of this spread to 0.003. The option trades in combination with the producer's long copper exposure results in a collar where downside is hedged but upside is limited as well.

If the company produces 25mn pounds of copper per quarter, this hedge will require the execution of 1,000 spreads. The payoff diagram below combines the price of copper along with the short call and long put position to demonstrate the exposure to the price of copper at expiration.

The price of copper was $2.80, but the break-even at quarter-end of this trade is now $2.803, due to the $0.003 cost of the collar. The worst-case scenario is for the price of copper to drop to $2.60 or lower. The long $2.60 put offsets the losses in the commodity price below the $2.60 level and the producer would lock in a copper price of $2.597 per pound, accounting for the $0.003 cost of the trade. Finally, if copper rises to $3.00 or higher the producer has limited their price to $2.997 a pound as the short call position offsets a copper price above $3.00 a pound. The payoff diagram below shows the unhedged exposure to copper at expiration (in red) and the collared position (in blue).

Exhibit 2: Collar Payoff at Expiration



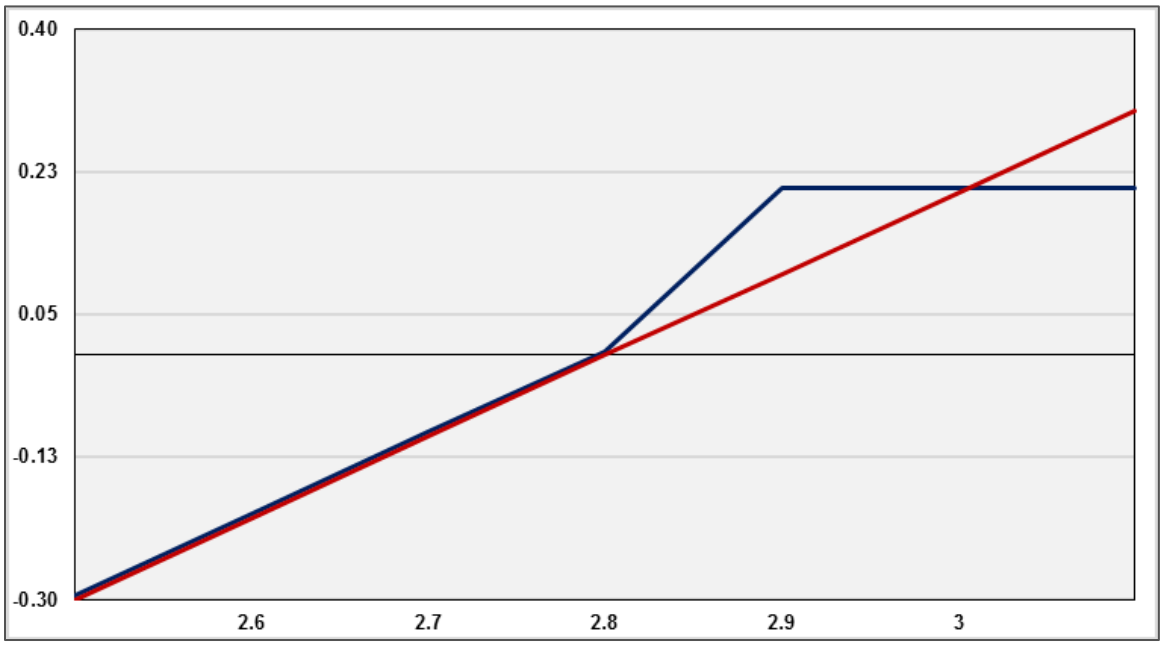
Source: TABB Group

A final interesting aspect of the collar is the potential outcome at expiration. If the price of copper is below the put strike price of $2.60, the producer will be able to use the option position to deliver their copper. They can exercise their put options to deliver copper at $2.60 a pound. Conversely, if the price of copper is over $3.00 a pound they will have to make good on their obligation to sell copper at $3.00 a pound by delivering their production.

In another example with the same parameters (a recent drop in the price of copper from $3.00 to $2.80), the producer believes there is little risk to more downside below $2.80 in the price of copper, but also believes the maximum level copper will reach in the next 3-months is $3.00. In this case, there is an option strategy that does not increase downside exposure but likely allows the firm to reap extra rewards if copper rebounds to just $2.90. Staying with a production expectation of 25mn pounds this strategy would involve buying 1000 of the 3-month $2.80 calls for 0.10 and then selling 2000 of the 3-month $2.90 calls for $0.055, a strategy that is referred to as a 1 by 2 call spread. The result of this transaction is a small credit of $0.005 for each of the 1 by 2 call spreads.

