Low-cost and Traditional Airlines:

Ratio Analysis and Equity Valuation by the Residual Earnings Model

Master Thesis

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ABSTRACT

Fundamental analysts use basic fundamentals, which generally based on available public information, to determine a firm’s intrinsic value. Forecasting future performance is one of the key elements for doing fundamental analysis, and historical results are the foundation for future forecast.

The analysis of this study is conducted into two sections with case studies in the airline business. Firstly, financial ratios are analyzed to examine whether low-cost or traditional airlines better perform their operations during a certain period. The other section is undertaking fundamental analysis of the case studies to evaluate current stock prices of representative airlines based on the potential future forecast. The model using for this valuation is the Residual Earnings Model. Key assumptions of future forecasts are mainly based on their historical ratios. Other related factor such as the gross domestic product (GDP) is included in forecasting sales growth rate because it is one of the key influences in the airline business.

For ratio analysis, the findings suggest that low-cost airlines perform better operations based on five years average. However, the traditional airlines improve their performances significantly in the latest fiscal year. For equity valuation, the findings show that estimates of equity values of the airlines yield inconsistent results comparing to their stock prices. Possible reasons of the difference might be the improvement in key financial ratios of the airlines.

Key words: Fundamental analysis, ratio analysis, equity valuation, residual earnings, airline industry, low-cost airline, traditional airline
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Chapter 1  Introduction

1.1 Problem Background

Fundamental analysis or intrinsic value analysis uses financial and other economic information to determine the firm’s value. Analysts use basic fundamentals, which generally based on publicly available information, such as accounting earnings, dividends, growth factors or leverage ratios, etc. to infer the intrinsic value and compare whether it is over or under the firm’s stock price (Lee, 1987).

Fundamental analysis in accounting researches mostly has been done in cross-sectional approach. The study tended to investigate large firms in various industries, which are problematic and not in line with the investment analysts who likely focus on one industry or one sector (Quirin et al., 2000). In addition, each industry has typical characteristics, for instance accounting methods, nature of expenses or tax features, etc. There are not many researches performed on industry-based analysis. Examples of industry-based study include the analysis of U.S. oil and gas industry (Quirin et al., 2000) and the analysis of the U.S. airline industry (Behn and Riley, 1999), etc.

Forecast of future payoff is the most important process of fundamental analysis because it is considered as one of the key elements to determine the firm’s value. According to Palepu et al. (2000), ratio analysis of past operating behavior could be the foundation of future forecast. Possible and reliable assumptions are the key concerns when performing the forecast, which deals with uncertainty in the future.

To determining the firm’s value, there are several valuation models to be employed such as asset-based valuation model, discounted cash flow model and abnormal earnings (residual earnings) model (White et al., 1998). The Residual Earnings Model is the accounting-based approach, using accounting variables to define the equity value. From the linear relations of the model, it is implied that the stock price of the firm relates to current book value, current earnings and future earnings. Unlike other models that tend to connect future earnings with cash flow or relate to dividend policies, this model is based on clean surplus relation instead. However, only clean surplus is not sufficient for residual earnings valuation. The most important linkage between accounting numbers and the future residual earnings is fundamental analysis or information dynamics mentioned by Ohlson (1995). Since Ohlson (1995) proposed the model, there are numbers of empirical study validate the model as well as compare it against the discount cash flow and dividend discount model. Due to deriving from the same assumption, the residual earnings model yields identical results as the discounted cash flow and dividend discount models (Ohlson, 1995, and Feltham and Ohlson, 1995).

Fundamental analysts use fundamental analysis to define the firm’s intrinsic value and this value should represent in the firm’s stock price. But, according to the market efficiency under semi-strong form hypothesis, which generally appears in most stock markets, the stock prices reflect all available public information and fundamental analysis is not useful.

In September 2001, the airline industry was attacked by the tragedy event and consequently, affected to the airlines’ financial performances. Some traditional airlines, especially the U.S. flag airlines, had a big lost from the tragedy and have taken years to recover the financial status. However, some of U.S. and European low-cost airlines have grown in profitability and new low-cost airlines have continued entering to the industry. According to the interesting contradiction, the study tends to focus on financial ratios and equity values of low-cost and traditional airlines after the 9/11 crisis.

This study mainly discusses in two connecting parts. The first section performs a part of fundamental analysis, ratio analysis, in the industry-based. Ratio analysis is undertaken in the airline industry by comparing the key financial ratios among low-cost and traditional airlines for a certain periods. Three low-cost and three traditional airlines are selected as the case study. The second section examines equity values of the same airlines by using the residual earnings model accompanied by the forecast of accounting variables based on historical performances to compare with the stock prices of those airlines.

1.2 Research Questions

- Based on the ratio analysis, do low-cost airlines perform better financial results than traditional airlines?
- Based on the residual earnings model, how do estimates of equity values of the representative airlines illustrate, comparing to their current stock prices?

1.3 Purpose of Study

The purpose of this study is to analyze the financial ratios of representative low-cost airlines and traditional airlines to examine how different between their operating performances.

This study also uses the same case studies to conduct fundamental analysis. The purpose is to illustrate the process of doing fundamental analysis and attempt to evaluate current stock prices of representative airlines based on the potential future forecast. The valuation model using for estimate equity values of the airlines is the Residual Earnings Model.

1.4 Perspective

The perspective on this study is considered in an investor’s view. Low-cost airlines have become the new trend of global air transportation in the last decade and continued growing both in number of carriers and travelers. Traditional airlines may lose their market shares to the fierce competition, and cannot maintain the growth in the long run.

The result of this study, based on number of case studies selected, shows the actual performance of both low-cost and traditional airlines to compare how well they perform their operations
during current years. In addition, how the equity values of low-cost and traditional airlines would be illustrated, comparing to their stock prices.

1.5 Delimitations

This case study research is limited to six airlines, which their stocks are traded on the U.S. or European stock exchanges. For the comparable purpose, the selected airlines present their financial statements according to the IFRS (International Financial Reporting Standards) or the U.S. GAAP (Generally Accepted Accounting Principles in the United States). The data collection is discussed in Chapter 2.

For time period, the calculations are based on the airlines’ annual reports published online covered the years from 1996 to 2006.

1.6 Preconceptions

Preconception is an idea form in advance of enough knowledge and may lead to bias judgement. People hold individual preconceptions, according to personal background, personal experiences, or prestudy beliefs, so individual preconceptions may have an impact on scientific researches.

