

The industry has suffered from increasing oil & fuel prices over the past two years. Determining how the price of oil relates to the price of jet fuel, and then how oil prices are expected to develop over the next year and the consequences for airline financial performance are examined.

# What are the prospects for oil & fuel prices?

Over the past three years the airline industry has suffered from rising fuel prices, which rose from 60-80 cents per US Gallon (USG) in early 2003 to nearly 230 cents per USG in October 2006. The recent fluctuation in the price for Brent crude oil, which has fallen by almost \$20 from its August 2006 peak of \$78 per barrel to below \$60 per barrel in early October, has caused the industry to wonder where the price will go. What are the underlying reasons for the inflation and fluctuation of the oil price? What is the prediction for oil prices in the future? How will different fuel prices affect airlines' financial results?

## Oil and fuel prices

Jet fuel, a product refined from crude oil, falls into three categories: wide-cut jet fuel (Jet B), Jet A and Jet A-1. Jet B is used in some parts of Canada and Alaska because it is suited to cold climates, but Jet A is used in the United States. Most of the rest of the world uses Jet A-1, which has a lower freezing point than Jet A, making it more suitable for long international flights.

As aviation fuel is a product of crude oil, its availability and price correlate to the price of crude oil. "The price of jet fuel is the equivalent of the market price of oil plus the crack-spread cost, which is the cost of refining the oil to aviation fuel," explains Vaughn Cordle, chief executive officer at Airline Forecasts. "The crack-spread used to be about \$5 per barrel, which was added to oil at \$21 per barrel, giving \$26 per barrel. There are 42 USG to a barrel, so the price of fuel would have been \$0.60 per USG.

"Crude oil is now about \$58 per barrel, and the cost of refining has increased, taking the crack-spreads up to \$15-20 per barrel. The total cost is \$76-80 per barrel, equal to \$1.80-1.90 per USG," continues Cordle. "Aircraft

fuelling and handling costs and domestic and environmental taxes add a further 10-12 cents per USG. The total cost is therefore close to \$2 per USG."

Fuel prices vary between airlines, however, because each carrier uses different fuel quantities and purchase policies. These grant the airlines different negotiating powers with fuel suppliers.

Some airlines with high balance sheet equity and large cash reserves hedge oil and fuel prices, which often gives them a cost advantage over other carriers. Fuel price hedging is concerned more with the price of oil than the price of fuel.

## High oil prices

Several factors have contributed to the recent increases in the price of oil. The first of these is demand, which is a result of an upturn in the global economy.

The global economy entered a recession after 9/11, but since 2003 it has recovered and gradually entered a boom era. In 2001 the global economic growth rate was 2.5%, and demand for oil shrank. By the end of 2003 the demand had increased by 4% (3.2 million barrels per day), following a growth in the global economy of 3.2%. This soaring demand laid the foundations for the high oil price.

As the world economy boomed, the economy of China, like that of other undeveloped countries such as India, entered an era of high growth from late 2003 and recorded an average GDP growth rate of 8.5% per year. This resulted in a surge in demand for oil from China, which nevertheless accounts for only 8% of the global consumption of 80-85 million barrels per day. China's and India's increasing demand therefore imposed a psychological, rather than substantial, impact on the international oil market.

The second factor is an under-development of oilfields and producing capacity over the past two decades, and

rising oil production costs. After the oil shock in the 1970s, the oil-producing countries, of which Saudi Arabia was the most prominent, launched a price war to grab more market share. This drove the oil price down to \$9-10 per barrel, which made investments in refinery and storage facilities economically unviable. Cordle explains that the cost of a new refinery is about \$3 billion, and consistently low prices mean that the US has built none for the past 30 years. Hurricane Katrina exacerbated this situation, taking 5% of US refining capacity temporarily off-line.

Costs are also increasing. Over the past four years drilling costs in the North Sea and the Gulf of Mexico have risen by 130-430%, and equipment costs by 20-50%. The lack of development in oil fields is another fundamental reason.

The third factor is prevailing and dominating speculation in the market. Oil is traded as futures or options, rather than a commodity. Buyers place orders for oil delivered in three or six months, and sell the purchase contracts when the dealing date approaches. Some buyers are speculators, and make profits from the arbitrage and swap. Success is dependent on the amount of the fund the speculators can manipulate, and the demand versus the fear of scarcity of the commodity. There has been a large increase in the amount of venture capital used in the oil market since 2001. Speculation capital created the illusion of strong demand for oil, which intensified the fear that oil was becoming scarce, pushing its price higher. The higher the oil price, the higher the profit the capital can gain. Greed and fear are the catalysts for high oil prices and no one can predict the future price of oil.

