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C Lester Westbrooks

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**FORUM*****AIRLINE FUEL HEDGING: AN OVERVIEW OF HEDGING SOLUTIONS  
AVAILABLE TO AIRLINES***

C. Lester Westbrooks

Over the past several years airlines have been struggling to cope with a barrage of challenging economic conditions and have been very creative in reducing cost. In an attempt to produce a profit for their shareholders airlines have slashed cost in many areas and have not willingly left any stone unturned looking for cost savings. There are two ways to make a profit however, either by lowering your cost or by raising your revenue. The revenue increase side of the airline profit equation has been limited by government security taxes, unhealthy competitive practices, and the entrance additional of low cost carriers such as Jet Blue and Air Trans. Airlines have varying degrees of control over cost with fuel being most illusive.

Air travel has become a part of our national culture and has been made affordable for the general public by airline deregulation. Deregulation unleashed the creative energies of many businessmen and women leading to a huge expansion in airline capacity commensurate with this demand for air travel. Now, after years of affordable air travel, passengers are conditioned to first consider air travel when covering substantial distances. The entrance of low cost carriers (LCC) has provided the traveling public with additional opportunities to fly.

From 1993 to 2003 the demand for air travel increased by approximately 13.7 million passengers per year peaking in the summer of 2001. September 11<sup>th</sup> dealt the airline industry a significant blow decreasing air travel demand to the lowest levels since 1993. With the perceived risk of terrorist attack either contained or dealt with by the traveling public, air travel is on track to recover to pre-September 11<sup>th</sup> levels by the end of 2004. (Air Transport Association of America, 2004)

In an oligopolistic industry, such as the airline industry, it is difficult to distinguish one company's product from a competitors. By definition, players in an oligopolistic industry compete in non price competition. This is where the airline industry departs from the characteristic of an oligopoly. If a passenger desires to travel from Miami to New York he would have many options to choose from and many different prices. After all, an airline seat is an airline seat to most travelers. To develop brand loyalty, airlines

introduced frequent flier programs to provide frequent business travelers with free travel to be used for personal travel. Also, airlines, such as American, have tried other schemes attempting instill brand loyalty. Expanding the leg room in their coach section, DVD players, and computer power ports at passenger seats are just a few examples of attempts to attract loyal customers. Brand loyalty goes only so far "because most airline customers value low price above all other carrier selection factors" and "the carrier with the lowest cost has a powerful competitive advantage." (Wells, 2004)

The most desirable way for airlines to improve their bottom line is to increase their revenues. It would be logical that an increase in cost that is felt across the industry, such as fuel, would be passed on to the consumer. Federal Express has done this with the recent increases in fuel cost by adding a fuel surcharge to their delivery prices. This idea presumes, however, you are not in an industry with eleven competitors operating in bankruptcy since September 11<sup>th</sup> -- five have filled bankruptcy in 2004 alone. (Air Transport Association of America, 2004) It is difficult to add a surcharge when your product is mostly indistinguishable from you competitors, your bankrupt competitor does not have to pay their debts, and is often so cash strapped they price their product to make payroll.

In airline pricing any increased that is not followed by a quorum of other industry participants is destined to be rescinded. The Bureau of Transportation Statistics

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developed the national Air Travel Price Index in 1995 to track the cost of consumer cost of air travel. As seen in figure 1, in the past nine years the cost to consumers has increased only 3.58% while the cost of jet fuel has increased

by 83%, figure 2. (Bureau of Transportation Statistics, 2004) With fuel consuming 15 to 20 percent of airline operating expenses profits are being minimized.

