

# **RISK MANAGEMENT PRACTICES IN THE AIRLINE INDUSTRY**

by

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## **ABSTRACT**

This paper reviews the use of financial derivative instruments by non-financial entities to manage risk exposure. It provides the main objectives of a non-financial corporation to enter into derivative contracts with a counterparty and the scope of usage of these instruments. It is evident that most companies use derivative instruments to preserve cash flows and firm value as opposed to taking positions in contracts for speculative purposes.

The paper focuses on the risk management practices of a specific industry: Airline transportation. The airline industry employs derivative instruments primarily to manage volatility in jet fuel prices, interest rates and foreign exchange rates. In spite of the lack of consistent information provided in the annual reports, there is strong evidence to support the effective use of derivative instruments to manage operating costs and thereby maximize firm value.

## **EXECUTIVE SUMMARY**

The purpose of this project is to explore the usage of derivative instruments particularly by non financial entities. Existing theories on why value maximizing firms engage in derivative transactions are reviewed. Most quantitative studies done in the area of risk management for non financial entities use the theories of capital market imperfections as a foundation. Underinvestment problems, taxes, financial distress costs and management incentives are cited as reasons why a firm engages in hedging activities.

Numerous quantitative studies have been done in various countries, industry sectors, and regions, to ascertain the extent to which non financial entities employ derivative instruments. The majority consensus is that entities use derivative instruments primarily for risk management and not for making a profit through arbitrage opportunities. Globally, non financial entities transact approximately 15% of the total derivative contracts and 50%-60% of the non financial firms engage in derivative transactions.

A review of the risk management practices in the airline industry is done. To this end, a sample of 15 airlines' (8 major international and 7 low cost) risk exposures and usage of derivatives to mitigate these risk exposures specifically volatility in the jet fuel price were examined. While most of the airlines have policies in place to pursue an aggressive hedging strategy, the actual percentage hedged according to 2005 data is much lower. The highest percentage of jet fuel hedged for 2005 is 85% by Southwest airlines, which also had the biggest hedge benefit.

## **DEDICATION**

I dedicate this paper to my husband and son and our parents for their incessant support and patience in the past year.

## **ACKNOWLEDGEMENTS**

I wish to thank Dr. Geoffrey Poitras and Dr. Chris Veld for their time and feedback in guiding me through with the project. I also wish to thank all the professors for sharing their wisdom and knowledge in the past year.

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# 1 INTRODUCTION

The use of financial derivatives by financial institutions, fund managers and corporate treasurers has increased considerably since their inception about 30 years ago. These financial instruments are forwards, futures, swaps and options. The insights provided by Black-Scholes (1973) and Merton (1973) were pivotal to the finance industry embracing these alternative financial products. Black-Scholes and Merton introduced the basic idea that a risk free position can be created if an option is hedged with a unit of the underlying asset.

Some firms use derivative instruments to manage their risk exposure and thereby reduce the volatility of a firm's cash flows and firm value, while other firms use derivatives to speculate and to take advantage of arbitrage opportunities. Derivative instruments are used for risk management by non-financial firms around the world, primarily to manage interest rate risk and foreign exchange risk. Commodity price derivatives are also used, but are specific to certain industries. The ultimate objective of a firm who employs derivatives as a part of their risk management strategy is to maximize the value of the firm.

While derivative instruments are effective in managing the various risks a firm is exposed to, as long as they are used correctly, their misuse could lead to catastrophic financial losses. Examples of extreme losses include: (1) Metallgesellschaft (1993) which incurred a loss of \$1,800 million from oil futures; (2) Orange County (1994) which incurred a loss of \$1,700 million from interest rate derivatives; (3) Barings Bank (1995) which incurred a loss of \$1,400 million from the stock index, bond futures, and options; and (4) Sumitomo Corporation (1996) which incurred a loss of \$3,500 million as a results of misused copper futures.

Most non-financial firms transact derivative instruments over-the-counter (OTC) while a small proportion also trade in the exchange. According to statistics reported by the Bank for International Settlements (BIS), in June 2001 total outstanding notional amounts of OTC derivative instruments stood at nearly a \$100 trillion. While 80% of this total amount is attributable to financial entities (i.e. banks and insurance companies) 20% is attributable to the use of derivative products by non-financial firms. The United States of America (USA) and the United Kingdom (UK) are the highest users of derivatives at 22.1% and 20.3% respectively (BIS, 2001)

There has been much discussion and research done over the last few years regarding the risk effectiveness of these alternative financial products. While there seems to be both qualitative and quantitative evidence in support of the fact that firms are using derivatives for financial risk management, there is also evidence of increased financial risk because of the misuse of derivative products. While using derivative instruments are only one of many tools corporations employ to manage firm wide risk, they serve as a good proxy to assess corporate risk management.

This paper focuses on the use of derivative instruments by non-financial corporations. The remainder of the paper is organized as follows: (1) Section 2 provides a brief overview of the theories behind why value maximizing non-financial firms engage in hedging practices and academic evidence which pertains to the effectiveness (or lack there of) of derivative instruments in reducing the financial risk of non-financial corporations. Although it is known that non-financial entities use a variety of derivative instruments to manage their risk, the paper focuses on recent research to determine to what extent derivative instruments are used; (2) Section 3 looks at the airline industry as a whole and a sample of 15 airlines to ascertain the risk management practices and the extent and effectiveness of derivative instruments used and (3) Section 4 provides a conclusion.

## **2 LITERATURE REVIEW**

### **2.1 Relationship between derivatives use and firm value**

There are two opposing theories that try to explain the reasons behind why firms use derivatives. The first theory states that firms use derivatives to take on more risk as it is in the interest of the equity owners. The equity holders of a leveraged firm can be viewed as holders of a European call option with the underlying asset being the value of the firm. The exercise price will be the face value of the debt and the maturity date of the debt is the date the option can be exercised. The equity holders of the firm have the right to buy the firm from the debt holders at the strike price at the maturity date. The value of the call option is a function of the cash flow variance of the underlying asset - the value of the firm. Jensen and Meckling (1976) and Myers (1977) argue that equity holders of leveraged firms will be induced to take on more risk to increase the value of the call option and thus transfer wealth from the debt holders to the equity holders. Due to poor data availability for non-financial firms, there has been limited empirical research done to test this hypothesis.

An alternative theory is based on the notion that corporations use derivatives to reduce their risk. The rationale for non-financial value maximizing firms to engage in hedging activities for risk management are based on theories of capital market imperfections such as underinvestment problems (Myers, 1977), taxes (Smith and Stulz, 1985), financial distress (Smith and Stulz, 1985), contracting costs (Mayers and Smith, 1987) and management incentives (Stulz, 1984). The theory of corporations using derivatives to reduce their risk is extended to incorporate a speculative component inherent in risk management activities. (Poitras, 2002). A hedging position for instance can lose or make money and therefore has a speculative component. Poitras

reasons that in addition to striving to minimize an identified risk exposure, an optimal risk management strategy also has a profit maximizing objective.

## **2.2 Theories of Capital Market Imperfections and Hedging Activities**

### **2.2.1 Underinvestment problems**

The theory presented by Myers (1977) is based on the argument that most firms are valued as having future productive value by the market and this value incorporates the expectations of continued future investments. I.e. the value of the firm can be viewed as the present value of investment options available in the future and this value will determine if the options are to be exercised. Myers states that in certain low states of nature, firms with risky debt will pursue suboptimal strategies and will turn down certain investment opportunities that could have potentially increased the firm's value.

### **2.2.2 Taxes**

Smith and Stulz (1985) develop a theory of value maximizing corporations, which argues that firms who participate in some kind of financial hedging could effectively decrease the firm's tax liability. They further argue that the corporate tax liability is a convex function of the pre-tax firm value while the after-tax value is a concave function of its pre-tax value (if the effective marginal tax rate is an increasing function of the pre-tax value). The tax provisions in effect yield a convex statutory tax function. The higher the convexity of the tax function, the greater the tax liability. If hedging reduces the variability of the pre-tax value of the firm, which in turn reduces the tax liability, the reduction in the tax liability will increase the after-tax value of the firm. The argument only holds if the transaction costs from hedging do not exceed the hedging benefits. Firms with excessive profits and/or investment tax credits, whose resulting tax liability function is extremely convex, will increase their hedging in order to reduce the tax liability. This would result in the increase of the after-tax value of the firm.