Even though the author of this thesis has background on finance and accounting areas, the individual preconceptions would not influence the outcome of the study. This reason is that interpretation and analysis of case study are based on real figures, which is free of conflict of interest, or preconceptions of individual analyst.
1.7 Disposition

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Chapter 2  Research Methodology

This chapter describes the methodology using for the study. The chapter organizes as choice of subject, research philosophy, research approach, research method, and data collection.

2.1 Choice of Subject

Finding the topic for master thesis is not an easy task. The topic should be matched to a researcher’s interest, academic knowledge, working background or career goal. Within the limited time of the course, the researcher needs to have a well plan for the achievable topic.

I have been working in an airline company and have an academic background in accounting area. Air transportation is considered as a key element in travel industry and there is one-ninth labor force in the global working in this industry (Hanlon, 2007). The industry is more sensitive to variable effects than others, for example; fuel prices, economy recession, traveling season, weather, war or terrorists, which is the most concern nowadays. I also invest some of my money in a stock market and have questions why some stocks look expensive and what is the true value of those stocks. Therefore, I refine my ideas with working and studying experiences to a topic relating to the airline industry combining with theories of fundamental analysis.

2.2 Research Philosophy

Research philosophy depends on what the author want to develop the knowledge (Saunders et al., 2000). Understanding of the research philosophy is important to research methodology, according to the following reasons (Easterby-Smith et al., 1997; cited by Crossan, 2003):

- Help the author to clarify the research strategy and the research method.
- Help the author to avoid useless works with clarification of certain methods at the early stage.
- Help the author to select or adapt the methods, which previously are out of the experience.

Using theories of ratio analysis and Residual Earnings Model for empirical tests on low-cost and traditional airlines can imply that the study lies on positivism philosophy.

Positivism deals with scientific knowledge, which is measurable. Positivism philosophy of the study is the work concerning the observable social reality and the results can be considered as those produced by the physical and natural scientists (Remenyi et al., 1998:32; cited by Saunders et al., 2000).

2.3 Research Approach

Basically, there are two broad research approaches: deductive and inductive. Deductive or top-down approach begins with the interesting theory and works through observations to find the results, which do or do not align with the hypotheses. In contrast, inductive or bottom up approach works from particular observations, which are more open-ended, to develop a new theory (Trochim, 2006).
Deductive approach emphasizes scientific principle and concentrates on quantitative and valid data to explain causal relationship between variables while inductive approach considers the meaning of human relating to events with a close understand of the research context, involves qualitative data and less concerns with the need to generalize (Saunders et al., 2000).

When applied to this study, from the theories and move to testing of quantitative data to find out the results that can prove hypothesis, the deductive approach is compatible for the research.

2.4 Research Method

Qualitative or quantitative methods are choices for analysis of a study, depending upon the research objective. Data collection is one of the differences to categorize qualitative and quantitative methods. It is simply to say that qualitative data contains words while quantitative data contains numbers. Rather than the data, the other difference is assumption of the research. Qualitative method deals with exploratory and inductive approach while quantitative method involves confirmatory and deductive approach (Trochim, 2006).

List (2006) addresses some useful conditions to differentiate qualitative and quantitative methods. Qualitative method’s conditions are non-existing topic research, uncertainty of the measurement, non-clear assessment concept and exploring of something. On the other hand, quantitative method’s conditions are confirmatory research topic, trend measurement, clear assessment concept and using of ratio or ordinary scale.

To answer the research questions of the study, data gathering mostly deals with numbers, and analysis sections are based on the existing theories. Therefore, according to conditions above, it can say that quantitative method is used for this paper. The case study is applied for the research. According to Yin (1989), the unique strength of case study is its ability to deal with various kinds of evidence, and the case study is preferred investigating contemporary events of which the relating behaviors cannot be manipulated.

2.5 Data Collection

Selection of the case study starts at what regions of the airline industry are chosen. Europe and the U.S. are the results of the selection because the European and the U.S. air transport markets are mature. There are numbers of low-cost and traditional airlines operated for certain periods, and their stocks trade on the markets. For other regions in the global, low-cost markets have just started and even though there are number of operating low-cost airlines, the airlines’ own to entrepreneurs and seldom traded on the stock markets. In addition, for comparable purpose, the European and the U.S. financial reports are compatible in term of accounting methods.

The case study limits to six airlines due to time constrain of the study period. The six airlines, dividing into two groups: low-cost and traditional airlines, are selected based on the profitability and passengers traffics, according to the statistical numbers shown in the book “Global Airlines” (Hanlon, 2007). Two low-cost and two traditional airlines selected operate in Europe while one low-cost and one traditional airline selected operates in the U.S. Details of the case study selected are summarized below.
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<th>Type</th>
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For sources of evidence, Yin (1989) categorized six sources for data collection of the case studies as documentation, archival records, interviews, direct observations, participant-observation, and physical artifacts. Multiple sources of data are considered to this study, which consist of documentation and archival records. The documentary information includes related books and articles while the archival records include service records, organizational records, maps and charts, survey data, etc.

All books and articles relating to accounting and financial theories, including literatures of the airline industry are available on the internet, and at the Umeå University’s library as well as the library’s database.

The financial information of six airlines are extracted from the annual reports of individual airline published on the airline’s website from the year 1996 to 2006, which the length of years varied depending on individual airline. Additional financial data and the stock prices are taken from several websites, i.e. yahoo finance, MSN money, advfn, Reuters and google finance. Statistical financial data, i.e. risk-free rate or market returns, is gathered from Datastream Advance.

Furthermore, to perform ratio analysis and equity valuation, the author uses the software application called Business Analysis & Valuation Model (BAV Model) developed by Professor Paul Healy and Professor Krishna Palepu, copyright of Harvard Business School.
Chapter 3  Theoretical Framework

This chapter presents different theories relating to investment and fundamental analysis. Brief background of market efficiency and investment style are determined, including the relations of market efficiency and fundamental analysis. Then, conceptual framework of financial statement analysis, as part of fundamental analysis, is addressed and stated details and relations in ratio analysis and valuation analysis. Some empirical study linking to the mentioned theories are included accordingly.

3.1  Market Efficiency

In a stock market, an investor would like to earn not only normal returns, but also abnormal profits or beating the market. Refer to the efficient market hypothesis (EMH), the stock is traded at its fair value, and this implies no abnormal profits opportunity offered.