Combining the expected production of copper with this option spread results in a unique payoff at expiration. The diagram below compares the outcome of the producer's long copper exposure with a payoff that combines this exposure with the 1 by 2 call spread.

Exhibit 3: Long Plus 1 by 2 Call Spread Payoff at Expiration



Source: TABB Group

The red line shows the producer's exposure to the price of copper combined with no other position. The blue line combines this position with the 1 by 2 call spread. The long $2.80 strike call option increases the long exposure of the company to twice that of their production. Once the price reaches $2.90 the short call option part of the 1 by 2 spread begins to offset both the company's expected production of copper and the long call option, but the net effective price the firm will receive is $3.00, due to its exposure being leveraged for prices between $2.80 and $2.90. The potential upside to the firm is capped at $2.90, but the firm would realize a $0.10 profit from the spread along with $0.10 in higher copper prices or a $0.20 increase over the price of copper when the spread was implemented. This is equal to receiving $3.00 a pound, even though the spot price of copper only rebounded to $2.90. Remember, the firm

believed the best possible price for copper would be $3.00—and even if the price does not rebound to $3.00 the firm would benefit from this spread in a way that results in copper being at $3.00 at expiration.

The firm is capping their potential copper price at $3.00. They may realize this outcome even if copper only rises to $2.90. By doing this spread they have leveraged the price of copper from $2.80 to $2.90. However, note what happens to the firm's exposure to copper if prices continue to move lower. The spread took in a small credit, which means that if copper continues to move lower, the firm will realize a slightly better price than the spot price at option expiration.

Equities

"We use derivative instruments to: manage risks related to foreign currencies, equity prices, interest rates, and credit; enhance investment returns; and facilitate portfolio diversification."

- Microsoft 2017 Annual Report

A common fund manager strategy is to guide asset allocations to target and maintain a specific ratio of investments in their portfolio. Options on futures are well designed to both make that task easier to manage and, at the same time, potentially enhance portfolio returns.

Specifically, a manager may have a mandate to maintain a portfolio that is 60% US equities and 40% fixed income. The portfolio is set up with this ratio, but subsequent market movements can shift portfolio weightings out of line with the desired exposure.

For example, in an equity bull market the price of equities likely will rise faster than the value of the fixed-income investment—and the resulting ratio of investments may rise to 65% stocks and 35% fixed income or higher. To account for this, the portfolio manager will set specific levels that require that the portfolio be rebalanced and this will be done on a specific timetable, often a quarterly basis. Further, the equity portion of the investment may have a specific target, e.g. a mixture of large cap and small cap, that will also need to be maintained. Options on futures are an ideal tool to manage these parameters and CME offers options on futures that have specific exposure to large cap or small cap stocks.

Consider a $2 billion portfolio with a 60/40 asset mix (60% equities and 40% fixed income) where the equity allocation is a 50/50 mix of large cap benchmarked to the S&P 500 and small cap benchmarked to the Russell 2000. At the beginning of each quarter, a portfolio manager will sell out-of-the-money calls and puts on both the S&P 500 and Russell 2000 at strike prices that match the level where the manager would need to materially rebalance their portfolio. Selling out-of-the-money calls will result in the portfolio having the obligation to sell stock index futures at higher prices while selling out of the money puts results in the portfolio buying stock index futures at lower price levels. The portfolio will receive income based

on selling these options but will also lock in price levels where they will increase or decrease stock market exposure.

If a portfolio has $1.2 billion in stocks with half in large caps as represented by the S&P 500 and half in small cap stocks as represented by the Russell 2000, they would sell calls and puts based on $600 million of value for both the S&P 500 and Russell 2000. The S&P 500 is trading at 2900 and Russell 2000 at 1700 to begin the quarter. Based on the historical relationship between stocks and bonds, along with the relationship between the S&P 500 and Russell 2000, different levels are determined as points where exposures would be increased or decreased at the end of the quarter. For the S&P 500, positions would be increased with the index below 2600 and decreased with the S&P 500 over 3200. Small cap stock exposure would be increased if the Russell 2000 is below 1500 and decreased with the Russell 2000 over 1900.