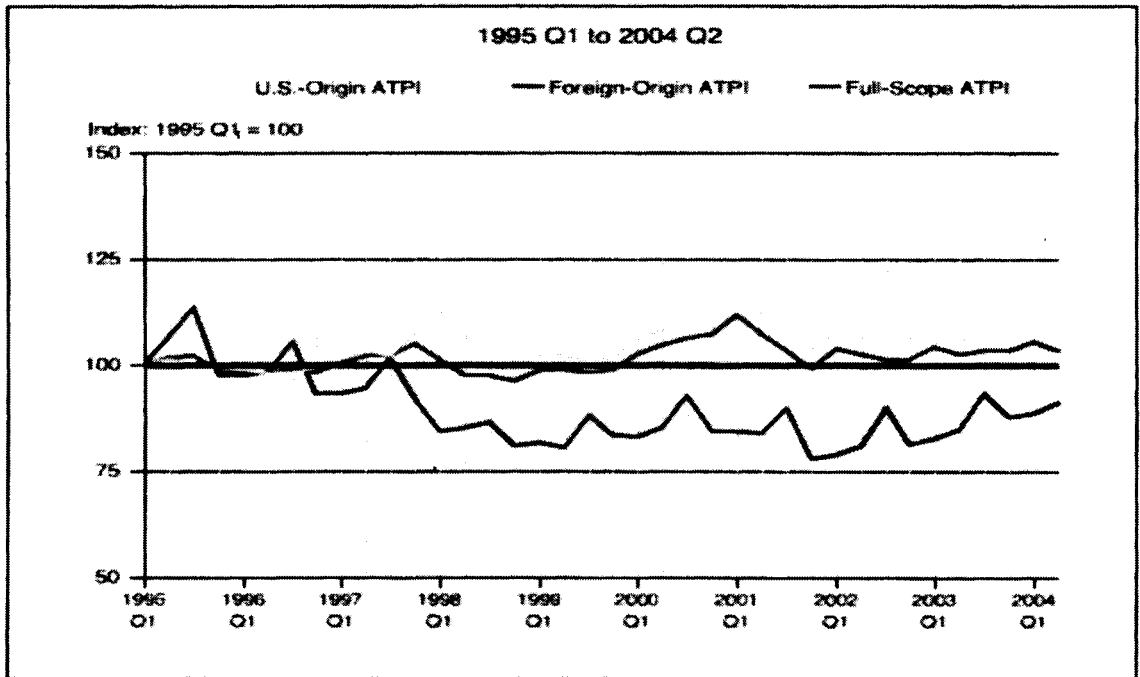


Figure 1 Bureau of Transportation Statistics

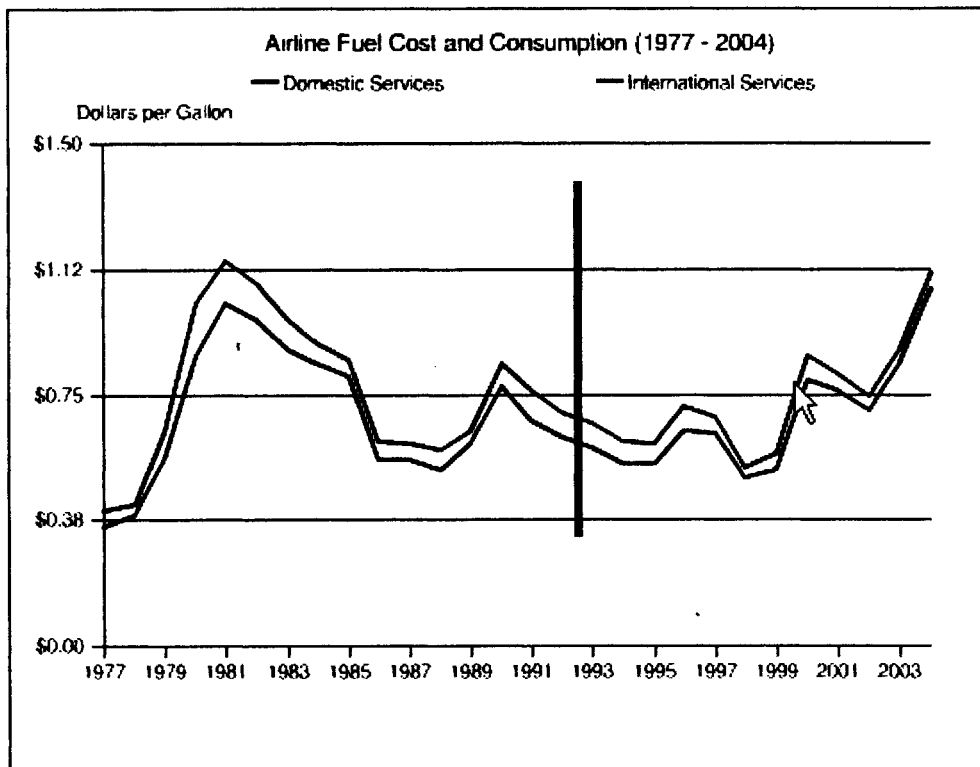


Figure 2 Bureau of Transportation Statistics

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As you can see from figures 1 & 2, the cost of jet fuel for airline is cyclical and subject to substantial variations while the revenue received from passengers is essentially flat.

Fuel prices are subject to a number of social and political influences which cause fluctuations in the cost of the commodity. Political events such as wars -- even the rumors of wars -- will likely lead to an increase in the cost of fuel. Government legislation has effects on the price of jet fuel such as increasing taxes to cover additional airline security cost. Limits in refining capacity can affect the cost of jet fuel and any interruption in that refining capacity, such as an explosion, will affect the cost of all refined product. Summer travel by consumers has a competing influence on the cost of jet fuel causing refineries to shift production to more gasoline based products. In the winter, the demand for home heating oil -- very similar to jet fuel -- increases and jet fuel cost rise. These are but a few of the triggers that can cause a spike in jet fuel prices. Some of them cannot be planned for such as a refinery shutdowns however, some of them, such as seasonal demand changes, can be.