The EMH can be categorized into three types when considers in term of available information affect the stock prices (Bodie et al., 2005). Details are stated as follows.

The **weak form** hypothesis describes that the stock prices reflect all historical prices and other security market data, i.e. trading volume and historical rate of return, etc. This hypothesis implies that the technical analysis is not useful for beating the market (LeBaron, 1999). But, the weak form efficiency theoretically supports that fundamental analysis can be used to identify undervalued/overvalued stocks and provides abnormal returns (Janssen et al., n.d.). The technical analysis and the fundamental analysis are briefly summarized below.

Under the **semi-strong from** hypothesis, the stock prices reflect all available public information. For this hypothesis, neither technical analysis nor fundamental analysis is useful for beating the market.

The **strong form** hypothesis describes that the stock prices reflect all information, both public and inside, relating to the firm. With this hypothesis, the inside information is not useful for beating the market.

For different forms of information regarding the above hypotheses, figure 1 shows relationship among the weak form, the semi-strong form and the strong form.
In the market efficiency, the stock price should follow random walk, and change unpredictable. If the stock price is predictable, the market becomes inefficient because the price will not reflect available information (Ross et al., 2005).

**Technical Analysis**

Technical analysts believe there are systematic statistics concerning the stock prices, or the history tends to repeat itself, so they study the past prices and look for the pattern including possible correlations in order to predict the stock prices (Bodie et al., 2005).

There are several methods to perform technical analysis such as market timing, filter rules, relative strength, line and bar charts, and moving average of stock prices over the past periods, etc (LeBaron, 1999).

Even though the technical analysts realize that information regarding future economic possibility of the firm is valuable, they believe the stock price is more sensible to psychological factors than fundamental factors. This can say as the key success of the technical analysis (Bodie et al., 2005).

The *Dow Theory*, by Charles Dow (who established *The Wall Street Journal*), developed in the late nineteenth, is the famous technical analysis study. The theory uses to identify long-term trend of the stock prices, which key indicators of the theory are the Dow Jones Industrial Average (DJIA) and the Dow Jones Transportation Average (DJTA) (Bodie et al., 2005).

If investors find that the stock price follows the trend predicted by the Dow theory, they will buy the stock at low prices and sell it when the prices increase. If most investors perform in the same
way, the pattern of the prices will be self-destruction and the theory will be invalid (Bodie et al., 2005).

There are number of studies relating to technical analysis and most of them shown that technical analysis is useless for predicting the stock prices, however, some of the studies mentioned technical anomalies, which may give a hope for technicians even though disadvantage of transaction costs remains the issue.

**Fundamental Analysis**

Fundamental analysts use the fundamental analysis as a tool to recommend investors to buy or sell the stock based on comparing value of the firm to its stock price. Financial statements supplemented with future economic prospect of the firm are the sources using for the fundamental analysis.

As fundamental factors consist of quantitative and qualitative information, the analysts should conduct both quantitative and qualitative analyses to complete the fundamental analysis for any stocks. Quantitative information relates to numerical data, which can be found in the financial statements, so quantitative analysis can be done precisely. On the other hand, it is more difficult to extract qualitative factors because the information is less tangible or relates to quality things such as quality of the management or brand-name recognition. Therefore, doing qualitative analysis is more difficult but considers important not less than doing the quantitative analysis (Janssen et al., n.d.).

Janssen et al. (n.d.) refer the good example for importance of qualitative analysis, represents with the Coca-Cola Company. For Coke’s stock valuation, doing only the quantitative analysis cannot be complete because the qualitative analysis on Coke’s brand recognition is a must to undertake.

If investors would like to have superior rate of returns by using fundamental analysis, they need to find firms not only are good, but also better than everyone else’s estimate. Investors in the market generally can find good firms, but discovering better firms are the challenge. This is the difficulty of fundamental analysis. Investors can make superior returns when their analyses are better than others according to the same public available information (Bodie et al., 2005). Warren Buffett, as the famous example, has been successful for years by using fundamental analysis to pick up right stocks and earn abnormal returns (Janssen et al., n.d.).

### 3.2 Investment Strategy

There are many factors affect to individual’s investment such as income, age, risk tolerance, financial goal, or tax bracket (Palepu et al., 2000). Investors who expect high rate of returns should have higher risk tolerance degree than ones who expect lesser returns. Investors can manage their portfolios by themselves or choose another way of investment. Mutual funds are other popular choices for the investors who would like to have professional teams managed their money instead. There are wide ranges of fund types that the investors can select in order to match their investment objectives. Major investments of mutual funds are included in money market, debt instruments, equity market, mixture of money market, debt instruments and equity market (Palepu et al., 2000).
All investment relates to the risk. The investment with higher risk is potential to have a higher return. Investors may protect themselves from the risk by using the diversification strategy. It is important for the investors to know degree of risk tolerance they can afford to avoid the trouble by investing with over degree of risk.

The two most important factors concerning risk are time horizon and investor’s discipline. According to Rowland (n.d.), the suitable time horizon is ten years and if the investor leaves the money in the stock alone for such period, the money will grow in the best return.

3.2.1 Active and Passive Strategies

Investors who use the active strategy on the investment believe that they can seek for superior rather than average returns in the markets. Active investors search out relating information they think it is valuable, and use various methods including fundamental analysis, technical analysis, and macroeconomic analysis in order to obtain such superior profits on investment (Evanson, n.d.).

The passive investors choose buy-and-hold strategy rather than look for undervalued stocks to make superior profits. Advocates of passive strategy believe in the EMH, which stocks are traded at the fair values and with all available information, it is not useful to buy and sell stocks frequently because high brokerage fees will decrease returns on the portfolio (Bodie et al., 2005). Lower costs on trading frequency are the substantial advantage of the passive strategy over the active strategy.

3.3 Financial Statement Analysis

Financial statements provide primary information of economic consequences of the firm’s business activities (Palepu et al., 2000). From economic factors transformed into accounting numbers, financial statements report data of assets, liabilities, income and cash flow that are useful to all users (White et al., 1998). Even though major users of financial statements are investors that a firm seeks for its capital, the financial statement are also used for other purposes from analysts inside to outside the firm including governments that use the financial statements in social and economic policy-making (Penman, 2007).