### **2.2.3 Cost of Financial distress**

Smith and Stulz (1985) also determine that hedging aids firms in reducing the expected cost of financial distress associated with enforcing bond covenants by the shareholders. They argue that since the bond covenants are enforced by accounting ratios, managing the accounting earnings volatility through hedging will reduce the likelihood of financial distress and avoid subsequent bond covenants from being binding. Nance, Smith and Smithson (1993) further contribute to this theory by arguing that the higher the probability of a firm experiencing financial distress, the greater the reduction in the cost of financial distress. The higher the cost incurred in the event of financial distress, the greater the reduction in the cost of financial distress. They also claim that the likelihood of a firm experiencing financial distress is positively related to the fixed claims of the firm and therefore conclude that the importance of hedging increases as the fixed cost component of the firm increase.

### **2.2.4 Management Incentives**

Under assumptions of perfect markets and continuous trading, Stulz (1984) specifically analyses hedging foreign exchange exposure with forward foreign currency contracts and provides the following reasoning for value maximizing firms pursuing active hedging strategies:

(1) It is the managers of the firm that determine a firm's hedging policies. The shareholders determine the managerial compensation contracts that will maximize shareholder wealth and thus the firm value. Typically managerial compensation is tied to the firm's shares. While shareholders' diversify by holding investments outside the firm, managers of the firm have a sizeable portion of their own investment tied to the equity of the firm. Given this firm share based compensation contract, managers will be influenced to pursue hedging policies (assuming that the costs of hedging is low) that will maximize their own expected lifetime utility. Managers acting in their own utility maximizing efforts will pursue policies that will consequently decrease the variability of firm value.

## **2.3 Results of Empirical Evidence to Test the Theories Based on Capital Market Imperfections**

Several studies have been conducted to validate the relationship between the theories based on capital market imperfections and the firm's decision to hedge. Limited empirical evidence exists to support this claim. The results of some of these empirical studies are provided below.

Based on 169 responses received to a questionnaire sent to CEOs of Fortune 500-S&P 400 companies, Nance, Smith and Smithson (1993) conclude no significant relationship.

Mian's (1996) paper examines this relationship based on 3022 firms in the USA. The data for the empirical work was obtained from notes disclosed on derivatives in the 1992 annual reports of these firms. Mian concludes that there is limited empirical evidence consistent with the theories mentioned above. His findings indicate that there is no empirical evidence based on his data to support the financial distress cost model. However, there seems to be weak evidence to support the tax incentives.

Howton and Perfect (1998) in their sample of Fortune 500/S&P 500 firms and sample of random firms that don't belong to the Fortune 500 have findings that support and oppose the existing theories. While the sample of Fortune 500 firms produced results consistent with the theories mentioned above, the sample of the smaller firms had no relationship.

## **2.4 Characteristics of non-financial firms most likely to use derivative instruments**

Géczy, Menton, and Schrand (1997) examine the use of currency derivatives to test theories of hedging behaviour. The sample for their study consisted of 372 of the fortune 500 non-financial entities as of 1990. These firms have foreign currency exposure by way of foreign operations, foreign currency denominated debt and/or a high proportion of their competitors in



the respective industry are foreign. They determine that the firms most likely to use currency derivatives are firms with greater growth opportunities and tighter financial constraints. Géczy, Menton, and Schrand (1997) also examine currency derivatives use for naturally hedged firms. These are firms with both foreign operations and foreign currency denominated debt. They find that the use of currency derivatives for naturally hedged firms is not determined by research and development and short term liquidity. However the results of the sample examined shows that R&D and short term liquidity are strong determinants of the use of currency derivatives by firms with foreign operations but with no foreign currency denominated debt. The study further substantiates that currency derivatives are also being used more by firms with extensive foreign exchange exposure and economies of scale in hedging activities. Firms with more foreign pretax income and sales and foreign currency denominated debt are also more likely to use currency derivatives as the benefits of hedging is greater and cost smaller for firms that have a large foreign exposure. The final conclusion made in the paper is that larger firms and firms that are large users of other types of derivatives such as interest rate and commodity based are more likely to use currency instruments.

Froot, Scharfstein and Stein (1993) find that firms that pay higher dividends are also more likely to hedge. The reason being that high dividend paying firms need to hedge more to ensure they have sufficient cash flow to ensure they can pay the dividends and invest. There is an opposing line of reasoning in that since high dividend paying firms have decided to distribute cash in the form of dividends instead of investing the cash, the firm is unlikely to be liquidity constrained. This reasoning is consistent with Fazzari, Hubbard, and Petersen (1988) who established that cash flow for dividends had the least sensitivity to hedging.

El-Masry (2006) examines a sample of 173 responses received to a questionnaire sent to the corporate treasurers. The sample consists of non-financial firms in the United Kingdom between March and May 2001. The statistics obtained when the sample is divided into large,

medium and small sized firms are as follows: 56.25% of the large firms confirm using derivatives, while the respective percentages for the medium and small sized firm are 33% and 10%. The positive relationship between firm size and percentage usage is consistent with studies of firms done in other countries such as in the US by Bodnar *et al*, (1995, 1996, 1998), New Zealand by Berkman *et al*, (1997), Sweden by Alkeback and Hagelin (1999), Belgium by Ceuster *et al* (2000) and Canada by Jalilvand *et al* (2000). The results are consistent with the reasoning that large firms are better able to take advantage of economies of scale and also they are better able bear the fixed cost component of derivatives use compared to the smaller firms. The derivative users of the sample are also broken down by industry sector and the higher users are communications (80%), automobiles (80%), electrical firms (75%), transport (70%) and chemical (65%). Retailers are the lowest users at 30%. Derivative usage is highest amongst public companies (56.25%), lowest amongst private companies (6.25%) while the other companies use derivatives 37.5%. The survey results also support that derivative usage is higher amongst multinational firms.

Froot, Scharfstein and Stein (1993) build a model based on the imperfect market theory to say that hedging can be justified, if imperfect markets exist and as a result it becomes expensive to borrow funds externally than from internally. The paper illustrates how a firm's optimal hedging strategy in terms of how much to hedge (fully or partially) and what instruments to hedge with depends on the nature of financing and investing opportunities available and specific to the firm. When external funding becomes more costly to a firm Froot, Scharfstein and Stein conclude that the following implications apply to the optimal hedging strategy: (1.) a firm should not usually fully hedge its firm value from all risks specially if futures are used to hedge. When futures are used to hedge for a multiple number of years, an increase in the price in the first few years, will lead to a large marginal call on the aggregate futures positions covering the multiple years. This would lead to fluctuations in the margin and consequently cause fluctuations

in the cash available for investment. If the firm was to hedge using forwards instead, even though this would resolve the problem of fluctuations in the marginal call, it introduces a new element of risk – credit risk, because settlement is at maturity. (2.) The higher the correlation between the firm's cash flow and future investment opportunities, the lesser the hedging required by the firm. (3.) Firms whose cash flows are closely related to their collateral and as a result who will incur higher external borrowing costs, will hedge more. (4.) The optimal hedging strategy for multinational firms will depend specifically on exchange rate risks on its investment cash flows – expenses and revenues. (5.) Options are a better instrument to hedge against non-linear exposures as it helps manage investment and financing activities more effectively compared to using futures and forwards. Bartram (2006) draws the same conclusion. (6.) When the model is used at an intertemporal setting using futures in the hedging strategy, will cause a trade-off between insulating against the present value of all the cash flows and insulating the level of cash at each point in time. (7.) The model also implies that a firm's optimal hedging strategy will also depend on the nature of the competition in the product market and the hedging strategies pursued by the firm's competitors. The model also rationalizes why firms with a high R&D component are more likely to hedge. These firms have a high proportion of intangible assets that are not acceptable collateral when borrowing externally. In addition there exists an information asymmetry between the firm and the outside world on the new projects planned for the future. The potential of R&D projects are likely to result in risks that are not easily hedgeable with risks such as interest rate risk.

## **2.5 An assessment of the extent of derivative usage and it's effectiveness**

Several studies have been done in the recent past worldwide to analyse the extent to which derivative instruments are being employed by non-financial entities, and how effective the instruments being used are in risk management. Since only a proportion of all non-financial firms

use derivatives, are these firms at a clear advantage in managing their risk compared to their counterparts that don't?

Howton and Perfect (1998) conduct a study of 2 samples. The first sample consists of 451 Fortune 500/S&P 500 (FSP) firms and the second sample consists of 461 random firms that don't belong to the Fortune 500/S&P 500 category. (Smaller firms). Derivatives use is determined with information provided in the financial statements. They find that 61% of the FSP firms use derivatives while 36% of the firms from the random samples use derivatives. Both samples are similar in that swaps are the most often used interest rate contracts (over 90%) and forwards and futures are the most commonly used currency contracts (over 80%).