Cordle makes the point that the depreciation of the US dollar over the past three to four years has been another factor, adding up to \$20 per barrel to the price of oil. Another is the risk premium of \$8-10 per barrel, due to the risk of disruption of supply and tightening

*There is debate over whether oil & fuel prices will rise, remain steady or decline over the next one or two years. Each \$10 change to the price of oil changes the price of jet fuel by about 25 cents per USG, so having a large impact on airline financial performance. The prospects for large reductions in the price of oil are slim.*

production capacities. These combined with increased demand have driven prices upwards.

## Where now?

The price of oil is dependent on three key factors. The first is the growth of world economy. After a three-year upturn the world economy seems to be losing its momentum bit by bit and could be facing a landing in the next few years.

The US reported average GDP growth of 3.8% over the past four years, but its economy is expected to slow in 2007 to a GDP growth rate of 2.0-2.5%. This will ease the demand for oil from the US economy, which accounts for about a quarter of oil consumption. This will lead to an increase in oil stocks and so a reduction in oil prices.

China, the other engine for world economic growth, is also facing a soft landing over the next two years. Japan, the second largest economy in the world, has recovered from a 15-year-long recession, but cannot save the world economy from sliding into a downturn.

The second factor is the supply of oil. Although there have been no large increases in supply over the past 20 years or so due to low prices, since 2002 the major oil-producing countries and oil companies have gained the confidence to invest in exploration, development and refining. If investment continues, global production capacity could increase by 20% over the next five years. It could increase by 12-15 million barrels per day between 2010 and 2012, outstripping expected demand growth of 7-9 million barrels per day. This would boost spare capacity and drive prices down.

The third relates to speculation capital. With the expectation of lower economic growth and a weakening demand for oil, the gamble for future oil prices is becoming more risky and less profitable. When the oil boom peaks, the venture capitalists are expected to pull out of the market sharply, but this is not expected before 2008. The price of oil is therefore expected to fall gradually.

The fourth factor affecting future oil prices is the Organisation of Petroleum Export Countries (OPEC). In early October its president announced its 11 members had agreed to trim production by one million barrels per day. The announcement increased the price of oil,



although how the cut would be shared by its members was undecided. Whether OPEC can really control its members' production is doubtful. They are used to producing without obeying the quota, and when the price heads down it is more difficult to call back discipline.

Analysts' opinions on future oil prices vary. The worst scenario is a gradual increase in prices to about \$70 per barrel by the end of 2008. Some predict it could fall, however, to \$45-50. The mid-range prediction is a price of \$60 per barrel.

## Airline industry

The airlines most affected by high fuel prices have been the US majors, which were enjoying low oil and fuel prices and strong yields up to early 2001. This led to labour costs rising, with airline unions always demanding higher salary scales when airlines are doing well. Pilot salaries increased substantially, with many widebody captains grossing in excess of \$300,000 per year in most major carriers. Labour costs as a percentage of total costs grew for all legacy airlines in this period. By contrast, Southwest had among the most competitive labour costs of all US carriers.

The decline in US majors' yields began in early 2001, well before 9/11, and before oil and fuel prices started to rise. The larger legacy carriers have lost \$2-4 billion a year in revenues compared to 2000 and 2001 due to declining yields.

Rising oil prices from 2003 added to their pains, but these pressures gave the US majors scope to lower costs by negotiating with unions for lower salary scales. They generated huge losses during 2001-2005, thereby eroding their equity and seriously weakening their balance

sheets.

Most majors have now returned to profitability, and have overcome high fuel prices through lower salary scales. Yields have improved since 2005, due mainly to the legacy carriers reducing capacity by 20% since pre-9/11 levels. Yields are still lower than in early 2001, however. Low-cost carriers have continued to increase capacity at high rates, and are the main cause of lower yields. Legacy carriers have partly made up for lower yields by accepting higher load factors, but Cordle makes the point that unit revenue is overall still 14% lower than 2000 levels.

US airlines collectively consume 16 billion USG of fuel a year. A \$10 change in the oil price changes the price of fuel by 25 cents a USG, and so would alter the annual fuel bill by \$3.8-4.0 billion.

Current fuel prices of \$1.90-2.00 per USG compare to previous prices of 60-80 cents per USG. These higher costs have increased the airlines' annual costs by \$19 billion. Higher fuel prices have exceeded the cost reductions made by legacy carriers.

The issue now is the future price of oil and fuel, and how this will affect airlines. "I expect the industry to earn a net profit of about \$4.5 billion in 2007, but this is based on an oil price of \$60 per barrel, and fuel being about \$1.80 per USG," says Cordle. "Some experts predict that oil could be \$70 per barrel by the end of 2008, and if it was this price in 2007 it would increase the industry's fuel cost by about \$4 billion, wiping out virtually all this expected profit."