Users of financial statements should concern not only business activities affect the financial reports, but also accounting system plays the important role on this published information. Palepu et al. (2000) summarize three features of accounting systems influenced the financial statements; accrual accounting basis, accounting standard and auditing and the last feature, managers’ reporting strategy, which can be an important tool to manipulate investors’ perceptions.

The analysis of financial statement will help investors and other stakeholders understand the firm’s business and make better economic decisions (White et al., 1998). Penman (2007: 2) defines financial statement analysis as:

‘Financial statement analysis is the method by which users extract information to answer their questions about the firm.’
The framework of fundamental analysis using financial statements consists of four related steps: business strategy analysis, accounting analysis, financial analysis and prospective analysis (Palepu et al., 2000). The most important part of fundamental analysis is developing forecast of future payoff (earnings) or the step of prospective analysis because future earnings are one of the key elements to find the firm’s value (Penman, 2007).

### 3.3.1 Strategy Analysis

Refer to Palepu et al (2000), strategy relates to how a firm’s managers can create ideas to increase profits or financial performance with sustainability. The ideas may be development on new products/services, new distribution channels or improving competitive advantage. Strategy analysis, therefore, is evaluation of such ideas and is the first step of financial statement analysis.

The purpose of business strategy analysis involves qualitative analysis of the firm’s key profit drivers and business risk in order to assess the firm’s current performance and its sustainability for forecasting future performance. Strategy analysis relates to analyzing in three factors: industry analysis, competitive analysis and corporate analysis.

Industry analysis involves key drivers of the industry’s profitability and forecasts the possible change in the future. The said profitability is influenced from existing competitors, barriers of new entrants, substitute products, and power of buyers/suppliers.

For competitive analysis, there are two strategies that the firm may use for competing in the industry, which are cost leadership or differentiation.

Analysts perform corporate analysis by examining how well the firm can create value through doing several businesses at the same time. If the firm runs multiple businesses efficiently, its value will be created by cost reduction or revenue increase. The key feature for analysts to perform strategy analysis is to assess the sustainability of the firm’s strategies.

Strategy analysis is useful for further financial statement analysis. For accounting analysis, the firm’s accounting policies and estimates should be in line with its strategy, for instance, the firm sells products to low-income customers should have high allowance for bad debt expenses. For financial analysis, the cost leadership firms expect to have lower gross margin and higher asset turnover, comparing to differentiation strategic firms. For prospective analysis and valuation, strategy analysis helps to assess how long the difference of performance between the firm and the industry exists, and helps to forecast the firm’s investment in order to maintain its competitive advantage.

### 3.3.2 Accounting Analysis

The purpose of accounting analysis is to evaluate the firm’s accounting quality, and assess the distortion level according to accounting numbers. Refer to Palepu et al. (2000), doing accounting analysis consists of six key steps as follows:
- Identify and evaluate key accounting policies and estimates to measure the firm’s key success factor and risk in accordance with the firm’s strategy, for instance how accurate a leasing company estimates the residual values of leased equipment.
- Assess degree accounting flexibility. For example, the firm has choices for inventory accounting policies of LIFO, FIFO or average cost. Managers may use policy, resulting in good operating performance but not suitable to business characteristics.
- Evaluate accounting strategy. Analysts may use the following questions to evaluate the firm’s accounting strategies:
  - Are accounting policies similar to others in the same industry?
  - Does management use accounting policies or estimates to hide some information, i.e. management stock option, violation of bond covenants?
  - Does the firm change accounting policies or estimates, and are they reliable, and what is the impact?
- Evaluate the quality of disclosure. Generally there are minimum disclosures required for the financial statements but the choices to provide adequate information to assess the firm’s business strategies and its economic consequences are in the consideration of the firm.
- Identify potential red flags of questionable accounting quality. These indications help analysts to investigate such items closely, for instance unexplained transactions that boost profits, unusual increase in account receivables and sales, etc.
- Undo accounting distortion. If the financial numbers are misleading, analysts should adjust the numbers to reduce the distortion. The cash flow statement and financial footnotes are the guidance to restate the financial numbers.

Performing accounting analysis is useful in perspective of reliable conclusion from the financial analysis, the next step of financial statement analysis (Palepu et al., 2000).

### 3.3.3 Financial Analysis

Continue to the third step of financial statement analysis: financial analysis. The traditional analysis to see how efficient a firm engages the operation is to analyze its financial statements. Two major tools using for this analysis are ratio analysis and cash flow analysis (Palepu et al., 2000). This research will focus on ratio analysis and cash flow analysis will not be discussed.

#### 3.3.3.1 Ratio Analysis

Basically, an investor would like to see the profitability and growth of a firm through the period of investment. Assessment of the firm’s profitability and growth by ratio analysis will help the investor to get wider pictures on measurement of the firm’s value. Ratio analysis can be used by (Palepu et al., 2000):

- comparison actual with historical ratio
- comparison of the firm’s ratio with others’
- comparison with the benchmark ratio

Ratio analysis is also useful when financial analysts would like to work from historical ratio to forecast future performance and determine the firm valuation.

Ratio analysis concerning the firm’s sustainable growth is shown in the following framework.
Figure 2: Sustainable Growth Rate Framework

Return on Equity (ROE)

\[
\text{ROE} = \frac{\text{Net Income}}{\text{Shareholder’s equity}}
\]

Return on equity is the comprehensive ratio of the firm because it shows how well managers use the firm’s asset to create returns to shareholders. ROE of the firm generally relates to the cost of
capital. In the competition market, ROE should not be significantly higher than the cost of capital. The attractive high ROE over the cost of capital will bring competitors into the industry and consequently, ROE will be down to the normal level: its cost of capital. On the other hand, ROE is driven by two main factors: return on net assets (ROA) and financial leverage, which can be derived in details as (Palepu et al., 2000):

\[
\text{ROE} = \text{ROA} \times \text{Financial leverage}
\]

or

\[
\text{ROE} = \frac{\text{Net income}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Shareholders’ equity}}
\]

where

\[
\text{ROA} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}}
\]

So we can say that the profitability earned by the firm’s assets and assets generated from shareholders’ investment are the main composition of ROE.