The number of options used to rebalance the portfolio is based on the strike price times the $50 multiplier for both the S&P 500 and Russell 2000 futures combined with the respective index levels and performance of the bond portion of the portfolio. The following transactions would result in adding to the respective positions on weakness—or lowering that exposure— based on relative stock market strength in order to bring the respective weightings back in line with the portfolio's mandate.

Exhibit 4: Short Option Trades

Action	Contracts	Underlying	Option	Premium	Dollar Income
Sell	250	S&P 500	2600 Put	13.00	$ 162,500
Sell	200	S&P 500	3200 Call	8.00	$ 80,000
Sell	590	Russell 2000	1500 Put	1.00	$ 29,500
Sell	470	Russell 2000	1900 Call	1.25	$ 29,375
				Income	$ 301,375

Source: TABB Group

The options sold result in premium income equal to $301,375 and an obligation to either add to positions or lighten up based on the 60/40 directive of the portfolio. If neither market moves higher nor lower than the respective strike prices mandate, the result is both the short call and put option positions expiring out of the money, which results in a small income boost to the portfolio performance.

For the sake of simplicity and brevity, we have only considered the equity portion of the portfolio in this example. Similar results can be achieved for the fixed-income portion of the portfolio through the utilization of interest rate options contracts offered by CME Group. CME offers futures and options on a variety of fixed income markets. For example, there are options on US Treasury futures based on 2-year notes, 5-year Notes, 10-year Notes and even 30-year bonds.

Grains

"The Company, from time-to-time, enters into derivative contracts which are designated as hedge of specific volumes of commodities that will be purchased and processed, or sold in a future month"

- ADM 2017 Annual Report

Agricultural commodities are unique because of the influence of factors during the main growing season and resulting volatility. Grains are especially sensitive to this seasonality with only one harvest per year for North America and South America. The vibrant dynamic of growing conditions for the crop in the ground coupled with the supply and demand drivers for inventory pricing already on-hand present interesting opportunities for trading. These unique factors can have profound impacts on the relative pricing of options on ag products such as corn, wheat, or soybeans. The differences in implied volatility across options expirations on the same product make the grain markets an attractive vehicle for a volatility trader.

One example can be found with corn, which can exhibit significant sensitivity to weather during the North American summer months due to weather changes which can cause a large reduction to global supply. Because of this sensitivity, the level of prices for options as expressed as implied volatility can vary a great deal based upon facts and sentiment. This presents an opportunity for a volatility trader that has an opinion on the current and future level of how volatility is priced. Specifically, the period of July and August is one of the most critical for crop development and this generally results in the volatility (price) of options that expire after this window (the September contract) and that is higher than those options that cover the period prior to July-August (the June contract). Historically, the price of volatility in the September contact has fallen to converge with the prices for June. If a trader believes this effect will occur again and that the current level of implied volatility for the deferred contract or "weather premium" is too high on a relative and/or absolute level to the nearby contract then the opportunity exists to execute a time spread to take advantage of this discrepancy.

In this trade, the volatility trader will buy the nearby contract and sell the deferred month, in both cases hedging the delta risk by buying or selling the appropriate number of futures contracts. The addition of a hedge in futures effectively covers the price sensitivity of each leg of the trade, leaving just the exposure to implied pricing levels or volatility. Additionally, the trader can also express their view in the level or direction of underlying prices for the commodity. In this example, if the trader believes that the price of the underlying commodity is likely to fall then they will use put options and buy the July expiration while selling the September expiration. With this market position, the trader will likely benefit if underlying prices for the June contract exhibit large price swings relative to the September contract or if weather concerns decrease and September implied volatility decreases relative to June.

