

Is Now the Right Time? Better to Flip a Coin

Let's flip a coin. Heads, and you pay me a dollar. Tails, I pay you. Everyone knows you have a 50% chance of winning a dollar and a 50% chance of losing one.

Kenny Chow

The analysis described in this note was performed by Kenny Chow. Kenny is Aegent's energy market analyst, responsible for looking at gas and electricity markets, developing pricing and hedging strategies, and for term deal execution for Aegent clients. Kenny has a degree in finance, and a Derivatives Market Specialist designation from the Canadian Securities Institute.

If you don't like those odds, you might suggest we flip the coin twice, with 50 cents riding on each flip. Just by doing that you've reduced by half your risk of losing a dollar.

How? Well, two coin flips could result in two heads (I win \$1), two tails (you win \$1), or a head then a tail, or a tail then a head (in both of these, we each break even). Only one of those four possible outcomes results in you losing your dollar (a 25% chance). And 75% of the time, you'll end up no worse off than you started. That's not a bad outcome if you are risk averse.

Does this simple strategy work when buying energy? Analysis by Aegent Energy Advisors shows that it does. Instead of buying your whole requirement in one transaction and hoping you win, consider dividing it up into smaller pieces and completing the portfolio in a series of transactions. The impact is just like flipping a coin several times. The risk of a bad outcome is significantly reduced.

Putting Theory to the Test

To test the theory, we looked back at 2005-2006 and the 2006-2007 gas years. We imagined a buyer who wanted to fix his price for the gas year before it started. He can buy gas in the forward market for whatever the going price is on any day right up to October 31. In our experiment, we assumed the buyer would consider buying for the 2005-2006 gas year on any day from January 1, 2004 up to October 31, 2005. For the 2006-2007 gas



Playing the odds

If you buy energy today, two things could happen tomorrow. The price could go up, or it could go down. Heads you win, tails you lose! The best approach is to flip the coin not just once, but several times.

year, the buying period was from January 1, 2005 to July 31, 2006 (the analysis was done in August 2006).

Type A buyers buy all their requirements in one transaction. Type B buys half in each of two transactions, and his price is the average of the two. Type C and Type D buy in 4 and 8 transactions (Buyers could buy in any number of transactions, but these were the ones we looked at).

Kenny Chow, Aegent's Energy Market Analyst, conducted the analysis. As Kenny explains, "Obviously, each buyer could pick any day or days in the buying period to do his transactions. There are thousands of potential combinations of trading days. We used a technique called Monte Carlo simulation to look at 10,000 different ways that each type of buyer could complete his strategy. For example, for Type B buyers, the simulation would pick two days at random from the buying period, and average the price for one outcome. Then it would pick another two days, and average that outcome. This process was repeated 10,000 and then we looked at the cumulative results of all the outcomes. In effect, this is like looking at the results of 10,000 Type B buyers who followed this strategy."

Results – It works!

We found that all four buying strategies achieved the same average price outcome. However, the more diversified the buying strategy, the narrower the range of portfolio prices among buyers of that type. In other words, just by dividing up their portfolio, buyers of Type B, C, and D were able to reduce the worst case scenario as compared to Type A buyers.

For the 2005-2006 gas year, the worst portfolio price experienced by Type D buyers who accumulated their gas portfolio over 8 transactions was US\$2.54/MMBtu (US natural gas futures prices were used in the analysis) lower than the worst price realized by buying all in one shot as a Type A buyer does.

The worst case price for the buyer who bought his 2005-2006 gas over several transactions was 20% lower than for the buyer who bought it all in one shot.

Neutral hedges

Entering into hedges on random days or at predetermined intervals is called "neutral hedging", since it is done with no market view or bias. Some hedging experts feel this approach is superior since it is mechanical and methodical, and is not influenced by emotion or "gut feel".

For the 2006-2007 gas year, the results were directionally the same, but the range was narrower. The worst price outcome for the Type D strategy was US69¢/MMBtu better than Buyer A. This smaller benefit just reflects that forward prices for that year were not as volatile as prices in the run up to the 2005-2006 gas year.

Important Considerations

Note that this analysis assumes that all gas buying happened on random days. Nothing in the analysis tried to choose a day when prices were considered to be attractive.

The Coin Toss Analysis points to a low cost way to reduce price risk. Kenny observes, "Some buyers use options to limit their gas price risk. A call option or a 'cap' enables the buyer to have a floating price while ensuring the price will not rise above a certain value. For this protection, the buyer pays a premium. It is interesting to note from our coin flip analysis, that buyers can reduce the volatility and price risk in their portfolio simply by diversifying their buying transactions. In our analysis, the buyer who bought in many transactions would pay the same average price in the long run as the one who bought in a single transaction each year. However, the diversified buyer would have achieved a much less volatile price along the way, with no option premium."

So, if you are unsure whether to buy now or buy later, consider buying some now AND some later. In the long run, you'll see that that is an inexpensive and effective way to contain price risk.