**Operating Return on Assets (Operating ROA)**

\[
\text{Operating ROA} = \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Net assets}}
\]

As we can see on the above diagram, ROA is one of the drivers on ROE. ROA is measured with net income divided by total assets. Net income includes interest income net of interest expenses while total assets include operating assets and financing assets. Amount relating to financial activities will be consequences of financing decision, therefore, in practical way operating ROA is widely used to measure operating profit of the firm acquired by its operating assets. Operating ROA usually is compared with the firm’s weighted average cost of debt and equity capital (WACC). In the long run and in the competitive market, operating ROA will lie on the same level of WACC, which is lower than ROE (Palepu et al., 2000).

**Net Operating Profit after Tax (NOPAT)**

\[
\text{NOPAT margin} = \frac{\text{NOPAT}}{\text{Sales}}
\]

where

\[
\text{NOPAT} = \text{Net income} + \text{Net interest expenses after tax}
\]

NOPAT margin drives operating ROA, and NOPAT margin is the profitability excluding interest income and interest expenses derived from sales. NOPAT margin shows the firm’s operating results without consideration in debt lines, similarly to EBITDA margin (earnings before interest, taxes, depreciation and amortization divided by sales), which EBITDA intends to focus on cash operating transactions. But, EBITDA may mislead with depreciation because depreciation is perceived as the real operating expense (Palepu et al., 2000).
Operating Asset Turnover (ATO)

\[
ATO = \frac{\text{Sales}}{\text{Net assets}}
\]

The other driver of operating ROA is operating asset turnover. The ratio represents how the firm can generate sales with its operating assets. The operating asset turnover ratios of some firms are dramatically higher than others in the same industry because rather invest in property, plant and equipment, they rent their fixed assets (Palepu et al., 2000). The better ratio in operating asset turnover yields the better operating ROA, if NOPAT margin of compared firms are similar, and yields better ROE.

**Spread**

\[
\text{Spread} = \text{Operating ROA} - \frac{\text{Net interest expense after tax}}{\text{Debt} - (\text{Cash} + \text{Short-term investments})}
\]

\[
\text{Net interest expense after tax} = (\text{Interest expense} - \text{Interest income}) \times (1 - \text{Tax rate})
\]

The financial management is the other key to drive ROE if the firm has cost of liabilities less than earnings from investment. Financial management affected to ROE consists of *spread* and *net financial leverage*. If the firm has debt in its capital structure, they need to pay cost of borrowings, and to get the positive spread the cost of borrowings must be less than the operating ROA. If the firm cannot earn operating returns over its interest expenses, ROE of the firm will decrease by the negative spread.

**Net Financial Leverage**

\[
\text{Debt-to-equity ratio} = \frac{\text{Short-term debt} + \text{Long-term debt}}{\text{Shareholders’ equity}}
\]

\[
\text{Net financial leverage} = \frac{\text{Interest-bearing debt} - (\text{Cash} + \text{Short-term investments})}{\text{Equity}}
\]

The firm can create shareholder value through the high net financial leverage. High level on debt will increase the net financial leverage ratio and when multiply the financial leverage to the positive spread, the firm will get the high ROE. However, too much debt may cause the firm into the business risk. The firm needs to bear not only a large amount of interest expenses, but also the risk on financial distress, or restriction on its operations required by borrowers (Palepu et al., 2000). Once the firm has cost of borrowings greater than the operating ROA, spread will result a negative value and ROE will decrease accordingly.
**Sustainable Growth Rate**

Sustainable growth rate  \[= \text{ROE} \times (1 - \text{Dividend payout ratio})\]

Dividend payout ratio  \[= \frac{\text{Cash dividend paid}}{\text{Net income}}\]

The sustainable growth rate, linked by all the above discussed ratios, is the comprehensive ratio that analysts use to assess the firm (Palepu et al., 2000). There are several key drivers impacted the sustainable growth rate. The firm may focus on its operating ROA, or use the financial policies to drive the sustainable growth. The firm may have zero payout to maintain its sustainable growth rather than distribute dividends to shareholders.

### 3.3.4 Prospective Analysis: Forecasting

To conduct forecasting of the firm’s future performance, analysts use historical and current data in financial statements along with setting possible and reliable assumptions to convert projected financial statements. Forecasting is considered as the most important process of fundamental analysis. As forecasting involves uncertain estimation in the future, analysts practically forecast the firm’s performance not for long-term (Penman, 2007).

According to Palepu et al. (2000), the best way for future forecast is to do it in a comprehensive approach. Generally only few key drivers, for instance sales and profit margin, drive forecasting numbers in most cases. Behaviors of the key accounting numbers are the good starting points for checking reasonable and complete forecast, which consist of:

- The behavior of sales growth
- The behavior of earnings
- The behavior of return on equity and its components

The average financial statistic should take into a consideration in the forecasting process (Palepu et al., 2000). The financial information may be forecasted with deviation from the average, depending on the reasons driven.

Reasonable assumptions are important for undertaking forecast in order to produce reliable future payoffs. Too optimistic forecast will lead to overstate earnings and result in superior valuation, which may be unreliable for investors.

### 3.3.5 Prospective Analysis: Valuation Analysis

The final step of prospect analysis is valuation, which the forecast is converted into estimated value of the firm. Generally business decisions, either inside or outside the firm, involve valuation analysis (Palepu et al., 2000). For instance decision on capital budgeting or strategic planning within the firm will affect the value. Analysts outside the firm undertake the firm’s valuation analysis to recommend buy or sell decisions.
There are a variety of approaches using in valuation analysis. White et al. (1998) categorized valuation models into three classes, which are asset-based valuation model, discounted cash flow model and abnormal earnings or Edward-Bell-Ohlson (EBO) model.

The asset-based valuation uses market value of assets minus market value of liabilities to find a firm’s equity value. If the balance sheet shows assets and liabilities at market value, there will not be difficult to measure value of the firm with this model. In reality assets and liabilities in the balance sheet are not marked to market over the times, but they are recorded at historical prices according to the GAAP. The difficult task for using this model is to find market value of assets and liabilities, which have been complex and problematic.

The discounted cash flow model lies on cash flow stream to measure the equity value. Dividends, earnings or free cash flow approaches are used for formulating the discounted cash flow model.

Dividend model is widely used on the finance texts to value a firm’s common stock. Generally, dividend model relates to dividend payment amount, dividend growth rate and cost of capital (Ross et al., 2005). The model based on estimation of dividend growth rate and it is not easy to undertake. Moreover, there is still a question of no-dividend firm. Many firms choose to retain dividends for invest in possible growth opportunities (Ross et al., 2005). The dividend model will further discuss more on the following part.