"The other issue is the effect of oil and fuel prices on demand and traffic growth," continues Cordle. "If the price of oil is \$60 then the market will grow by 4% per year, but if it increases to \$70 it



will only grow by 1.5% per year. Half the benefit of a growth rate of 4% would be passed on to passengers in the form of lower fares, so the airlines' costs would benefit by about \$2 billion. The problem is that oil and fuel prices are not the only issue affecting airline profitability. The agreements airlines made with unions for lower salary scales end in 2008/2009, so labour costs could start to increase again. An example of the effect of labour costs is USAirways, which managed to negotiate itself from having some of the highest salaries of all US legacy carriers, to among the lowest after it entered Chapter 11 in 2002. If its labour costs were to increase to average levels its annual costs would increase by \$800 million. Overall, US legacy carriers have weak balance sheets and really need to generate \$8 billion a year more revenue to improve earnings so that they can strengthen their weak balance sheets. A reduction in oil and fuel prices to previous levels is the only way this could happen, but this is unlikely. This explains the talks of a merger between Delta and USAirways, which would increase their scope and improve revenues, and also realise large cost savings through synergies."

European legacy carriers remain in a comparably strong position in the high fuel price environment. No imminent bankruptcy is likely in the European industry in the foreseeable future due to high fuel prices. But the fluctuation of oil prices does have a profound impact on their balance sheets. British Airways' net profit will fall by 8% and 10% in 2007 and 2008 if the oil price increases annually by \$5 per barrel, while Air France-KLM's net profit in 2007 and 2008 will fall by 17% and 30%, respectively.

## Industry reaction

Besides fuel surcharges, the most popular strategy to control fuel costs is hedging strategies, including over-the-counter (OTC) and exchange-traded derivatives. Options, including collar structures, and swaps are the primary OTC derivatives used by airlines, such as Southwest Airlines and jetBlue, and are traded directly between the airlines and investment banks. This is based on the presumption that the oil price is a mean-reverting process, or that it moves in cycles rather than consistently in one direction. Given this, it is possible to implement a hedging strategy that enables airlines to lock in prices at the low point in the cycle while capping prices at the high end to take advantage of eventual price decline.

The exchange-traded derivative for airlines' hedging is exchange-traded futures. Jet fuel futures do not exist in the US and most parts of the world, so futures on crude or heating oil must be used instead to hedge jet fuel purchase. The most important elements are the spot price of hedge items, such as crude oil and heating oil, prices of selected contracts, and correlations between the items and contracts.

The airlines using hedging have gained a lot. In 2004 Southwest's fuel cost was locked in at \$24 per barrel of oil, while most of its competitors were paying the market rate of \$40 per barrel.

Air France-KLM has had a better oil hedging position than any other European airline: for the financial year 2007, 81% of its fuel requirement has been hedged at \$51 per barrel; for 2008, 46% has been hedged at \$57 per barrel; and for 2009, 25% has been hedged at

*While all US majors have negotiated large reductions in salary scales with their various employee unions, these are only temporary. Overall, the US majors have weak balance sheets and lack the financial strength they require to replace all of their ageing, fuel-thirsty fleets.*

\$50 per barrel. These hedges mean that for the time being, AF-KLM will be able to maintain a fuel cost lower than its peers, which is expected to save it 50 million Euros (\$65 million) in the first quarter of 2007.

Whether an airline can employ the hedging strategy on a large scale depends on its cash flow. US legacy carriers can only hedge a small portion or none of their fuel consumption due to severe cash flow constraints. Like Southwest and jetBlue, these airlines have historically hedged their jet fuel costs using heating oil and crude options, swaps and futures, but they have limited fuel hedging operations because they are unable to generate cash flow to finance futures margin deposits or option premiums. Delta started in 2004 with fuel hedges in place, but was forced to close the positions to generate cash for operations. United's fuel hedges were cancelled by its counterpart due to bankruptcy filing, and American's credit rating limits the types of contracts it can use.

Another strategy is to retire fuel-inefficient aircraft. Airlines should compare the cost of financing new aircraft and the fuel efficiency they provide against their current fleets. While new aircraft have excessive financing charges, many legacy carriers have old fleets that will have to be replaced even if capacity is maintained at current levels. Most airlines' balance sheets are too weak to allow them to re-fleet.

A simpler approach in the short and medium term is to upgrade fleets with fuel-saving technologies. American Airlines will add blended winglets to its 757s to taper fuel consumption, and save 3% to 5% of fuel cost.

## Summary

The oil price seems to have reached its peak and may gradually decline. Most factors appear to favour a fall in the price of oil, which would improve financial performance. A large drop is unlikely, however, and so hedging and retiring less fuel-efficient aircraft are the other options. These are hard to achieve, however, because of the airlines' weak finances. The legacy carriers of the US could be in a downward spiral they cannot exit. **AC**

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