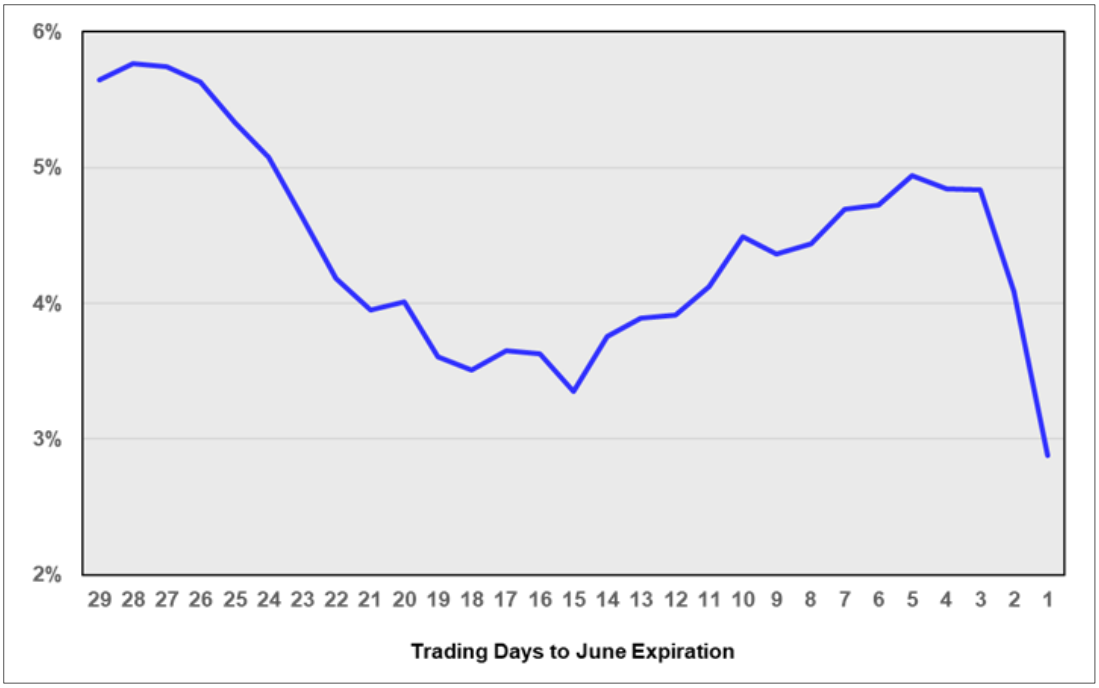
This is a simple example of what can be a dynamic pricing relationship: care should be taken to actively monitor the position in terms of the absolute price of the underlying, the relationship between the

underlying price for both the July and September futures, as well as the difference in the price of volatility between each contract.

If a trader wanted to have a time spread on the same underlying, Short-Dated New Crop options could be used. A September Short-Dated New Crop option has an underlying of a December future but expires in August. These contracts typically trade at a higher implied volatility compared to a standard December option. This is a similar concept as the June/September time spread example, with the exception that both options would cover the same underlying over different time frames. Both time spread examples in seasonal products leverage the flexibility of options.

Finally, the following chart demonstrates the unique nature of implied volatility for options on agricultural markets. The chart plots the smoothed average Implied Volatility Spread between the June and September Corn options expirations over the past 12 years.

Exhibit 5: 12 Year (2007-2018) June – September Implied Vol Spread Relationship



Source: CME Group

Energy

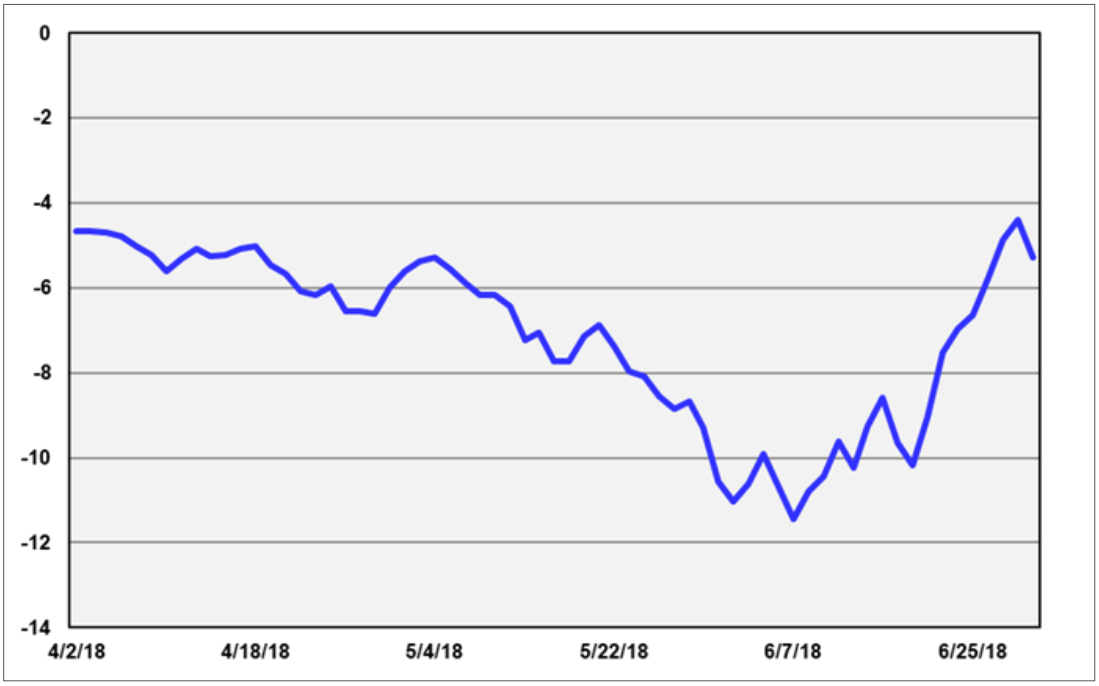
"Crude oil options were entered into by PXP (Plains Exploration & Production Company) to protect the realized price of a portion of expected future sales in order to limit the effects of crude oil decreases"