The next discounted cash flow model, earnings model, is derived from the dividend based model. The earnings based model extends a relationship between dividend payout ratio and “earnings”. The earnings can be defined with accounting earnings either before or after interest payment depending on evaluation of the equity of a firm or value the whole firm (debt plus equity). Rather than using net income of GAAP for the model, cash flow generated from operation activities is more appropriate to input as the earnings but accounting methods have affected to classification of cash flow from operations, cash flow from investments and cash flow from financing (White et al., 1998). Therefore, this valuation model is still face the difficulties with the earnings input.

The last approach of cash flow stream is free cash flow model. Free cash flow is cash inflow from operations minus cash outflow to investment. And valuation of a firm is formulated by summation of present value of expected free cash flows over the periods. The free cash flow model does not widely used by analysts because forecast free cash flow is practically problematic and the model cannot undertake for a firm with negative free cash flow. Penman (2007) gave an example of General Electric Company (GE), one of companies that earned highest stock returns in the U.S. from 1993-2004 and its earnings has been growing from 2000-2004, which has negative free cash flow from 2000-2004. Although free cash flow is easy and familiar concepts, there are disadvantages that make the model does not work in some cases, for example, investment with positive net present value reduces value rather than creates the value.

The abnormal earnings model or EBO model is grounded on book value in the balance sheet adding forecast of abnormal or residual earnings to define intrinsic value of equity. This model is derived from dividend discount model (White et al., 1998).
3.3.5.1 Residual Earnings Model

Residual income has a long history but it has become widely discussed over the ten years from the study of Ohlson (1995) with theoretical framework by using accounting data for a firm’s equity valuation. His model lies with the assumptions of a firm’s market value (or stock price) relates to expected present value of future dividends, and clean surplus relation¹. Ohlson model also satisfies the Modigliani and Miller’s assumption regarding to the perfect markets. In the perfect markets, stock prices react to available information in the efficient market, therefore, financial statements give no value added (Lo and Lys, 1999).

In addition to the above Ohlson Model, Feltham and Ohlson (1995) extend the study of valuation model by separating accounting data into operating and financial activities, and analysis of accounting conservatism and growth (Lo and Lys, 1999).

Residual earnings (RE), also called residual income or abnormal earnings or excess profit for equity describe premiums over required return for book value of common equity at beginning of the period (Penman, 2007) as

\[ RE_t = \text{Earn}_t - (\rho_E - 1)B_{t-1} \]  

where \( RE_t \) is residual earnings of equity in the future, \( \text{Earn}_t \) is comprehensive earnings at the same period as \( RE_t \), \( \rho_E - 1 \) is required rate of return or cost of capital and \( B_{t-1} \) is the book value of common equity at beginning of the period.

RE can be derived in the relationship of return on common equity (ROCE), required rate of return and book value of equity by

\[ RE_t = [\text{ROCE}_t - (\rho_E - 1)]B_{t-1} \]

where \( \text{ROCE}_t \) is comprehensive earnings at the current period divided by book value of equity at the beginning of the period.

If the firm has earnings at the cost of capital multiplied by book value of preceding period (in equation 1) or its ROCE is equal to cost of capital (in equation 2), zero residual earnings will be generated and there is no value creation to the firm. Refer to equation 2, ROCE and book value of equity (also called value drivers) are two drivers affected RE. Greater ROCE over \( \rho_E - 1 \) and growing in the book value will increase RE positive. Consequently, value of a firm will increase. The following equity valuation model shows that the relationship of RE accompanied with book value is value of the firm.

¹Clean surplus relation model can express in the change of book value as
\[ y_{t-1} = y_t + d_t - x_t \] where \( y_t \) is net book value at date \( t \), \( d_t \) is net dividends paid at date \( t \) and \( x_t \) is earnings for the period \((t-1, t)\).
\[ V_0^F = B_0 + \text{Present value of RE} \]  
\[ \text{Where } V_0^F \text{ represents value of a firm at current period and } B_0 \text{ is book value of equity at the same period.} \]

From the equity valuation model, if divided the both sides with \( B_0 \), the following equation will demonstrate intrinsic price-to-book (P/B) ratio:

\[ \frac{V_0^F}{B_0} = 1 + \text{Present value of RE} / B_0 \]  
\[ \text{(4)} \]

If a firm generates zero residual earnings, no premiums are given over the book value and the intrinsic P/B ratio of the firm is equal to 1 (normal P/B ratio). P/B ratio defines the relationship of the firm’s stock price and its net worth. An investor often pays for an earning growth of a firm with higher price, but earning growth does not always mean value growth (Penman, 2007). According to this model, the investor can compare the firm’s intrinsic P/B ratio with the actual P/B ratio of any stock in a market to learn how reasonable price of the stock.

As the firm usually operates with going concern concept, or continues with indefinite time, refer to the equation (3), the valuation model can be applied.

\[ V_0^F = B_0 + \text{RE}_1 + \text{RE}_2 + \text{RE}_3 + \ldots + \frac{\text{RE}_T}{\rho E} + \frac{\text{CV}_T}{\rho T E} \]  
\[ \text{(5)} \]

The forecasting future RE is necessary for going concern model according to equation (5) but forecast is dealing with the uncertainty, therefore, forecast will be undertaken in definite years and used “continuing value” \( CV_T \) adding at the forecast horizon \( T \) (Nissim and Penman, 2001).

\[ V_0^F = B_0 + \text{RE}_1 + \text{RE}_2 + \text{RE}_3 + \ldots + \frac{\text{RE}_T}{\rho E} + \frac{\text{CV}_T}{\rho T E} \]  
\[ \text{(6)} \]

\( CV_T \) is the premium over book value at period \( T \), or \( V_{T+1}^F - B_T \).

According to Penman (2007), there are three cases of continuing value as follows:

Case 1: \( CV_T = 0 \)
Residual earnings are zero after the forecast horizon \( T \).

Case 2: \( CV_T = \frac{\text{RE}_{T+1}}{\rho E -1} \)
Residual earnings are constant, but non-zero after the forecast horizon \( T \).
Case 3: \[ CV_T = \frac{RE_{T+1}}{\rho_T - g} \]

Residual earnings grow with constant rate after the forecast horizon T (where g is \(1 + \) growth rate in residual earnings).

