

Recent oil market turbulence has provided a tough test for airlines looking to hedge their exposure to rising fuel costs as profits head into a tailspin. *David Watkins* reports

Turbulent times

★ With West Texas Intermediate (WTI) crude oil hovering between \$90 and \$100 a barrel on the New York Mercantile Exchange (Nymex), airlines are flying into tricky headwinds. Such high oil prices are putting pressure on carriers' fuel-hedging strategies as they contemplate the consequences of triple-figure oil.

Traditionally, airlines hedge a portion of their fuel requirements by locking in future purchases at a set price. Carriers are reluctant to lock in prices close to \$100 a barrel (/bbl) in case prices go down, but un-hedged price rises could result in even greater financial pain. As a result, some are exploring hedging structures beyond traditional zero-cost collars, caps and swaps while increasing operational efficiencies. The situation is compounded by the current credit crunch and recession fears, so airline risk managers are buckling their seatbelts in anticipation of a turbulent ride.

"With oil prices so high, airlines are damned

"With oil prices so high, airlines are damned if they do and damned if they don't when it comes to hedging"

Larry Weaver, DelleM Associates

if they do and damned if they don't when it comes to hedging," says Larry Weaver of DelleM Associates, a jet fuel management consultant based in Tampa, Florida.

Weaver notes that the high level of competition in the industry makes it harder for carriers to pass costs on through higher fares. Low-cost carrier JetBlue posted losses of \$4 million in December 2007, while Northwest Airlines lost \$8 million in December 2007.

High fuel prices and a slowing economy now threaten to unravel the progress made since

the September 11, 2001 attacks on the World Trade Center in New York pushed many carriers towards bankruptcy, with all major airlines posting fourth quarter 2007 losses at the beginning of this year. With competitive pressures so strong, many expect the industry to experience a wave of consolidation in a quest to improve margins and better compete in this tough environment.

According to the US Department of Energy, jet fuel prices increased 49% in 2007 (see figure 1). "Eight years ago the big worry was whether oil was going to be \$16-\$20/bbl," says John Donnelly, jet fuel management consultant with global strategy firm Oliver Wyman. "Since then we've seen a meteoric rise and profound challenges for airlines trying to cope with it."

Locked and loaded

Many airlines employ a strategy of partially hedging their fuel requirements. Because their schedules make demand fairly predictable, carriers can purchase fuel months or years in advance to receive a discounted rate from the supplier. A typical hedging strategy for an airline might involve buying a call and selling a put, enabling the hedger to receive an amount of money as the market goes higher while retaining liability on the downside.

Yet while jet fuel costs can be locked in this way, there is not a perfect hedge available in the over-the-counter or exchange-traded derivatives markets. While OTC derivatives on jet fuel are illiquid and therefore expensive, exchange-traded jet fuel derivatives are not available, prompting airlines to use the more liquid commodity futures highly correlated with jet fuel, such as Nymex WTI and heating oil.

One risk manager at a large airline who



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wished not to be named said their company held a fortnightly risk analysis meeting to evaluate hedge positions out to 18 months.

“We are settling up to seven different types of option, including zero-cost collars, swaps, three-ways [a zero-cost arrangement establishing a maximum and minimum price, as well as a level below which the airline would benefit from falling prices], and knock outs [options with a built-in mechanism to expire worthless should a specified price level be exceeded] which enable us to hedge without paying anything now,” says the risk manager, in reference to the fact that, with such strategies, the cost of the cap (call) is offset by the income received from the floor (put).

While hedging allows airlines to limit uncertainty over future costs by mitigating volatility and improving financial planning, it requires a good financial condition, a willing counterparty and considerable upfront transaction costs.

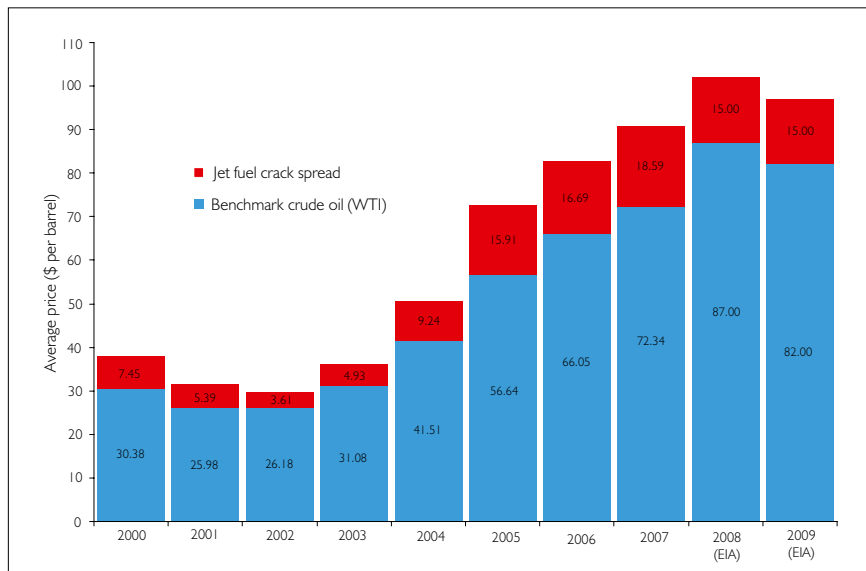
Only one US airline, Southwest Airlines, boasts investment-grade credit – rating agency Standard & Poor’s gives it a positive buy rating of four stars out of five. The airline recently revealed 2007 hedging gains of \$727 million. For 2008, it has derivatives contracts on roughly 70% of estimated consumption at an average crude price equivalent of