- Freeport-McMoRan 2017 Annual Report

Crude oil is the engine that drives the global economy, making up over 40% of the S&P GSCI, a production weighted global commodity index—and it is a complex product that also can have a great deal of price volatility. Different grades of crude oil have different values and the price of crude oil can also be dependent on its geographical location. On this last point, the two largest geographically-based crude oil benchmarks in the world are WTI and Brent, both of which represent light, sweet grades of crude oil with WTI being based in the US and Brent originating from the North Sea.

The WTI-Brent relationship in particular presents interesting trading opportunities and the fact that there is a specific product listed for it makes trading it more efficient and cost effective. The chart below shows the daily closing WTI-Brent relationship during the second quarter of 2018. Note that the prices differ greatly over the quarter despite each contract representing the price of oil.

Exhibit 6: WTI-Brent Price Relationship



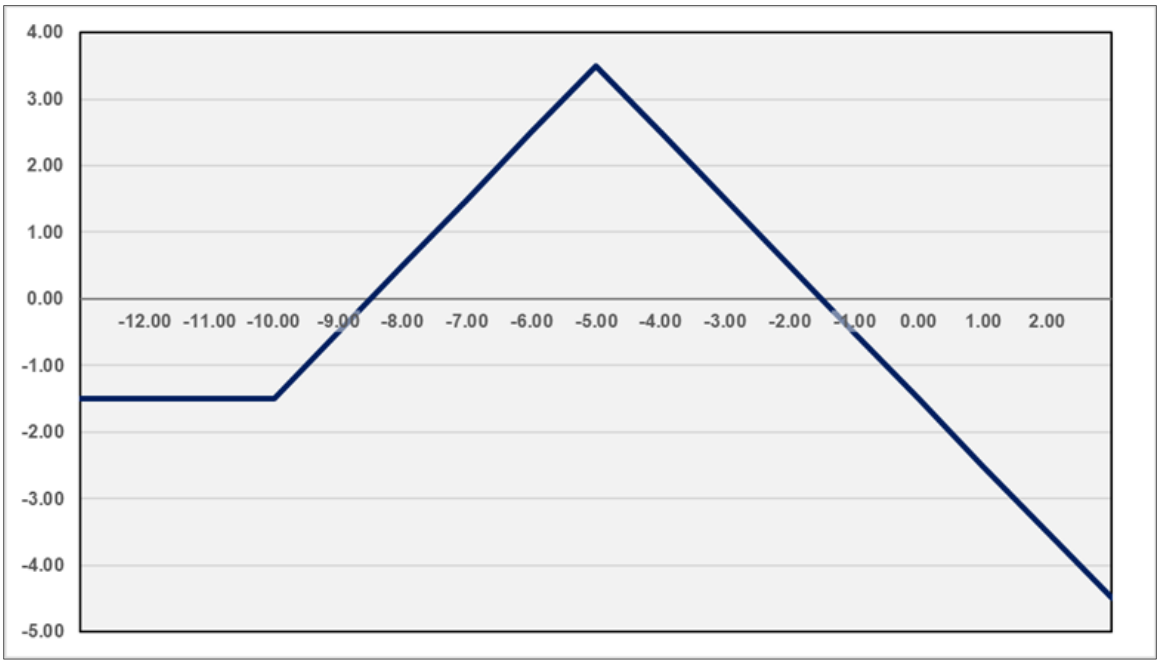
Source: CME Group

For example, an energy trader at a global macro hedge fund who notes that the WTI-Brent spread has recently fallen to -$10 (e.g., $60 WTI and $70 Brent) due in part to higher than normal oil inventories in the U.S. Midwest may expect that this will be temporary as greater export capacity is due to come online. The trader thinks that there will be a reduction in inventories and, consequently, a rising price of WTI in relation to Brent in the neighborhood of -$5. Based upon recent price history, the trader also believes that there is little or no chance that the price differential will rise above -$5 and that the relative price of options (implied volatility) will fall as underlying prices return to their recent range.