Hentschel and Kothari (2001) conduct an empirical study to determine the extent to which firms use derivatives to reduce overall stock return volatility. They define hedging as risk management that reduces return volatility and speculation as risk management that increases return volatility. Sample data are obtained from 425 (325 non-financial, 100 financial) large US corporations. The sample in their research consists of a sample of the 200 largest industrial non-financial corporations, the 25 largest retailers, 25 largest transportation companies, 25 largest utilities, 50 largest diversified service companies, 50 largest diversified financial firms excluding insurance companies and the 50 largest commercial banks. These corporations were selected based on the ranking of highest sales in 1987 and published in the April 25, 1988 issue of the Fortune magazine. The data is obtained from the 1992, 1993 annual financial statements' notes pertaining to derivative positions. The findings were based on the notes related to derivatives contained in the annual financial statements of these companies. Their findings contradict the hypothesis that firms use derivatives to speculate on large exposures. They also find that there is no noticeable reduction in the firms' overall risk exposures as a result of using derivatives to hedge. They conclude however that firms use derivatives to reduce the risk exposure associated with short term contracts.

Bartram (2006) investigates the choice of derivative instruments with data gathered from the Bank for International Settlements (BIS) through its triennial survey, questionnaires and polls of CFOs worldwide and derivatives information disclosed in the annual reports. They determine that non-financial firms are responsible for approximately 15% of the worldwide derivative turnover. Amongst all non-financial firms, approximately 50%-60% are reported to use derivatives. Bartram (2006) concludes that overall non-financial firms use derivatives to reduce their risk exposure and they mainly use financial options to hedge against foreign exchange and interest rate risk. Approximately 15-25% of the firms worldwide use options. Furthermore, Bartram (2006) concludes the reasons behind the choice of options as a risk management tool are, the flexibility offered by the options as hedging instruments can be used against linear and non-linear exposures, the accounting treatment of the various derivative products, the level of liquidity offered and agency related incentives enabling them to present bets on both directions.

The results obtained from the survey conducted by El-Masry (2006), state that derivatives usage rate for the users and non-users were 67% and 33% respectively. The reasons for firms not to use derivatives according to the survey responses are insignificant risk exposures, concerns about the disclosure requirements mandated by FASB rules, concerns over the perceptions held by investors, regulators, analysts or the public and the cost of implementing and maintaining a derivatives strategy exceeding the benefits derived from it, exposures are managed through other tools such as diversification and risk transfer and the lack of knowledge about derivatives and the difficulty in pricing and valuing them. The results also confirm that derivatives are mainly used to hedge against foreign exchange rate risk followed by interest rate risk. The study confirms that firms hedge mainly to manage their cash flow volatility followed by firm value, managing accounting earning volatility and managing balance sheet accounts and ratios.

Sheedy (2006) conducts a survey to assess if and how risk management practices vary between Hong Kong and Singapore and how risk management practices in both these countries

compare to the US. The survey conducted is similar to the 1998 Wharton study to improve the comparability between the results. Surveys in Singapore were done in the period of August – October 1999. Hong Kong surveys were conducted in April – May 2000. The study finds almost similar results between Hong Kong and Singapore except for some government policies. Sheedy (2006) concludes that the proportion of firms using derivatives in Hong Kong and Singapore are much higher especially in the middle and small firms categories compared to similar US firms. The intensity in which these firms use derivatives is also much higher than in the US. The highest uses of derivatives is to manage foreign exchange risk and Sheedy notes that this could be due to the significance of imports and exports and the extensive use of offshore borrowing. Interest rate derivatives are used to a lesser extent in these two countries compared to the US. Derivatives are also used to speculate on a larger scale than in the US. Hong Kong and Singapore are not as heavily regulated with respect to disclosure and valuing requirements of derivatives as in the US exposing the firms that use derivatives to a higher probability of large losses in the event derivatives were misused.

In conclusion, this section has reviewed the literature on the use of derivative instruments by non-financial firms, by focusing on the extent and the effectiveness of these instruments for financial risk management and firm value maximization. The majority of the literature cited in this paper concludes that most non-financial firms use derivative instruments to hedge against volatile cash flows and firm value. This risk management use of the derivative instruments is contrasted by speculative derivative transactions, which are disallowed by most non financial firms. Numerous theories have been presented as to why firms use derivatives, but the results of the empirical studies done so far to validate these theories are mixed.

With respect to the extent of derivative instrument usage, Bartram (2006) concludes based on data obtained from the BIS survey responses that the non-financial firms account for 15% of the worldwide derivative turnover, and 50%-60% of the non-financial firms use

derivatives. The use of derivatives is 61% for the Fortune 500/S&P 500 while 36% of the smaller firms. Based on industry sector the highest users of derivatives are the communications, automobiles, electrical firms, transport and chemical sectors. Derivative usage is highest amongst public companies and lowest amongst private companies.

Results from Hentschel and Kothari (2001) study concluded that the effectiveness of derivative instruments in reducing the overall risk exposure of the firm was not significant. However they conclude that firms effectively use derivative instruments to reduce the risk exposures associated with short term contracts.

The paper also provides evidence on firm characteristics that are most likely to hedge. These characteristics are large firms, firms that are large users of derivative instruments (economies of scale benefits), firms with greater growth opportunities and tighter financial constraint (tend to be users of currency derivatives), firms that pay higher dividends, R&D and short term liquidity (for firms with foreign operations).

A point worth noting here is that due to lack of information availability in the quality and amount of derivative transactions, a good proportion of the studies cited in this paper base their conclusions on data gathered from surveys sent to selective or random firms. There is potential for these conclusions to be biased as a result. With the ever increasing regulatory requirements emphasizing the need to disclose the nature of information to be made available public on derivatives usage there has been and will continue to be an improvement in the data publicly available in the recent years and in the years to come.

### **3 DATA AND METHODOLOGY**

For the purpose of this project, I have narrowed down the study to a specific industry – the airline industry. The paper analyzes the effectiveness of financial derivatives in managing the jet fuel costs. In particular the magnitude of the hedge benefit/loss and the effect of the hedge benefit/loss on the profit margin of the company are analyzed. In order to assess the effectiveness of financial derivatives, data is obtained from the 2005 financial statements of fifteen corporations in the airline industry. Specifically information was extracted from the Management Discussion and Analysis (MD&A) and the footnotes sections of the financial statements. The corporations include 8 major international airlines and 7 low cost regional airlines. When selecting the 8 major international airlines I attempted to select international airlines that represented all continents but due to lack of publicly available financial information, airlines from all continents could not be included in the sample. The Department of Transportation (DOT) defines international airlines as companies with annual revenue of \$1 billion dollars or more. Although low cost regional airlines operate in most countries around the world, the sample primarily consists of the US and European airlines as financial statements were available only for these airlines. It should be noted that in the risk overview presented for all airlines below, fuel expense is expressed as a percentage of total operating expenses net of any hedge benefits or losses.

The study has three objectives: (1) the first objective is to look at the primary risks facing the airlines and the ensuing risk management practices in the airline industry; (2) the second objective is to determine if there are any differences in hedging policies implemented by the



major international airlines vs. the low cost airlines; (3) the third objective is to look at the effectiveness of jet fuel hedging in increasing the operating margin.

**Table 1 Sample Airlines List**

<b>Airline/Corporation</b>	<b>Type</b>	<b>Annual Report Fiscal Year End</b>
Air Canada ACE Aviation Holdings Inc	Major International Airline	December 31, 2005
American Airlines AMR Corporation	Major International Airline	December 31, 2005
British Airways British Airways Plc	Major International Airline	March 31, 2006
Hawaiian Airlines Hawaiian Holdings Inc	Major International Airline	December 31, 2005
Singapore Airlines Temasek Holdings (Private) Limited	Major International Airline	March 31, 2006
THAI Thai Airways International Public Company Limited	Major International Airline	September 30, 2005
JAL Japan Airlines Corporation	Major International Airline	March 31, 2005
Qantas Qantas Group	Major International Airline	June 30, 2005
EasyJet EasyJet plc	Low cost airline	September 30, 2005
AirTran Airways AirTran Holdings	Low cost airline	December 31, 2005
Alaska Airlines Alaska Air Group Inc	Low cost airline	December 31, 2005
Ryanair	Low cost airline	March 31, 2005
SkyEurope SkyEurope Holding AG	Low cost airline	September 30, 2005
Southwest Southwest Airlines Company	Low cost airline	December 31, 2005
WestJet WestJet Airlines Ltd	Low cost airline	December 31, 2005