### 3.3.5.2 Residual Earnings Model and Dividend Discount Model

Residual earnings model is derived from dividend discount model. From the following dividend discount model, the price of stock equals to future dividend streams (McCulloch, 2005).

\[ P_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1 + r)^t} \]

Where \( P_0 \) is the stock price at current period, \( D_t \) is future dividend and \( r \) is the discount rate of return.

From the clean surplus relation expressed in the change of book value as:

\[ B_t = B_0 + d_t - x_t \]

Where \( B_t \) is net book value at date \( t \), \( d_t \) is net dividends paid at date \( t \) and \( x_t \) is earnings for the period \((t-1, t)\).

If we place the clean surplus relation to the dividend discount model, mathematically we will get the residual earnings model as per following equation.

\[ P_0 = B_0 + \sum_{t=1}^{\infty} \frac{ae_t}{(1 + r)^t} \]

Where \( ae_t = \text{earnings} - rB_{t-1} \).

As the residual earnings model and the dividend discount model yield the identical value for the infinite horizon forecast period, this makes analysts secure for the same results generated. But, the dividend discount model has a disadvantage with the firm having zero payout for several years because the model cannot measure the value. Moreover, Penman (2007) mentioned dividends may not relate to the value creation because the firm can borrow money for dividend payment. In this view, the dividends are considered as value distribution, not value creation.

### 3.3.5.3 Disadvantage of Residual Earnings Model

**Accounting Data**

Residual earnings valuation relies on accounting data in the financial statements. Analysts who work on the residual earnings model need to have knowledge on accrual basis, which is
considered as accounting complexity (Penman, 2007). Moreover, accounting numbers can be suspect by the manipulation. According to Elliott and Elliott (2006), the financial statements are well cooked before their published outside. So to ensure that the financial statements are reliable, analysts should better perform accounting quality analysis. The temporarily increase or decrease in financial numbers will be reversed in the future. But, it would be advantage if analysts unwrap misleading accounting numbers before the problems appear (Penman, 2007). For example, unusual income timing or overstated income recognition will directly affect equity value of the firm because according to the residual earnings equation, earnings number is the key component to derive residual earnings. There are several studies found that misleading financial reports caused the firm’s average stock price decline of 8% (Palepu et al., 2000).

**Forecast Horizon**

The valuation models (dividends, discounted cash flow, or residual earnings) need time period on forecasting future performances so analysts need to forecast a horizon to calculate the value of the firm. As the firm operates business with the going concern basis, we do not know the exact period of the firm’s life time. Usually analysts perform forecasting in finite-horizon, which approximately is short term of three to five years. For perpetuity, the long-term growth rate is the variable key for calculation of the continuing value. Difference in growth rate yields substantial values generated by the model, and estimation of appropriate growth rate is the difficult task because it deals with uncertainty in the future.

3.3.6 From Ratio Analysis to Equity Valuation

Financial statement analysis shows the firm’s financial performance in time series and we can use the historical behaviors as the building blocks for prediction of future ratios, and finally can forecast the equity payoffs (Nissim and Penman, 2001). Future payoffs along with the growth rate are the important components for equity valuation.

Financial statement analysis can produce various types of ratios depending on the objective of users. Ratio analysis can be compared within the firm from the past to the present, or compared to other firms within or out of the industry. From the residual earnings valuation model, return on common equity (ROCE), cost of capital and book values produce the residual earnings at a certain time. So increase in return on common equity complemented with increase in book values yield abnormal earnings. Refer to Nissim and Penman (2001), ROCE is driven by seven drivers: sales profit margin, asset turnover, other items/net operating asset, financial leverage, net borrowing cost, operating liability leverage and minority interest sharing, while drivers of book values are sales, asset turnover and financial leverage.

However, not only financial analysis, the best possible forecasting future performance must be accompanied with business strategy analysis and accounting analysis. For example, if business strategy analysis shows that the firm is on restructuring process of operation, the capital expenditures may be needed. If accounting analysis shows that the past earnings or assets are overstated, what is the implication of future accounting numbers.
3.4 Empirical Evidence

The empirical reviews start with the residual income model. Even though there are numbers of studies both of support and controversy on the Ohlson (1995) model, this model has been the obvious interest for further researches in the future. The study of Ohlson (1995) and Feltham and Ohlson (1995, 1996) regarding to relation of the valuation models and accounting data, has become widely discussion in accounting literatures in the past ten years. Stober (1999) reviewed empirical applications studied by various authors based on the valuation models and considered the directions of researches in the future. For the Ohlson (1995) model, most empirical applications have undertaken researches involving amounts in financial statements instead of testing the model’s properties. On the other hand, most empirical applications on the Feltham and Ohlson (1995, 1996) models have been testing the properties instead. Stober (1999) concluded that in the future researches studied, the policy-oriented studies will be extensively focused.

Liu and Ohlson (1999) developed the empirical implication of the Feltham-Ohlson (1995) (FO) model, which relates to a firm’s market value, accounting data and other useful information. The FO model notes that growing in financial assets will grow in the firm’s market value, which involves control of the operating activities. But, there is dichotomy of operating activities and financial activities.

Halsey (2001) studied the relations of the residual-income model and ratio analysis by using the residual-income (RI) stock price model to interpret return on equity and its components: return on assets and financial leverage. Increase in total common equity provides ROE greater than cost of equity capital, or increase in total common equity by increase in financial leverage provides return on net operating assets greater than cost of debt. His study focused on ratio analysis, interpretation of current price-to-book (P/B) and price/earnings (P/E) ratios, including forecast of ROE and book value in which involves the RI valuation model. Halsey (2001) indicated that one-third of publicly traded firms expect to improve RI from the current level, of which 17% faced the trouble and the equal amount declined in profitability even though they are operating well. He concluded that the RI valuation model is proven to be better than cash flow basis. Another advantage of the RI valuation is its earnings-based approach, which relates to accrual basis in financial reporting, so it affords the accountant to evaluate the firm’s performance. Moreover, the RI valuation involves future residual earnings, which is useful to analyze business strategies, future profitability and return on equity.

For fundamental analysis, few numbers of researches are conducted on the specific industry because mostly have been done in cross-sectional approaches. Quirin et al. (2000) focused on the fundamental analysis to the U.S. oil and gas industry. Financial data including other related information are used to forecast the future stock price. The study gave the evidence that fundamental are valued by the market. And there is a question of how accurate the fundamental model is able to predict the stock price.