The trader doesn't want to take on the linear risk that would be present in an outright futures position—and options present virtually limitless ways to scale the size of the position, risk and possible upside by

using options. Further, rather than having to take separate positions in both the WTI and Brent contracts, the trader is able to enter into a position by utilizing the WTI-Brent Spread option contract, also call the "arb option." The spread option is a specialized option contract that allows the trader to transact based solely upon the price differential between the two benchmarks, making the transaction more efficient and cost effective. In this case, the trader opts to use a long ratio call spread to express their view. The trader buys 100 of the -$10 Calls for $2.50 and sells 200 of the $5 calls for 0.50 each, creating a 1 by 2 call spread for a cost of $1.50 per spread. In this theoretical example, the price of the -$10 call is more than twice the price of the -$5 calls so the trader pays a premium to enter into the trade. This trade will lead to the following potential outcomes at expiration

Exhibit 7: 1 by 2 Call Spread Payoff at Expiration



Source: TABB Group

If prices remain at -$10 or fall further (e.g. -$15) until expiration, the trader will lose only the amount of premium or the $1.50 that they paid to put the trade on.

Once prices hit the -$8.50 point, which is between the two strikes, the rising value of the -$10 option starts to compensate for the premium paid for the spread.

The value of the position will continue to grow as prices approach -$5, with maximum profit of $3.50 realized if the spread is at exactly -$5 at expiration. At this price, the -$5 calls expire worthless, while the -$10 calls are each worth $5 per barrel. (Each contract represents 1,000 barrels of crude, making each option worth $5,000 in this example.)

However, if prices continue to rise higher than -$5, the profitability of the trade drops quickly due to the exposure from the trader being short twice as many -$5 calls as they are long the -$10 calls. The upside break-even for this trade is a spread of -$1.50. Caution must be exercised in this case—and the position either trimmed or exited—to prevent what can become virtually unlimited downside exposure.

At the end of the day, this example highlights the use of a strategy where the trader has a very firm conviction on both the direction of the market as well as its likely terminal point at expiration. The existence of the specific spread options contract makes it relatively easy and efficient to transact and options, in general, make it possible to tailor specific risk and reward parameters that fully express a trader's convictions.

Interest Rates

"We use derivative financial instruments in the management of our interest rate exposure on long-term debt and our exposure to foreign currency fluctuations"

- Home Depot 2017 Annual Report

One of the positive attributes of options on futures is they can often be combined with over-the-counter (OTC) trades to create hybrids that make the most from the positive attributes of both types of products and, at the same time, allow for an added level of flexibility in risk management over the life of the trade. An excellent example of this is found in capital structure arbitrage when trading a popular strategy known as a CDS (Credit Default Swap) basis trade.

This basis trade is similar to any trade that involves taking a position in a derivative and the underlying market. In this case the underlying market would be the Z-spread (a corporate bond vs. a same maturity Treasury) and the derivative would be the CDS, both of which also results in exposure to the corporate credit risk. The opportunity for a basis trade arises when the pricing of the CDS relative to the Z-Spread gets out of line with normal pricing. A trader may take advantage of a widening or narrowing of this spread, much like if the spot price of a commodity and associated derivative move outside of historical norms.