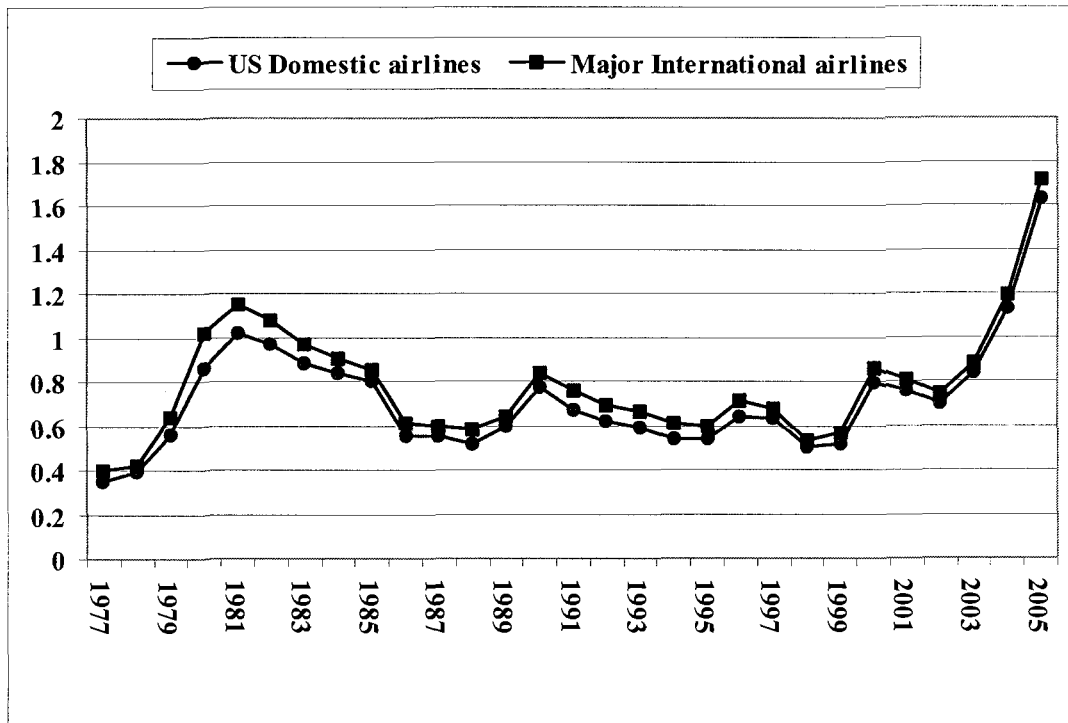
### **3.1 Overview of the Airline Industry**

The airline industry is characterized by low profit margins, high labour costs and capital costs. According to the Air Transport Association (ATA), the last time the US airline industry

posted a profit was in the year 2000 where the net cumulative profit was \$2.5 billion, which translates to 1.9% profit margin. Post September 9/11 has been particularly challenging for the airline industry as most airlines posted a loss. In the US airline industry alone the 2000 to 2005 cumulative net losses for the industry was \$35 billion excluding extraordinary restructuring charges and gains. The airline industry has constantly struggled with turning a profit due to poor cost management and external risk factors such as the threat of terrorist attacks, economical instability, political instability and natural disasters in various parts of the globe that affect tourism. According to the Airline Monitor, over the last 35 years, the net profit margin for the world's airlines was 0.3%. In 2005 the two main factors that contributed towards driving profits down to a large extent were fare and fuel prices. Despite these setbacks there has been an increase in the number of passengers who choose to travel by air in the recent past. But revenue growth is severely hampered due to intense price competition and fare discounting offered by the low-cost competitors.

The air transportation service is also capital intensive and the airline industry has been able to generate only half of the required cash flows internally. Their poor profit margins have made it difficult to procure financing. The airline's biggest expenses are labour costs, aircraft fuel costs, aircraft ownership costs and facilities rents. The two biggest operating expense items are salaries, wages and benefits followed by jet fuel costs, which have recently seen significant price hikes and volatility. The two expenses taken together account for approximately half of the total operating expenses. The hike in jet fuel expense is due to the price increase of the commodity as well as an increase in consumption due to an increase in the demand. While the major international carriers have been somewhat successful in passing on the increased fuel prices by way of increased fares the same cannot be said for the low cost airlines. The total annual fuel cost and consumption for the US and international airlines is provided below. From 2003 to 2005 fuel costs have increased by approximately 95% for the US and International airlines.

Figure 1 Airline Fuel Cost Per Gallon (US\$)



Source: Bureau of Transportation Statistics, 2006

Although airlines have made use of hedging contracts in the past, given the present situation, maximizing the benefits of utilizing financial derivative instruments in particular to hedge against jet fuel prices should be seen as a clear cost advantage. In 2005 the average jet fuel price was \$72.32 per barrel and only a handful of the US airlines have hedged their 2006 forecasted fuel consumption between \$36-high\$60 per barrel.

While almost all major airlines have an integrated risk management system in place that aims to identify and mitigate the range of strategic, operational, financial and legal risks, this paper focuses on the role of financial derivatives in the management of financial risk.

Having access to information that aids in the assessment of an entities overall risk exposure and the effective management of it has been a long standing challenge. Recently there has been an explosion of growth and innovation experienced with the financial derivatives

products. However the measurement and disclosure of these products for financial reporting purposes hasn't been able to keep pace. There are increasingly more disclosure requirements mandated from firms engaging in derivatives and hedging transactions. These requirements are governed by the Financial Accounting Standards Board (SFAS) in the US with standards SFAS 133, Accounting for Derivative Instruments and Hedging Activities, and SFAS 138, Accounting for Certain Derivative Instruments and Certain Hedging Activities. Internationally, the pertinent standards are governed by the International Accounting Standards (IAS) through IAS 39, Financial Instruments: Recognition and Measurement. The entities now disclose relatively more useful information to the end user in their filed annual financial reports as compared to what was previously reported. While the existing accounting standards by no means provide a complete picture of the effect of the derivatives and hedging transactions on a firm's risk management and overall creation or destruction of value to the firm, they are an improvement from the past and there is potential for the quality of information to be improved. A high degree of variation still exists in the type and amount of information being provided by the various entities to the public on its derivative transactions.

Airlines are subject to three main types of financial risks – jet fuel price changes, foreign currency exchange fluctuations and changes in interest rates. Recently jet fuel prices have experienced unprecedented price hikes. This is due to an increase in demand from emerging economies such as China and India. There has been a reduction in supply due to significant disruptions to oil production and the refinery process.

Below is a discussion of how each of the airlines included in the sample manage their exposure to these risks and the extent to which financial derivatives are used to mitigate the risks. When evaluating the gains realized from hedge contracts to mitigate exposure to fuel price volatility, I have only considered the gains or losses settled in the current period which have been

factored into fuel expense and have not included the unrealized hedges that settle in the future periods. Airlines are also exposed to credit risk when they enter into financial derivative agreements with a third party to the extent that the third party does not honour its obligations. Most of the airlines don't consider this a major risk factor as they manage this risk by limiting the aggregate amount of the exposure to one counterparty. In addition the credit risk management policies in place also require that the counterparties be at or above a certain investment grade or credit rating.

## **3.2 Discussion of Each Airline's Risk Management Practices**

### **3.2.1 Air Canada - ACE Aviation Holdings Inc**

ACE Aviation Holdings Inc. is the parent holding company mainly offering transportation and other services through principal operating companies and/or partnerships with Air Canada, AC Cargo Limited Partnership (Air Canada Cargo), ACGHS Limited Partnership (ACGHS), Touram Limited Partnership (Air Canada Vacations), Jazz Air LP (Jazz or Jazz LP), ACTS Limited Partnership (ACTS) and Aeroplan Limited Partnership (Aeroplan or Aeroplan LP).

Air Canada is the largest full service provider in the Canadian domestic and international – North America, Europe, Pacific, Caribbean, Central America and South America markets. In 2005, it transported passengers to 170 destinations on the 5 continents through direct flights and through commercial agreements entered into with some regional airlines. On September 30, 2004, Air Canada and some of its subsidiaries emerged from creditor protection.

The corporation utilizes financial derivatives to manage its exposure to jet fuel price changes, interest rate and foreign exchange rate changes. To manage its interest rate risk inherent in the US and Canadian floating rate debt and investment, the company enters into forward interest rate agreements with maturities of no more than 18 months. Foreign exchange risk

volatility is managed by entering into foreign exchange forward contracts and currency swaps. As of the end of the fiscal year, the company had entered into foreign currency forward contracts and option agreements worth US\$521 on its 2006 purchases. Currency swaps with third parties are utilized on Canadian Regional Jet operating leases until the termination of the leases, which is between 2007-2011.

