A DYNAMIC APPROACH TO EFFECTIVE RISK MANAGEMENT

CHRIS LANG
ASSET RISK MANAGEMENT, LLC
HOUSTON, TEXAS

Hedging is an important tool for reducing the risks inherent in the production of oil and gas reserves. Like any tool, you need to have the skill to use it and the knowledge to choose the right tool for the job. The nuances in the industry necessitate a company specific hedging program that is actively managed to ensure price protection and create maximum value. Unfortunately, many producers adopt a passive "hedge it and forget about it" approach to hedging, exposing themselves to unnecessary risk and missed opportunities. The key to a successful hedging program is a commitment to dynamically manage the hedge portfolio over time to maximize its effectiveness as the market vacillates.

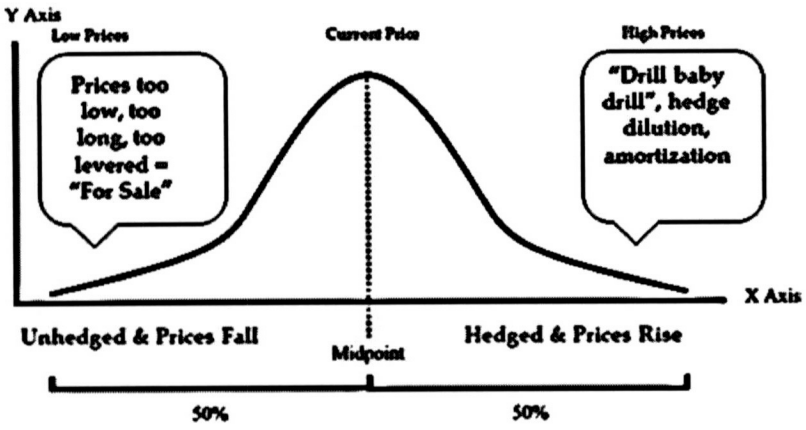
In North America, the exploration and production industry is highly fragmented. Over a thousand micro-to-small capitalization companies compete alongside the major integrated oil companies to develop reserves. The upside of fragmentation is a competitive market that breeds creativity and innovation. The challenge is navigating the risks and garnering the resources necessary to compete successfully: access to capital; large capital expenditure requirements; high financial and operating leverage; ever changing regulatory landscape; and volatile oil and gas prices. Risk is abundant, and many of these risks are interrelated and impact one another.

As a result, a vast majority of independent oil and gas producers in North America utilize derivative instruments to limit their exposure to the fluctuation of natural gas, crude oil and natural gas liquids prices. Managing commodity price risk is important to maintaining balance sheet strength, access to capital, and the cash flow stability necessary to develop oil and gas reserves over numerous commodity price cycles.

The first step in the decision making process is for the producers to accept that they are inherently long the commodity regardless of any action or inaction to manage the risk. The decision to hedge is company specific, influenced by numerous factors, including but not limited to organization structure, resource base, capital structure, investment objectives, reserve profile, tolerance for risk, etc. For example, a closely held private company with zero debt and a high PDP/reserves profile with long lived stable production may decide not to hedge. A company with this profile has the

balance sheet strength, cash flow and operating flexibility to lay down rigs at will and wait for a better day. This company may choose to hedge opportunistically at some price point to lock in what it views to be exceptional returns. However, hedging for this company is not necessary for survival.

On the other end of the spectrum, a highly leveraged company long on lease acreage in a resource play and short on cash flow is far more susceptible to commodity price risk. Deciding not to hedge at the wrong time may mean handing over the keys to the bank. The vast majority of independent oil and gas producers in North America have a credit profile that makes hedging commodity price risk not only prudent but necessary to achieve a sustained level of success. Quite simply, the decision whether to hedge or not produces asymmetric results, with the risks tilted against the highly leveraged non-hedgers.

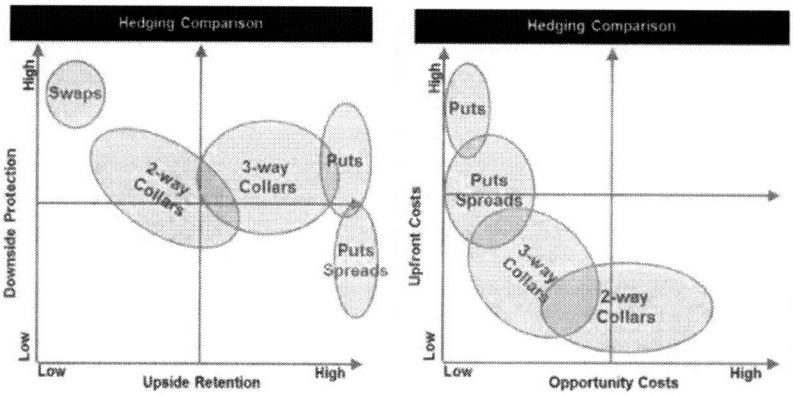


Managing commodity price risk is critically important for most producers, as weaker prices impact both current cash flow and liquidity. A successful hedging program will therefore help maintain balance sheet strength and access to capital, which ultimately preserves operating flexibility. This is the life blood of an oil and gas producer, and is a key to growing reserves and creating enterprise value.