\$51/bbl. These were put on over a number of different time periods. No counterparty information has been disclosed.

“This gives us the luxury of having a base hedge in place while being mindful of the fact that the current \$90–\$100/bbl crude oil range could go up or down,” says Scott Topper, vice-president and treasurer at Southwest Airlines.

Topper says there is “no strict formula” for the airline in terms of how it calibrates the extent to which it remains hedged and

On course: high oil prices are making strategic hedging decisions difficult for airlines



F1. Jet fuel cost poised to set new record in 2008

Source: ATA and Energy Information Administration

T1. Southwest hedges

Source: Southwest Airlines

Year	% hedged	Price/bbl (US\$) (weighted average)
2009	55%	\$51
2010	30%	\$63
2011	15%	\$64
2012	15%	\$63

unhedged in the event of a price slide such as that of January 2007, when WTI prices fell below \$50 on Nymex. “We’ve always had a graduated approach looking out into the future. As we get closer to prompt prices we focus, but it’s not very systematic,” he says. Topper says the airline is hedged out to 2012 (see table), with collars being

the most flexible option. “Using a pure cap has obviously become quite expensive, so recent years have seen us use collars. This balances good upside protection with some degree of participation should prices fall.”

Beyond the cap

While hedging is a viable option for larger airlines such as Southwest or American Airlines, those using under two million gallons of fuel monthly do not attract investment banks to deal with in the OTC space and are therefore struggling. At \$90/bbl, a cap becomes unaffordable.

“The smaller carriers are caught because they have their hedge capabilities cut off by such high oil prices,” says Dellem Associates’

Weaver, citing US business carrier MAXJet, which recently went into administration. “Airlines such as these don’t have a line of credit, don’t have cash in the bank and therefore aren’t in a situation where they can make money on hedges, unlike Southwest Airlines,” he says.

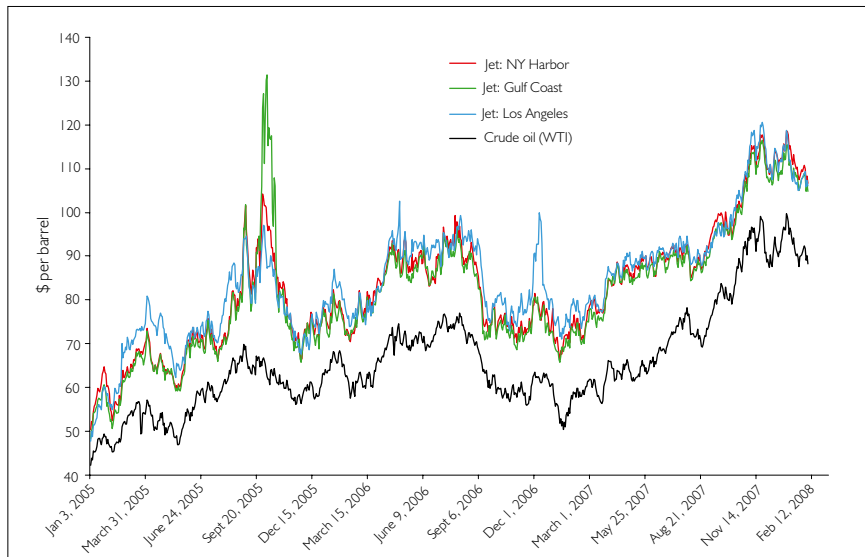
For those that can hedge, a key challenge is low implied volatility, which has led to some more innovative structures. With the underlying already priced into an option’s value and high WTI market volatility expected by options writers, an option’s price is likely to decline rather than increase whenever WTI makes a move.