In the 2005 fiscal year, fuel costs for ACE comprised of 23% of the total operating costs. In September 2005, the company adopted and implemented a systematic fuel hedging strategy to increase its hedge position to 50% of its anticipated consumption in the ensuing 24 month period. Consequently, only hedge contracts entered into on or after October 31, 2005 were included in hedge accounting in the financial statements for the 2005 fiscal year. As a result, the statements show a \$3 million loss on the hedged contracts for 2005, which was added to fuel expense. At the end of the fiscal year, the corporation had collar option structures in place to hedge 21% and 13% of its estimated 2006 and 2007 fuel consumption respectively. Due to lack of liquidity in jet fuel based hedges, the company hedges with jet fuel based contracts only in the short term. In the medium and long terms, the company enters into crude oil and heating oil contracts, which are effective hedges for jet fuel. In 2005, 3% of the total fuel consumption was hedged.

The corporation's short term investments are held with major financial institutions, Canadian governments and major corporations and therefore do not expose the company to significant credit risk.

### **3.2.2 American Airlines - AMR Corporation**

American Airlines Inc (American) is the principal subsidiary of AMR Corporation. American's major service is scheduled passenger services followed by freight and mail services. American flies to 150 destinations throughout North America, Caribbean, Latin America, Europe and the Asia.

To manage its jet fuel cost, the company enters into jet fuel, crude oil and heating oil hedging contracts with maturities of no more than 24 months. In 2005 fuel expenses accounted for 27% of the total operating expenses. At the end of December 31, 2005, 2004 and 2003 the total fuel costs without the effect of hedging contracts would have been \$5,679 million, \$4,068 million and \$2,921 million respectively. The hedging agreements in place resulted in gains amounting to \$64 million (1.13%), \$99 million (2.43%) and \$149 million (5.10%) for the same respective years. As at the end of the reporting period, the company had hedged with option contracts including collars, 17% of its estimated 2006 fuel consumption.

Foreign exchange risk stems from the company having expenses and revenues in foreign currency denominations mainly, British pound, Euro, Canadian dollar, Japanese Yen and various Latin American currencies and fluctuations in the exchange rates affect the US dollar value of these expenses and revenues. As at the reporting date, the company did not have a hedging program in place to manage the foreign currency denominated ticket sale revenues. The company has entered into Japanese yen currency exchange agreements to effectively convert the yen based capital lease obligations to US denominated obligations.

Interest rate risk affects the company's short term investments and variable-rate debt instruments with the variable-rate debt instruments mainly being impacted by changes in the London Interbank Offered Rate (LIBOR). The company's variable rate debt obligations accounted for 32% of the total debt outstanding.

### **3.2.3 British Airways - British Airways Plc**

The company operates international and domestic scheduled and charter flights to 148 destinations in 75 countries carrying passengers, cargo and mail. Most of the transactions denominated in foreign currencies generate a surplus and therefore through matching payments and receipts of each currency, the company manages its foreign exchange exposure. Any surplus

of foreign currency is sold at spot or forward for US dollars or Sterling. One exception however is the US dollar denominated transactions where the expenses almost always exceed the receipts due to large item payments such as capital expenditure, operating lease and fuel purchases made in US dollars. Forward foreign exchange contracts are utilized to cover the short term future revenues and expenses to hedge against foreign currency fluctuations. The company utilizes its Yen purchase option payments due under lease arrangements and repayments of Yen denominated loans as a hedge to future Yen revenue being generated.

The company utilizes swap agreements to manage its interest rate exposure. Most of the swap agreements are built into the lease and loan agreements. As at the end of the 2005 fiscal year, after taking into account the effects of the swap agreements, the proportion of debt with a fixed interest rate arrangement was 53% while the proportion of floating rate based debt was 47%.

Fuel accounts for 21% of the total operating expense and is the second largest expense item. Fuel price risk is hedged using financial and commodity instruments such as swaps, futures, forwards, options and collars. For the fiscal year the company had a realized gain of £303 million through its hedging contracts, which reflect a 16% benefit. As at the end of the reporting period, the airline's fuel risk management programme had hedged proportions of its anticipated fuel consumption, with fuel contracts of maturities upto 24 months.

#### **3.2.4 Hawaiian Airlines - Hawaiian Holdings Inc**

Hawaiian Holdings Inc. is the holding company that solely owns all issued and outstanding shares of Hawaiian Airlines Inc. Hawaiian Airlines Inc. is domiciled in Hawaii. Hawaiian Airlines offers scheduled flights between Hawaii and nine major cities across the United States and also offers additional services to Australia, American Samoa and Tahiti and



also offers unscheduled charter services. On March 21, 2003 Hawaiian Airlines filed a voluntary petition for relief under Chapter 11 of the US Bankruptcy code.

In 2005, the company's jet fuel cost represented 25% of the total operating cost as opposed to 19.6% and 15.4% in 2004 and 2003 respectively. In order to hedge a portion of the expected jet fuel cost in the near future, Hawaiian enters into derivative contracts from time to time. In 2004 Hawaiian had entered into heating oil contracts, but in May 2005 closed its positions on these contracts due to its ineffectiveness and entered into jet fuel forward contracts. In 2005, Hawaiian incurred a loss of \$4.2 million on its hedged contracts while a gain of \$1.2 million was realized in 2004. As at the end of the 2005 fiscal year, Hawaiian had hedged 30% of its 2006 anticipated fuel consumption through forward jet fuel based contracts.

Since the jet fuel forward contracts are with one counterparty and Hawaiian has not posted any collateral to support the contract, credit risk exposure of Hawaiian is minimal and is limited to the positive fair value of its jet fuel contracts in the event the counterparty fails to fulfil its obligations to Hawaiian.

Hawaiian does not enter into interest rate swap agreements to mitigate its risk exposure on its variable rate debt due to the relatively small magnitude of the debt, which amounted to \$20.8 million compared to \$106 million in fixed rate debt.

### **3.2.5 JAL - Japan Airlines Corporation**

The corporation is a holding company composed of 288 subsidiaries and 96 affiliates and its principal services air transportation of passenger and cargo. In addition its subsidiaries provide airline related services such as in flight catering, aircraft and ground equipment maintenance etc, travel services such as developing and marketing travel packages, hotel and resort business, credit card and leasing business. JAL operates on 243 international passenger routes and 166 domestic

routes. The airline's international routes span across the Americas, Europe, Southeast Asia, Oceania, Guam, Korea and China.

Jet fuel is the second largest operating expense component for the company, which accounts for 14% of its total operating expenses. Swaps and options are used by the corporation in order to hedge against the exposures to fuel price volatility. Exposure to fluctuations in foreign currency comes from foreign currency denominated purchases mainly flight equipment and foreign accounts receivable and payable and this exposure is managed by consistently hedging with forward foreign exchange contracts, currency options and currency swaps. Interest rate risk and foreign exchange risk that stems from outstanding debt obligations is managed by using interest rate swaps and options and currency swaps.

### **3.2.6 Singapore Airlines - Temasek Holdings (Private) Limited**

Singapore Airlines Limited domiciled in Singapore, is a subsidiary of Temasek Holdings (Private) Limited. Singapore Airline's principal service is passenger and cargo transportation, they also provide services such as airport terminal services, engineering services, pilot training, air charters and tour wholesaling and related activities. The company's functional currency is Singapore Dollars (SGD).

Singapore Airline's fuel cost for the fiscal year amounted to SG\$3,535 million, before hedging. With a fuel hedging gain of SG\$167 million (4.72%), the net fuel cost amounted to \$3,368 million. Unlike American Airlines and Air Canada, Singapore Airline's highest operating expenditure is fuel cost, which constitutes 35% of the total operating expenses. The flights operate between Singapore and East Asia, Americas, Europe, South West Pacific, West Asia and Africa regions.

The company's financial risk management program consists of utilizing forward currency contracts, interest rate swap contracts, jet fuel options and jet fuel swap contracts to mitigate the three principal risks. Jet fuel options and swap contracts are used to hedge up to 24 months forward.

The company operates globally and thus generates operating revenues and expenses in a multitude of currencies. For the fiscal year, foreign currency denominated revenue consisted of 65% of total operating revenue while foreign currency denominated expenses consisted of 69% of total operating expenses exposing the company to considerable foreign currency risk. The largest foreign currencies the company is exposed to are USD, Euro, UK Sterling Pound, Swiss Franc, Australian Dollar, New Zealand Dollar, Japanese Yen, Indian Rupee, Hong Kong Dollar, Chinese Yuan, Korean Won and Malaysian Ringgit. Foreign currency exposure is judiciously managed by matching receipts and payments and any surplus converted to SGD or USD. The company also utilizes forward foreign currency contracts with settlement dates ranging from one month to twelve months, to hedge against future foreign exchange exposure.