The decision making process logically begins with an informed view on market direction. If an oil and gas producer has a position in the energy market, it is wise to dedicate resources or engage a consultant to analyze and understand the fundamentals driving oil and gas prices to formulate a view. This view and understanding can provide hedging strategies tailored to the risk management needs of the individual producer. It is normally best to use basic

over-the-counter derivative instruments such as fixed price swaps, puts and calls. While more exotic products are offered by most market makers, these basic building blocks are often a more efficient and cost effective means to achieve the desired objective. Basic hedging products are also transparent, liquid, and simple to explain to a broad group of stakeholders. Further, basic products are easier to optimize with additional hedges as changing market conditions create opportunities to improve the initial position.

The most attractive product to use will be influenced by market conditions, existing hedge positions and producer hedge objectives. Changing market conditions will impact the desirability of one hedge instrument over another. Market factors include: view on price direction, shape of the forward curve, implied volatility levels, and option skew. Also, each product differs with respect to risk mitigation and upfront costs versus the opportunity cost of hedging. For example, a fixed price swap has zero upfront cost, high downside risk protection, and high opportunity costs. The producer locks in a fixed price for zero upfront cost, protects against any further decline in price (high downside protection) but also foregoes all upside participation (high opportunity cost). Compare that to a purchased put, where the producer pays an upfront premium at a specified strike price below the market. Downside protection is lower, as the producer is susceptible to lower prices until the strike price is reached. Upfront costs are higher, since the producer pays an upfront premium to purchase the option. Offsetting this is very low opportunity cost, as net of the cost of the option the producer participates fully in higher prices.



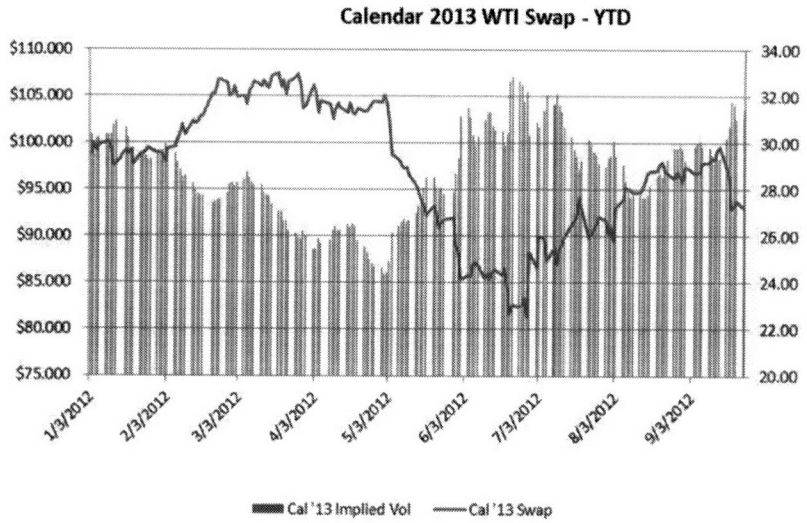
Formulating a fundamental view, analyzing markets, and choosing the right hedge product to leverage the view and appropriately manage the risk are highly effective thought processes for making hedging decisions. However, many producers are not maximizing the benefits from their hedging programs

because they are not actively managing their hedge portfolio as market conditions change. A passive approach to hedging mitigates price risk on the trade date, but introduces other risks which could become significant over time if not managed properly. For example, a producer may wish to sell a fixed price crude oil swap in a high price, flat curve, and high implied volatility market environment. On day one, the producer has protected against a decline in crude oil price, but has also introduced other risks. Should prices rise significantly, operating margins may be squeezed as operating costs rise versus the fixed price swap, negatively impacting cash flow and liquidity. Further, a hedge that on day one provided borrowing base uplift may diminish borrowing capacity should lender price decks exceed the level of the fixed price swap. Operating flexibility may be curtailed as well due to lower liquidity and diminished access to capital.