This type of volatility lends itself to hedging. When prices are down financial managers can purchase hedging instruments to limit exposure in case of a fuel spike. When prices are stable, manager can attempt to limit their upside exposure and even when prices are up managers can protect themselves from unforeseeable circumstances.

Investors value stable returns on their investments and it has been shown that hedging jet fuel price exposure has a positive effect on an airlines stock values with little value being added for the extent of hedging. In fact, "The evidence suggests hedgers are 12.33% - 13.68% more valuable as a result of initiation of measurable jet fuel hedging." (Carter, et al., 2004, p. 29)

Not all airline executives feel compelled to hedge their fuel Rod Eddington, CEO of British Airways stated "a lot is said about hedging strategy, most of it is well wide of the mark. I don't think any sensible airline believes that by hedging it saves on fuel bills." and "When you hedge all you do is bet against the experts in the oil market and pay the middleman. You can run from high fuel prices briefly through hedging but, you can't run for very long." (AFX News) On the other side of the fuel coin American Airlines tells investors in their 2003 annual report "During 2003, 2002, and 2001, the company's fuel hedging program reduced the company's fuel expense by approximately \$149 million, \$4 million, and \$29 million." (American Airlines, 2003) Likewise Southwest airlines, known for not following the conventional wisdom of the airline industry, reports "Southwest also has a successful hedging program, which

saved us \$171 million in jet fuel cost during 2003. We are also well protected in 2004 and 2005 with over 80 and 70 percent, respectively, of our anticipated fuel requirements hedged with prices capped at approximately \$24 per barrel of crude oil." (Southwest Airlines, 2003) This hedging is expected to save Southwest Airlines \$240 million in 2004. (Southwest Airlines, 2004)

The question now becomes, should my company hedge or not. As we have already seen, not all companies agree on the necessity of hedging. The argument could be made that rising oil price affect all competitors evenly so fares will be raised across the industry. We have seen however, that the airline industry does not always compete on a rational basis, especially when air carriers are in distress. Investors would be thrilled to see an additional \$149 million and \$171 million in the corporate coffers as American and Southwest saw in 2003 on the other hand, hedging is not always successful and if market forecast are incorrect, may lead to higher losses.

Hedging for an airline is similar to purchasing an insurance policy to protect against a rise in jet fuel prices. By investing in futures in the commodities markets airlines are able to lock in a price today that will be paid in the future for a commodity.(Southwest Airlines, 2004) If nothing else, hedging jet fuel gives the corporation the ability to plan and price their product based on a stable price of the commodity.

Hedging is an investment and like all investments there are risks associated with that investment. Hedging requires an airline to forecast the future direction of a commodity and make an informed decision. This decision has to be correlated with the company leadership's aversion to risk. If your company is conservative in their financial practices then no hedging or limited hedging might be an acceptable risk. On the other hand, if a company is aggressive and willing to risk some capital, a hedging program would be appropriate for this company. If your hedging forecast ultimately proves incorrect, your company will realize gains less than the cost of the program or losses.

Once the decision has been made to hedge financial managers must decide not only how much to hedge but what tools to use. There are a number of hedging strategies available to financial managers however, most use three basic tools -- forwards, futures, and options -- or some combination of them. Jet fuel trades in very limited quantities on the commodities market so investors use other commodities which closely follow the movement of jet fuel prices such as home heating oil or crude oil. This is sometimes referred to as cross-hedging. Cross hedging can involve purchasing oil futures two to three years out then

swapping them for home heating oil one to two years out and finally swapping them for jet fuel. (Defense Business Board, 2004)

Forward is the term used for a contract agreed upon by two or more parties to exchange an underlying asset at a contracted price, amount, and date. Investment banks are usually the institutions entering into agreement with airlines. Once the agreement is made no cash changes hands. The forward is settled on the contracted day. In the simplest case the spot price on the commodity is equal to the contracted price on the contracted day. All would be equal and no cash would change hands. If however, the spot price of the commodity had risen above the contracted price the banker would pay the airline the difference between the contracted price and the spot market price. The only cash that would exchange hands would be the difference. Conversely, if the spot price is lower than the contracted price the airline would have to pay the banker the difference. (Rao, 1999)

Forwards are useful to an airline to limit the upside exposure but they do have limits. If the price of the commodity falls the airline has no limit to the downside exposure and can lose large sums of money. Since forwards are contractual agreements between individual parties the airline is exposed to the risk of the banker not performing on the contract. Airlines use forecasting to plan on the amount of jet fuel they will require. If there is a significant increase or decrease in air travel the airline could require more or less fuel than contracted for. In either case the airline would experience losses for contracted fuel not used or unrealized profits for excess fuel not contracted in the forward. Forwards are useful for planning by providing a company with a stable fuel price.