Interest rate fluctuations on interest income generating assets and interest expense incurred on interest bearing liabilities impact the earnings of the company. Interest rate swaps are utilized to mitigate the fluctuations in the interest rate costs. Most of the interest bearing financial liabilities with maturities over one year have a fixed interest rate attached or they are hedged by matching with interest generating financial assets.

Counterparty risk managed by following a policy that limits the aggregate exposures of financial instruments held by any one party.

### **3.2.7 THAI - Thai Airways International Public Company Limited**

The company's main business unit THAI provides passenger, cargo and mail transportation in the domestic and international markets via scheduled and chartered flights. It's subsidiaries provide support services such as ground customer service, ground support equipment services, cargo and mail services, catering services, technical services etc. to it's main business of air transportation. In addition some of its subsidiaries provide marketing efforts and additional passenger services such as computerized reservation services for air travel and accommodation, hotel and restaurant business, fuel storage and refuelling services for various airlines etc. THAI flies to 13 domestic destinations and globally its routes extend to North America, Europe, Australia, New Zealand, and Regional routes such as China, Japan, Korea, India and the Middle East.

The company's fuel expenses amounts to over 30% of its total operating expenses. It is the highest operating expense item. The company's policy is to hedge up to a maximum of 50% of it's anticipated fuel consumption. In 2005, it hedged approximately 23% of its fuel consumption. Its revenue is denominated in over 40 currencies and while expenses are denominated in 4 currencies – US\$, Yen, Euro and Baht exposing it to earnings volatility. In addition, THAI has debt denominated in US\$, Yen and Baht. By adopting a natural hedge strategy THAI aims to match it's revenue to expense in each currency and also to balance the currency mix between it's debts and net cash flow from operations. During the fiscal year, to achieve the currency mix of its debt and net cash flows from operations, the company increased its borrowings in Euro and converted some of its existing US\$ denominated loans to Euro. The steps taken above effectively reduced the company's risk exposure and the debt currency mix (US\$:Euro:Yen:Baht) improved from 41:0:41:18 to 17:21:26:36.

THAI also enters into cross currency swap agreements to exchange US\$ denominated loans bearing floating rates of interest to Euro denominated loans bearing fixed rates of interest

increasing the proportion of fixed interest rate from 66% to 79%. THAI has been able to successfully reduce its foreign exchange and interest rate risk exposure by implementing effective risk management strategies.

### **3.2.8 Qantas - Qantas Group**

Qantas offers full service flights internationally to 83 destinations in 40 countries and domestically to 20 destinations in Australia. Qantas Group's fuel and oil price costs are the third highest of all expenses and accounts for 16.76% of the total operating expenses. Qantas group uses options and swaps on jet fuel and crude oil to mitigate its exposure to jet fuel price fluctuations. The company has an aggressive hedging policy in that it can hedge up to 100% of its estimated fuel costs out to 12 months and hedge 50% of its estimated fuel costs in the subsequent 12 months. During the 2005 fiscal year the fuel expenses net of hedging was \$1,931.7 million and the gains from hedging was \$403.5 million, which translates to a gain of 17% of the fuel cost.

In order to manage its foreign currency exposure, the company utilizes cross currency swaps. These instruments are used to convert long term foreign currency borrowings with maturities between 1 and 12 years, to currencies in which the company expects to have a surplus net cash flow sufficient to meet the principal and interest of the debt obligation under the swap. Forward foreign exchange contracts have been used extensively to hedge the foreign currency denominated borrowings with the currencies that are expected to generate a net cash inflow. Forward foreign exchange contracts and currency options are also used in the purchase and sale of property, plant and equipment when denominated in a foreign currency.

The company makes use of instruments such as interest rate swaps, forward rate agreements and options in order to manage its interest rate risk exposure. It uses these instruments to effectively balance its fixed and floating interest rate funding.

The company has strict policies in place to minimize the credit risk exposures due to default by a counterparty. The company also transacts with a large number of customers in several regions in order to minimize the effects of credit risk exposure. Credit risk associated with trade receivable counterparties net of any doubtful debt provisions as at the end of the 2005 fiscal year amounted to \$1,027.9 million.

### **3.2.9 AirTran Airways - AirTran Holdings**

AirTran Airways is a subsidiary of Air Tran Holdings and operates primarily in the eastern US and flies to over 40 destinations. The airline's main customer base is business travellers.

Aircraft fuel accounted for 32.9% of the total operating expense for the 2005 fiscal year. The company has hedged 31% and 15.4% of its estimated fuel consumption for the years 2006 and 2007 through the use of fixed-price and cap arrangements.

The company's exposure to credit risk is minimal as cash equivalents and short term investments are held with financial institutions with a high credit rating, for a shorter duration or lent to high quality debt securities. Credit risk that stems from accounts receivable is minimized due to the large number of customers.

### **3.2.10 Alaska Airlines - Alaska Air Group Inc**

Alaska Airlines is one of two wholly owned subsidiaries of the Alaska Air Group Inc. holding company. Alaska provides air transportation to passengers in the state of Alaska and between cities in USA, Canada and Mexico.

Fuel costs for the airline in the 2005 fiscal year comprised of 24% of the total operating expense. The gains resulted in about a 2% fuel cost reduction. The company enters into crude oil based derivative contracts such as call options, collar and fixed price swap agreements to mitigate

the volatility of the fuel prices. As at the end of the 2005 fiscal year, the company had hedged 47%, 20% and 7% of its anticipated fuel consumption for the years 2006, 2007 and 2008.

The airline's debt obligations and short term investments are vulnerable to changes in the interest rate. Although the variable rate portion of the debt obligation is somewhat offset by the variable rate short term investments, the airline has fixed the interest rate on some of these debt instruments in 2005. This has reduced the variable rate debt obligation portion to 44% from 65% in the previous year, of the total long term debt obligations.

### **3.2.11 EasyJet - EasyJet plc**

EasyJet's network spans 223 routes in 18 UK and European countries. Its fuel costs are the highest operating expense item and constitutes 23% of the total operating expense. During the 2005 fiscal year, the company used derivative instruments conservatively with respect to fluctuations in jet fuel prices and the US dollar exchange rate. The company did not use derivative instruments to mitigate interest rate risk or fluctuations in other currencies.

The company benefited from a £12.3 million (4.51%) hedge benefit from its hedging positions in fiscal 2005. The company utilizes a limited number of hedging instruments primarily zero-cost collars and forwards to hedge against fuel price fluctuations. The policy dictates hedging up to 80% of the forecasted fuel consumption up to 12 months in advance and to a lesser extent on forecasted fuel consumption up to 36 months in advance.

It manages its interest rate risk by implementing a policy in which the company aims to maintain a 50/50 balance between its fixed and floating rate leases. As at the end of the 2005 fiscal year, 59% of the operating lease payments were on fixed rates and 41% of the operating lease payments were on floating rates. All bank loans were based on floating rates, repricing

every three to six months. 60% of the loans outstanding were denominated in US dollars while 40% of the loans outstanding were denominated in Sterling.

With the exception of the US dollar, EasyJet manages its foreign currency exposure primarily by matching revenue to payments in each respective currency. Its revenues and expenses except for fuel, insurance, aircraft leases, interest expense and some maintenance costs are mainly denominated in the Sterling and European currencies. The company's use of hedging instruments to manage this risk is minimal. Due to high cost items such as capital lease payments, some mortgage payments and proceeds from the sale of aircrafts, the airline has a higher liability component denominated in the US dollar. The airline intends to use foreign exchange options in managing this risk in the near future.

Credit risk is not considered to be significant as the credit concentrations are limited mainly to cash, trade debtors and hedging relationships. Cash is held by major banks and rated money market funds while trade debtors are a few well established credit card acquirers. Hedging relationships are with counterparties who have an A credit rating or better.

### **3.2.12 Ryanair**

Ryanair is Europe's first low cost airline. Its network of routes includes 301 routes across 22 European countries. Ryanair's fuel and oil cost is the highest operating expense, which accounts for 26% of its total operating expenses. To manage the airline's risk exposure to fuel price, interest rate and foreign exchange risks, the company utilizes jet fuel derivatives, interest rate swaps and forward foreign exchange contracts. Ryanair's fuel risk management policy allows to hedge between 70% - 90% of its anticipated rolling annual fuel consumption. The policy has been fully utilized to prevent any large swings in the fuel prices in the short term. The company's hedging policies allow to hedge against fluctuations of future estimated cash flows up to a maximum of 12 years.



The airline is exposed to foreign exchange risk through its dealing in British Sterling and US dollars. The risk is mitigated primarily by matching British pound denominated receipts to payments and the surplus cash is used to fund forward foreign exchange contracts to hedge US dollar currency exposure. The US dollar denominated payments are generated from charges such as fuel, maintenance, insurance, capital expenditure costs.