“With prices around \$90, the worry for airlines is twofold,” says Richard Jefferson, head of commodities sales for Europe and Asia at Deutsche Bank. “Firstly, that prices continue to rise at the pace they’ve risen for the past few years, demanding hedging policies such as buying collars, swaps and other derivatives structures. Secondly, because implied volatility is low, any sort of collar or swap structure means inevitably buying oil at still quite high prices,” he says, noting that even a 10% discount to current levels would still be a high level historically.

In an effort to hedge its exposure to volatile crude oil prices more effectively, Guangzhou-based China Southern Airlines (CSA) sought a bespoke solution when it approached Deutsche Bank in the summer of 2007, resulting in the bank’s first-ever target profit forward deal in the WTI crude market.

The deal had a target to generate \$2 million for CSA to cushion the higher cost of fuel in the spot markets, and expired upon reaching that value. This enabled CSA to achieve hedge levels that other common extendible strategies – such as zero-cost collars, double downs and multi-extendible three-way trades – were unable to attain due to the record-low implied volatility.

“This structure essentially allowed our client to buy as much oil as possible at the cheapest price possible,” says Jefferson. The deal allowed CSA to achieve a lower strike on the call option than other potential strategies, which in this case



F2. 2008 energy market begins bullishly

In January, spot market offers \$2.62 jet on \$92.97 crude

Source: US Energy Information Administration and ATA

was \$60/bbl at a time when WTI was trading for \$71.20. The \$60 call option was financed by CSA's sale of put options, struck at \$50. If the market were to fall below \$50, CSA would have to pay Deutsche Bank's difference between the put strike of \$50 and whatever price the market expired at on any given month.

Jefferson says that such a deal would still be beneficial in the current price scenario. "These structures are attractive for the airlines that are prepared to take a lot more risk," he says. "Any exotic structure is only right for some clients on a relatively small amount of their hedge book and they have to layer on some more vanilla strategies as well."

Elsewhere, Frontier Airlines recently purchased fuel derivatives that hedge both Gulf Coast jet fuel crack spreads and west Texas intermediate oil prices nominally over the next 15 months.

"They're betting on the crack spread, so that as the crack between the price of a barrel of jet fuel and barrel oil grows, they're protected against that refining gap," says Randy Babbitt, jet fuel consultant with Oliver Wyman.

Geographic arbitrage

Aside from derivatives usage, airlines are looking to create savings through maximising the fuel efficiency of planes by reducing drag, flying with minimum possible weight and taxiing with one engine as opposed to two. Alaska Airlines crews no longer keep their thick, paper manuals on board, saving about \$30,000 a year in fuel costs, the airline estimates.

With spot jet fuel priced differently according to region (see figure 2), airlines can also indulge in geographic arbitrage of sorts due to the nature of their business.

For example, prices on the US west coast are traditionally higher, due to limited refining capacity and inferior storage, logistics and distribution capabilities. So an airline might carry extra fuel on board a flight if the price differential at the destination is considerably higher than at the point of departure.

Such planning requires increasingly robust risk management systems, notes Dale St Denis of SolArc, a provider of risk management software to airlines. The company's Right Angle solution manages procurement, demand forecasting and derivatives market hedging. It now has 10 airline clients as demand for greater risk

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Scott Topper, Southwest Airlines

management tools increases, with Northwest Airlines signing up in January.

"The airline has to manage transportation logistics and necessary supply contracts, as well as model a fuel expense forecast in the light of planned routes and the price of fuel at the destination, bearing in mind the fuel efficiency of the aircraft as well as activity in the derivatives markets for hedging purposes," says St Denis.

Flight from luxury

Airlines have made their fuel conservation programmes "the rule rather than a luxury", says John Heimlich, chief economist with the Air Transport Association. "We're leaving no stone unturned and as long as the revenue environment stays healthy, we're OK. The question is whether or not a dip in the economy means a dip in oil prices too. If not then we have a problem."

While some analysts fear a recession could dent travel demand, hitting airlines with a double whammy of empty planes and high fuel costs, others think a recession will bring down fuel prices.

"Some are hedging like mad right now while oil is below \$100 in preparation for it to go over \$100 again, especially with the Fed cutting interest rates every time the price of crude goes up," says Weaver, adding that risk managers must also remember a strengthening dollar could lead to falling crude prices.

With this in mind, airlines are mindful of the risk that benefits brought by their current hedge positions will erode in time, and that improved operational efficiencies and advances in new types of fuel are essential for healthy business.

"At this point our fuel hedges are a competitive advantage but we don't want to build our business on it," says Southwest's Topper. "The industry is adapting to higher energy costs and we're working really hard to prepare for the day when these hedges could go away," he says. **ER**