Assume that a trader has identified a corporate bond on a company that they believe is mispriced relative to its CDS. In this example, this credit basis typically trades around 150 basis points but currently sets up for 200 basis points—and for ease of illustration purposes, we will assume a flat Treasury yield curve. Exploiting the basis differential then involves trading the CDS against its Z-Spread (the corporate bond-treasury note). One important view the trader has is that they believe the risk of US Treasury yields to be asymmetric, with an upside bias, and they want to incorporate this into their trade—a perfect use for options. They have a trade horizon of about six months and so put on the following position:

- Sell the CDS at 560 bps
- Sell DV01 equivalent of the corporate bond at $97.50, yielding 6.10%

- Substitute: Buying outright Treasury note futures to hedge out the interest rate risk
- With: Selling six-month out-of-the-money put options on the 5-year Treasury Note future on a strike equivalent to 2.75% yield (current 2.50%)

Two outcome scenarios for this position illustrate the benefits of using options here. If interest rates rise and the corporate yield curve shifts higher in parallel to the Treasury curve (Z-spread unchanged) and the CDS remains unchanged, the fund will gain from the lower corporate bond price but not lose on the treasury side (since they never purchased it outright). They will have a mark-to-market loss on the puts, offset by the premium collected from the sale. If the interest rate is below the 2.75% yield (strike price equivalent) by expiration, they will have realized a profit on the corporate bond side and kept the option premium.

If the rate finishes higher than 2.75%, they will take delivery of the Treasury note future and the notes themselves when the futures expire, giving them the natural treasury side of the trade. And if interest rates do shift lower, the option premium collected will partially offset the loss on the corporate bond.
There is also an alternative to this position, depending on how the traders view the risk of an extreme move in interest rates to the downside. A scenario such as a 'flight to quality' could cause this, where the market bids up the front end of the curve, driving interest rates lower. Here, the fund could use the proceeds from the put sale on the 5-year note future to finance the purchase of out-of-the-money calls on the two-year note future. The additional leg would add some protection to the overall credit basis position against this scenario.

Conclusion

Options on futures have witnessed remarkable growth over the past several years and the reasons for this growth have long been attributed to a host of factors including regulatory mandates, democratization of the markets as a result of the advent of electronic trading, increasing investor sophistication and participation on the part of retail investors—and the virtuous cycle of growth leading to growth that the combination of these factors creates. However, one factor that deserves more attention is the power and flexibility of these products. As the examples above illustrate, options on futures can be utilized to manage the risk of specific portions of a position, alter the risk profile for an industrial company, augment and simplify portfolio management, express an opinion on seasonal volatility, provide flexible and cost-effective products to simplify position management, and augment OTC trades and positions in new ways. And these are only a small subset of all of the ways that options on futures can be utilized by commercial and professional traders and risk managers. All signs point to a continuation of the trend toward greater volume and liquidity in these products as increased knowledge leads to greater participation and a rising tide of factors that will raise all boats. The family of options products offered by CME Group cover all major asset classes, come in unique and useful product combinations, and offer exceptional liquidity for traders and risk managers.

About

TABB Group

TABB Group is a financial markets research and strategic advisory firm focused exclusively on capital markets. Founded in 2003 and based on the methodology of first-person knowledge, TABB Group analyzes and quantifies the investing value chain, from the fiduciary and investment manager to the broker, exchange, and custodian. Our goal is to help senior business leaders gain a clearer understanding of issues and trends within financial markets, so they can better grow their businesses. TABB Group members are regularly cited in the press and speak at industry conferences. For more information about TABB Group, visit http://www.tabbgroup.com/.

TABB Group Derivatives Practice

TABB Group's Derivatives Research Practice examines trading, operational and technology issues impacting global listed derivatives markets, representing one of the fastest growing sectors of the global financial markets. Derivatives have become a powerful tool used by a broad variety of market participants who incorporate both listed and OTC derivatives into strategies designed to earn alpha, enhance risk management practices and preserve returns. TABB Group's Derivatives research is used by global financial market participants, including sell-side brokers and banks, asset managers and hedge funds, exchanges, vendors, and regulators worldwide to better understand current and future derivatives trading trends in the US, Europe, Asia and emerging markets around the world.

The Author

Russell Rhoads, Head of Derivatives Research
rrhoads@tabbgroup.com

Russell joined TABB Group in July 2018 after almost a decade at Cboe Global Markets where he finished his time there as the Director of Education at The Cboe Options Institute. His career spans over 25 years and includes positions with several buy-side firms. Russell has authored several books on the financial markets and has been widely quoted in the financial press. In addition to his duties at TABB, Russell is an adjunct instructor at Loyola University in Chicago.

He is a double graduate of the University of Memphis with a BBA ('92) and an MS ('94) in Finance and also received a Masters Certificate in Financial Engineering from the Illinois Institute of Technology in 2003. Russell is currently pursuing a PhD from Oklahoma State University and is expected to complete his degree requirements in early 2019.

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