Interest rate exposure is partly managed by fixing the interest rate on some of the debt instruments and by matching floating rate assets with floating rate liabilities. Interest rate swaps are used to effectively convert almost all (approx. 91%) long term debt with floating interest rate arrangements to fixed rate arrangements.

Credit risk is managed by limiting the amount and the duration of the exposure to one counterparty and selecting counterparties who are at or above a certain credit rating.

### **3.2.13 SkyEurope - SkyEurope Holding AG**

SkyEurope operates primarily in Central Europe and offers its services to 38 cities and 19 countries. SkyEurope is a fairly new entrant to the industry. It was established in September 2001. Approximately half of the company's expenses are denominated in US dollars. The expenses consist of fuel and aircraft costs. The company determined that it had a natural hedge against the lease and maintenance contracts denominated in Euro since a substantial amount of the revenue is generated in Euro, but it had no hedge against US denominated expenses of the same expenses. Since the company went public in 2005, it has received the necessary financial backing to establish a risk management strategy. Although the company did not have any hedges in place to mitigate the foreign risk exposure in 2005, it had implemented risk management policies in 2006 to hedge foreign exchange risk.

Fuel costs amount to approximately 30% of total operating expenses and it is the highest single expense item. Derivative instruments have not been used to hedge fuel purchases and therefore had 100% risk exposure to changes in the prices. But the company intends to hedge commodity prices in the near future.

The company had no significant exposures to interest rate risk as it had no interest bearing assets and its debt obligations were due by October 2005. Liquidity risk is of concern to the company as it is primarily funded by equity and does not have access to any credit facilities.

### **3.2.14 Southwest - Southwest Airlines Company**

Southwest services 61 cities in 31 states in the USA. The company's fuel expense amounted to 19.8% of the total operating expenses for 2005 (second largest expense item). It primarily uses crude oil, heating oil and unleaded gasoline based hedging contracts, which have proven to be highly effective. Southwest's fuel risk management strategy had 85% of its 2005 fuel consumption hedged, which resulted in a hedge benefit of \$892 million for the year. The company has hedged over 70% of its anticipated fuel consumption for 2006. In addition the company has hedged 60%, 35% and 30% of its 2007, 2008 and 2009 expected fuel consumption. The majority of the hedge contracts are option contracts. In addition company also uses collars and fixed price swap agreements.

The company utilizes interest rate swap agreements to reduce the volatility of net interest income. The hedging instruments are also intended to take advantage of times when the short term interest rates are substantially lower than the fixed interest rates stipulated on its long term debt obligations.

Credit risk is not deemed to be substantial to the company's risk profile as all counterparties are limited to the amount of exposure and are to be at or above a certain credit

rating and Southwest periodically reviews the counterparties. There are also provisions in the agreements with the counterparties that allows Southwest to terminate early or ask for additional security to be posted in the event the market risk exposure goes above a prespecified level or the credit rating of the counterparty goes below a certain prespecified level.

### **3.2.15 WestJet**

WestJet is Canada's low cost service provider and its routes extend to 23 destinations in Canada and 10 destinations to the US. Fuel cost is WestJet's largest operating expense and in 2005 accounted for 26.5% of the total operating expenses. As at the end of the 2005 fiscal year, the company realized a gain of \$155,000 (0.04%) through its hedging strategy. For the months of January, February and March 2006 the company had hedged 50%, 40% and 11% of its estimated fuel consumption.

WestJet's exposure to foreign exchange rate risk is due mainly to aircraft lease payments, jet fuel, airport operations in the US destinations and certain maintenance costs. In order to meet the short term payment obligations in US dollars, the company has entered into foreign exchange forward contracts and options to purchase US dollars to hedge a portion of its commitments.

To manage its interest rate exposure the company has entered into forward interest rate agreements on six future aircraft deliveries. The company has not utilized any derivative instruments to hedge the variable interest rate bearing portion of the debt.

The credit risk exposure is insignificant due to counterparties of financial instruments being selected based on their credit rating and policies in place restricting any one counterparty to be exposed to a large amount.

## 4 CONCLUSION

The three main risk factors affecting all airlines are volatility in jet fuel price, foreign exchange and interest rate risks. Jet fuel price volatility is the biggest factor affecting the airline's financial performance. All airlines in the sample with the exception of SkyEurope, which is a relatively new entrant to the airline industry, had risk management policies in place in the 2005 fiscal year to manage these primary financial risk components. SkyEurope was poised to implement a risk management strategy in the year 2006. While there was adequate information presented with respect to the usage of derivative instruments to manage foreign exchange and interest rate risk, there wasn't specific enough data presented in the statements to isolate the realized benefit from these derivative instruments for the fiscal year. Of the airlines that included details of their interest rate risk mitigation strategies, most of the airlines utilize interest rate swap agreements to strive to maintain at least 50% of its debt and lease obligations at fixed interest rates. Ryanair in particular has entered into interest rate swap agreements to convert approximately 91% of its long term debt obligations with a floating rate to fixed rate arrangements. Appendix A summarizes the types of derivative instruments being used to hedge against interest rate and foreign exchange risks.

Most of the airlines attempt to manage their foreign exchange risk exposure by matching receipts to payments in the respective foreign currency. Foreign exchange forward contracts are utilized mainly to protect against US currency fluctuations in the short term since large payment items such as capital expenditure, capital lease and fuel purchases are made in US dollars.

With respect to jet fuel price hedging, based on the available data, Southwest had the highest hedge against jet fuel price for fiscal 2005 at 85%, which also benefited from the largest realized hedge benefit of 39.93%.

Jet fuel expense was the highest or the second highest expense item in all the reviewed financial statements except Qantas airlines where the jet fuel expense was the third highest expense. With the exception of SkyEurope, all the airlines, used derivatives to hedge against fuel price fluctuations. Appendix B presents the extent to which airlines hedged their anticipated fuel consumption for the 2006 fiscal year. The percentages presented were reported at the end of the 2005 fiscal year. While the low cost airlines seem to hedge a higher proportion of their anticipated fuel consumption or have policies in place that permits hedging upto a higher proportion from the available data it appears that the major international airlines are taking a more conservative approach with the exception of Qantas and THAI. Qantas has the most aggressive hedging policy in place of all 15 airlines allowing upto a 100% of forecasted consumption to be hedged. There was no data provided on the proportion the company truly hedged. The effect of the fuel hedge benefit on the jet fuel expense for the airlines in the sample is presented in Appendix C and Figure 2. The biggest benefit from hedging was gained by Southwest which had 85% of its 2005 fuel consumption hedged. The impact of hedging fuel prices on the company's profit margin is evident in Figure 3. Since the tax treatment in the various countries can differ, in order to make a fair comparison the operating margin results of the airlines were compared against the hedge benefit. There is a positive correlation between the % of hedge benefit gained and the operating margin. SkyEurope, which had no hedging strategy in place in the 2005 fiscal year, had the largest negative operating margin. Ryanair obtained the biggest gain on the operating margin. There was no data available in the financial statements as to the extent to which fuel prices were hedged. Given that the fuel expense accounts on average for

approximately 25% of the total operating expense, effective hedging does impact the company's bottom line.

Appendix D summarizes the term to maturity data for the sample airlines. Thirteen of the fifteen airlines in the sample reported term to maturity on the future jet fuel hedged contracts. Over 50% of the airlines hedge their anticipated fuel consumption upto 24 months only. It is evident that these airlines are concerned with managing the short term market fuel price movements. Southwest has contracts extending upto 48 months, whereas Ryanair has hedging policies in place that allows them to hedge cash flow fluctuations out to 12 years indicating a risk management strategy that is of a longer time horizon.

The main challenge in doing a comparison of the effectiveness amongst the airlines is the lack of consistency in the information presented in the financial statements. While some airlines provided information on the % hedged for the 2005 fiscal year, other airlines only provided information on their hedging positions for the subsequent years and several airlines did not provide any data at all. With the changes being implemented by the accounting standards on the disclosure requirements a more comprehensive study could be done in the not so distant future.