Futures contracts are another investment tool airlines can use to hedge their fuel expenses. "They too are essentially agreements to buy / sell an asset at a future time. Further, they may also be settled either by giving /taking physical delivery or by exchanging cash."(Rao, 1999) Unlike forwards, futures are highly standardized contracts exchanged on regulated commodity exchanges. This provides the airline with assurance that the contract will be performed on at expiration. Also, unlike forwards, futures require cash to exchange hands upon purchase. The exchange will require the parties to post a percentage of the contract into a margin account. Essentially, the rest of the contract price is borrowed from the clearinghouse. Borrowing requires credit. Airlines who are strapped for cash will have poor credit a rating and be unable to hedge their fuel using futures contracts.

The final basic tool used by airlines to hedge their

fuel cost are options contracts. Option contracts come in two types, calls and puts. When an airline purchases a call it is for a specified commodity, at a price, to be delivered on a date, it obtains the right but not the obligation to purchase the underlying commodity. For example, an airline financial manager might purchase 1,000,000 gallons of home heating oil through call options, with a February expiration date, for a strike price of \$.070 per gallon. At any point prior to the expiration date, the option can be exercised and the underlying commodity delivered. Included in the \$.070 strike price is a premium charged by the seller for the seller's risk equating to length of time until expiration – the current spot market price might be \$.65 leaving a \$.05 time premium. Generally, the greater the amount of time until expiration the higher the premium will be. If the cost of home heating oil rose over the next months to \$.75 per gallon it would be beneficial to the call option buyer to exercise the option and make a \$.05 profit. A call option has the effect of capping the amount the airline will have to pay for the commodity.

Conversely, in a declining market an airline financial manager could sell a put for the same 1,000,000 gallons of home heating oil with a February expiration date, for a strike price of \$.70 per gallon. In doing this the seller of the put is offering the purchaser of the put the right but not the obligation to put the 1,000,000 in the airline's hands and expect \$.70 per gallon for it. Like the call, there is a premium built into the put commensurate with the length of time until expiration. The airline would only purchase a put if they expected the price of home heating oil to remain above the strike price. If the price fell to spot market price of \$.65 per gallon the airline would lose \$.10 per gallon.

"A forward contract from the buyer's viewpoint can be viewed as a transaction in which the buyer pays for a call option by selling a put option at the same exercise price chosen such that both options have the same value." (Rao, 1999) This would effectively lock in the purchase price of the commodity with the security benefits of the exchange markets and without the before mentioned risk of the forward contract.

People of the 21<sup>st</sup> century have demonstrated their demand for air travel and we have discussed the challenges facing the airline financial managers in competing in an oligopolistic market that competes on price. Increasingly, the competition has demonstrated unhealthy characteristics caused by financial desperation. Increases in cost that transcend individual companies are not directly transferable to the consumers as would be expected in logical markets. Because of the volatility of the price of jet fuel and the often

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unpredictable nature of price increase, airline financial managers are enticed to use hedging as a risk management tool to insulate their companies from price increases. Managers use forward contracts, futures contracts, and

option contracts in varying combinations to mitigate the financial risk to their companies. →

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**C. Lester Westbrook** is currently an assistant professor in the Aeronautical Science Department at Embry-Riddle Aeronautical University in Daytona Beach, FL where he teaches electronic flight navigation, airline operations, and international flight procedures. He is a member of the Phi Kappa Phi honor society, the University Aviation Association, Allied Pilots Association, National Business Aircraft Association, and the Aircraft Owners and Pilots Association.

Professor Westbrook served as a line Flight Engineer for American Airlines on a B-727 and was selected to provide operational experience to new Flight Engineers under a "buddy" program. In 1993 he trained as First Officer on the B-727 and flew in the United States, Central and South America. In 1994 he trained as a F-100 First Officer and flew domestic operations out of Nashville Tennessee. In 1996 Les returned to flying B-727 International for a year when he went back to flying F-100 domestic operation which included Latin and Canadian operations.

Professor Westbrook served in the Tennessee Air National Guard as a tactically qualified Navigator on a C-130A until 1987 when he was selected to cross train to pilot and flew C-130A and C-130H II. Noteworthy of the many specialized training courses Les has attended are the ANG Mishap Prevention School at Norton AFB, Los Angeles, CA and Squadron Officers School in residence at Maxwell AFB, Montgomery, AL

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