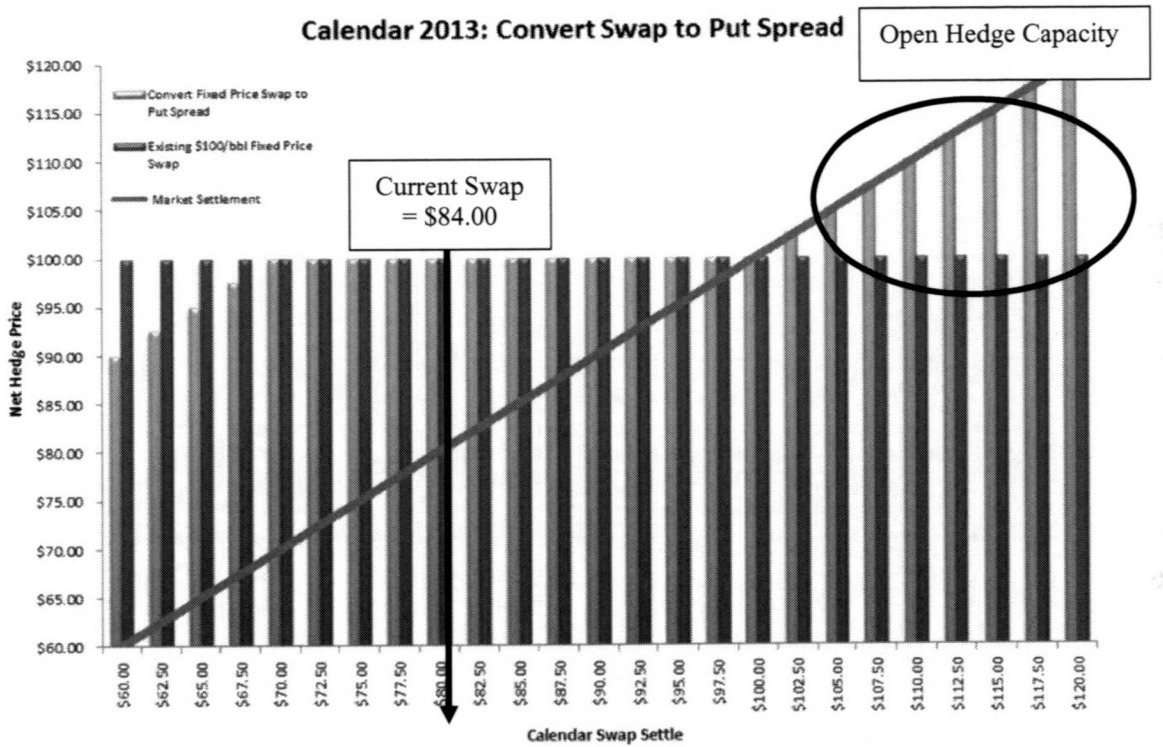
Additionally, the opportunity cost of not maximizing revenue and cash flow will have a negative impact on enterprise value. There is a huge incentive to maximize the inherent advantages of high operating and financial leverage characteristic of the E&P industry. Internal rates of return are exponentially leveraged to commodity prices. Hedges that encumber upside participation limit value creation. Further, we have seen numerous examples of producers who sold assets or issued debt capital to finance the restructuring of large hedge portfolio liabilities.

A dynamic approach to managing commodity priced risk avoids these situations by continually looking for opportunities to de-risk the hedge portfolio to improve balance sheet protection and open upside participation. The company must continuously look for situations to achieve these objectives, depending on what opportunities the market provides as it ebbs and flows.

A core principle is to never compromise the original balance sheet protection. However, many oil and gas producers overpay for price protection. When a producer sells a fixed price swap or purchases a put, it is protecting against a price decline to zero. Does any producer need price protection to zero for the tenor of the hedge? In conjunction with a fundamental view and market analysis, one can run cash flow sensitivities to determine the price protection necessary to fund the capital investment plan. One can then tailor a hedge using a combination of swaps and options to meet these objectives.



For example, in March of this year, the calendar 2013 swap was trading $100+/bbl and global supply and demand fundamentals were trending weaker. The European debt crisis, sluggish growth in the United States, and data showing slowing growth in China were significant downside risk factors that the market was underweighting relative to the geopolitical risk of the Arab Spring and Iranian nuclear standoff. Recommendation: Sell a fixed price swap for 2013 at $100/bbl. The swap locked in cash flow above budgeted levels, provided borrowing base uplift over lender price decks, and protected the capital expenditure plan. Fast forward to July—the calendar 2013 swap is $84.00/bbl, off over $20.00/bbl from the high of $107.51 a few months before. The sharp market decline over a short period of time presented an opportunity to improve the existing swap position. Recommendation: De-risk the fixed price swap by selling a $70.00 put to buy the $100 call. Result: A $100/$70 put spread. Above $100, the producer participates fully in the upside. From $100 to $70, the realized price is $100. Below $70, the producer realizes the market price plus $30.00/bbl. For example, if prices average $50.00, the producer realizes $50.00 + $30.00 = $80.00. Layering on this trade over the existing swap position not only opened upside participation, but also opened hedge capacity. The upside constraint was effectively eliminated by purchasing a call at the fixed swap price. As a result, the opportunity for the producer to sell another swap at higher levels was created. The producer now has an opportunity to be double hedged to the downside, providing flexibility to hedge forecast production while remaining compliant with traditional lender covenants. The payoff diagram below illustrates the price sensitivity before and after we optimized the original position.



Understanding these sensitivities in a dynamic way provides the flexibility to manage hedges more effectively, balancing downside protection with upside opportunity. Actively managing the hedge portfolio is a critically important component to a successful risk management program. Managing risk in this manner avoids the pitfalls that have plagued industry participants who have taken a more passive approach and becomes a powerful tool for maintaining access to liquidity and capital, increasing operational flexibility and maximizing enterprise value.