## APPENDICES

### Appendix A: Derivative Instruments Used by Airlines for Risk Management

<b>Airline</b>	<b>Interest Rate Risk</b>	<b>Foreign Exchange Risk</b>
Air Canada	Interest Rate Forward	Foreign Exchange Forward Currency Swaps
American Airlines	Not Provided	Japanese Yen Currency exchange
British Airways	Interest Rate Swaps	Foreign Exchange Forward
Hawaiian Airlines	Not utilized	Not Provided
Japan Airlines	Interest Rate Swaps Options	Foreign Exchange Forward Currency Options Currency Swaps
Singapore Airlines	Interest Rate Swaps	Currency Forward
THAI	Cross Currency Swaps	Cross Currency Swaps
Qantas	Interest Rate Swaps Interest Rate Forward Options	Cross Currency Swaps Foreign Exchange Forward Currency Options
Air Tran	Not utilized	Not utilized
Alaska Airlines	Not Provided	Not Provided
EasyJet	Not utilized	Not utilized
Ryanair	Interest Rate Swaps	Foreign Exchange Forward
SkyEurope	Not utilized	Not utilized
Southwest	Interest Rate Swaps	Not utilized
WestJet	Interest Rate Forward	Foreign Exchange Forward Options

## Appendix B: Percentage of Forecasted Fuel Hedged for 2006

Airline	Hedged or Maximum Allowed
Air Canada	21%
American Airlines	17%
British Airways	Not Provided
Hawaiian Airlines	30%
Japan Airlines	Not Provided
Singapore Airlines	Not Provided
THAI	Can hedge upto 50%
Qantas	Can hedge upto 100%
Air Tran	31%
Alaska Airlines	47%
EasyJet	80%
Ryanair	Can hedge between 70% - 90%
SkyEurope	Not hedged
Southwest	70%
WestJet	Avg of 35% in the first Quarter



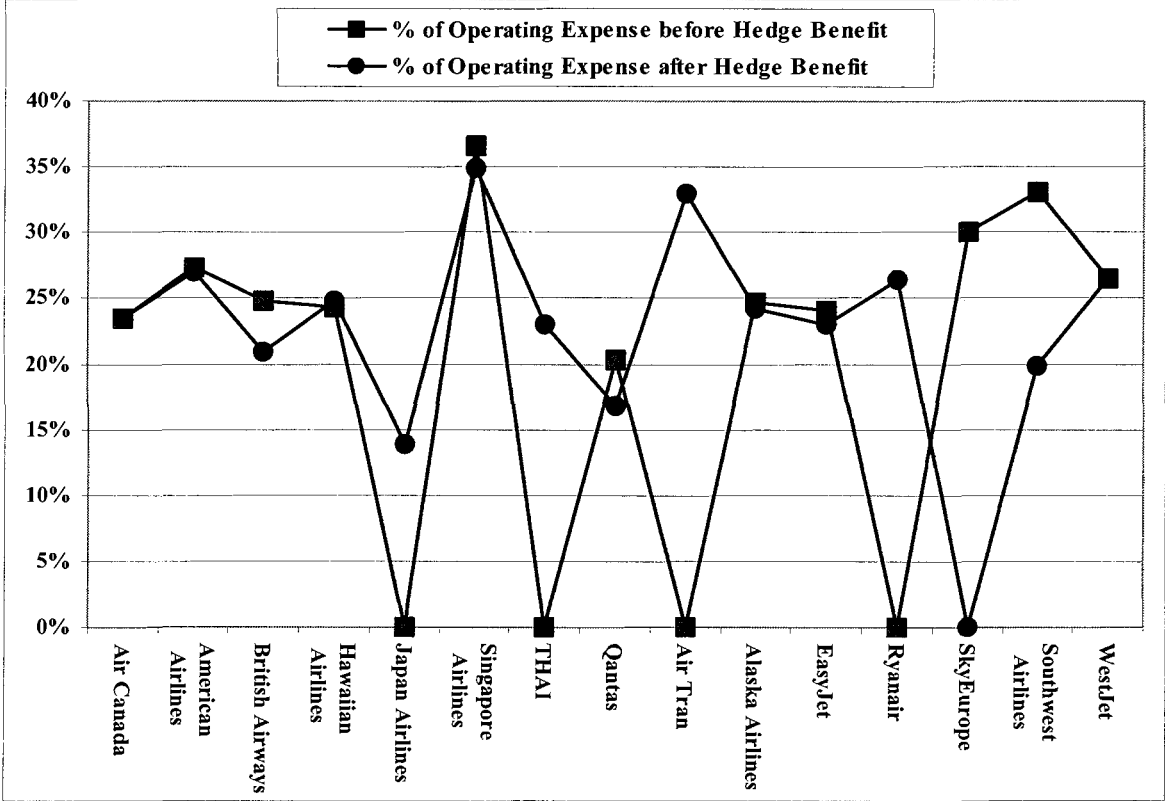
**Appendix C: Fuel Cost as a Percentage of Total Operating Expense**

<b>Airline</b>	<b>% Before Hedge Benefit</b>	<b>Realized Hedge Benefit/(Loss)</b>	<b>% After Hedge Benefit</b>
<b>For 2005 Fiscal Year</b>			
Air Canada	23.41%	(0.14%)	23.44%
American Airlines	27.30%	1.13%	26.99%
British Airways	24.78%	15.66%	20.90%
Hawaiian Airlines	24.28%	(2.13%)	24.80%
Japan Airlines	Not provided	Not provided	13.91%
Singapore Airlines	36.63%	4.72%	34.90%
THAI	Not provided	Not provided	23%
Qantas	20.26%	17.28%	16.76%
Air Tran	Not provided	Not provided	32.9%
Alaska Airlines	24.66%	1.74%	24.23%
EasyJet	24.06%	4.51%	22.98%
Ryanair	Not provided	Not provided	26.34%
SkyEurope	30%	Not provided	Not provided
Southwest	33.03%	39.93%	19.84%
WestJet	26.55%	0.04%	26.54%

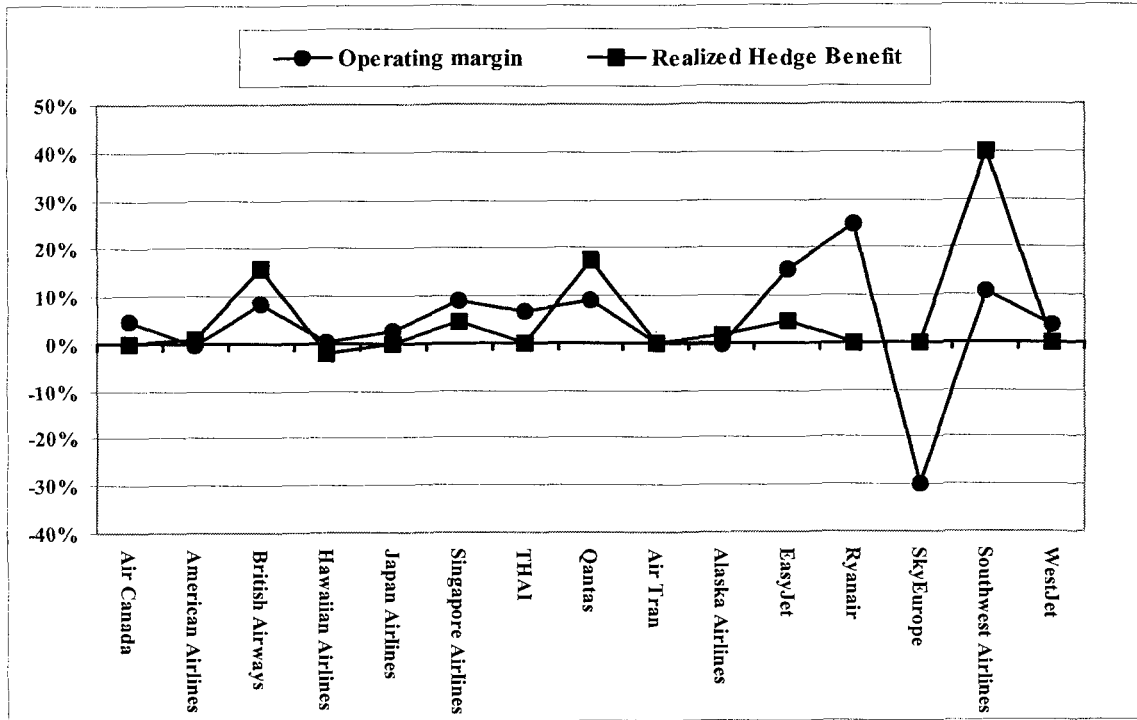
**Appendix D: Maximum Maturity of Jet Fuel Hedges**

<b>Airline</b>	<b>Term to Maturity</b>
Air Canada	24 months
American Airlines	24 months
British Airways	24 months
Hawaiian	12 months
Japan Airlines	Not Provided
Singapore Airlines	24 months
THAI	Not Provided
Qantas	24 months
AirTran Airways	24 months
Alaska Airlines	24 months
EasyJet	36 months
Ryanair	12 years*
SkyEurope	Not Provided
Southwest	48 months
WestJet	Short term and long term

**Figure 2 Effect of the Hedge Benefit/Loss on the Fuel Expense**



**Figure 3 Effect of Hedging Fuel Prices on the Operating Margin**



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