Lee (1987) studied the response of stock market to particular types of fundamental analysis. The four fundamental analyses, appeared in Alan Abelson’s column of “Up and Down Wall Street” in Barron’s, categorize as accounting analysis, negative fundamental analysis, positive fundamental analysis, and fundamental analysis of small firms. Lee (1987) concluded that the market reacted
differently to different fundamental analyses. Investors cannot earn abnormal gains based on the Alan Abelson’s analyses.

Even though there are numbers of researches conducted on fundamental analysis and equity valuation, possible questions on several issues have been raised for the future researches. For example, if fundamental analysis can predict future earnings, how accurate the analysts could predict them (Quirin et al., 2000).
Chapter 4 Literature Review of the Airline Industry

This chapter provides readers for information of the airline industry in details. Firstly, start with the industry overview and characteristics of low-cost and traditional airlines. The next topic describes competitive issues, which consist of deregulation, cost operation and loyalty schemes. Each factor has both advantage and disadvantage affect to low-cost and traditional airlines. Later topic describes financial performance and return on investment of the industry. The last topic discusses future growth in the industry, whether low-cost and traditional airlines have opportunities to grow in the business, according to optimistic factors forecasted.

4.1 Industry Overview

Travel and tourism is the largest industry in the world and air transport plays the significant role to this industry (Hanlon, 2007). Airline business is included in the air transport industry, which consists of aircraft manufacturers, airports, air traffic services, etc (Seristö, 1993). The air transport has grown for long period consistently.

The airline deregulation began in the U.S. in 1978 and spread across other regions of the world, leading to a rapid growth in the air transportation industry during the last decade (Sinha, 2002). There have been number of new airlines entered to the industry, high demand on aircraft for the fleet expansion, and increase in passenger traffic steadily. The passengers of scheduled airlines showed in the figure 3 imply the growth in the airline business from 1990 to 2006.

Figure 3: Growth in World Passengers Carried During 1990-2006

![World Scheduled Traffic Passengers Carried 1990-2006](image)
Passenger traffic grows from 1990 to 2006 at the average rate 4%. The highest growth is in 2004 around 12% then decreases to 7% and 4% in 2005 and 2006 consecutively (Hanlon, 2007). The passenger growth keeps growing in 2007 and forecasts to continue in the future, according to the liberalization of the industry. Asian and Middle East markets are considered to grow faster than other mature markets, the U.S. and European. Average world passenger growth rate is estimated at 5% annually (Hanlon, 2007).

One substantial reason for growth in the airline business is the new entrants. Since the barriers of the industry have been non-existent in many parts of the world by deregulations and open-skies agreements, low-cost or no-frills airlines are entered into the business. The new entrants seem to be more successful than failure in their operations. They can share the market with profitability from traditional or full-service airlines and increase portion of market share gradually. Some traditional airlines have to adjust their strategies by set up subsidiaries low-cost airlines to maintain the market share and also being their marketing arms. The table below shows some traditional airlines and their related low-cost airlines.

**Table 1: Traditional Airlines and their related Low-cost Airlines**

<table>
<thead>
<tr>
<th>Traditional Airlines</th>
<th>Low-cost Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Midland Airways (bmi)</td>
<td>bmiaby</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>Germanwings</td>
</tr>
<tr>
<td>Qantas Airways</td>
<td>Jetstar Airways</td>
</tr>
<tr>
<td>Scandinavian Airlines</td>
<td>AirBaltic</td>
</tr>
<tr>
<td></td>
<td>Blue1</td>
</tr>
<tr>
<td></td>
<td>Snowflake</td>
</tr>
<tr>
<td>Singapore Airlines</td>
<td>Tiger Airways</td>
</tr>
<tr>
<td>Thai Airways</td>
<td>Nok Airlines</td>
</tr>
</tbody>
</table>

*Source: Individual airline website*

Southwest Airlines, the U.S. based airline, is the pioneer of low-cost model. Southwest Airlines has operated the business with consistency profitability for long years. With the concept of simple product and low operation costs, Southwest Airlines becomes the role model in this industry (Schneiderbauer and Fainsilber, 2002). To overview how different between low-cost and traditional airlines, table 2 summarizes main features between them accordingly.
Table 2: Key Features of Low-cost Airlines and Traditional Airlines

<table>
<thead>
<tr>
<th>Features</th>
<th>Low-cost airlines</th>
<th>Traditional airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td>One brand: low fare</td>
<td>Brand extensions: fare+service</td>
</tr>
<tr>
<td>Fares</td>
<td>Simplified: fare structure</td>
<td>Complex fare: structure+yield mgt.</td>
</tr>
<tr>
<td>Distribution channel</td>
<td>Online and direct booking</td>
<td>Online, direct, travel agent</td>
</tr>
<tr>
<td>Check-in</td>
<td>Ticketless</td>
<td>Ticketless, IATA ticket contract</td>
</tr>
<tr>
<td>Airports</td>
<td>Secondary (mostly)</td>
<td>Primary</td>
</tr>
<tr>
<td>Connections</td>
<td>Point-to-point</td>
<td>Interlining, code share, global alliances</td>
</tr>
<tr>
<td>Class segmentation</td>
<td>One class (high density)</td>
<td>Two classes (dilution of seating capacity)</td>
</tr>
<tr>
<td>Inflight service</td>
<td>Pay for amenities</td>
<td>Complementary extras</td>
</tr>
<tr>
<td>Aircraft utilization</td>
<td>Very high</td>
<td>Medium to high: union contracts</td>
</tr>
<tr>
<td>Turnaround time</td>
<td>25 mins. turnarounds</td>
<td>Low turnaround: congestion/labor</td>
</tr>
<tr>
<td>Product</td>
<td>One product: low fare</td>
<td>Multiple integrated products</td>
</tr>
<tr>
<td>Ancillary revenue</td>
<td>Advertising, on-board sales</td>
<td>Focus on the primary product</td>
</tr>
<tr>
<td>Aircraft</td>
<td>Single type: commonality</td>
<td>Multiple types: scheduling complexities</td>
</tr>
<tr>
<td>Seating</td>
<td>Small pitch, no assignment</td>
<td>Generous pitch, offers seat assignment</td>
</tr>
<tr>
<td>Customer service</td>
<td>Generally under performs</td>
<td>Full service, offers reliability</td>
</tr>
<tr>
<td>Operating activities</td>
<td>Focus on core (flying)</td>
<td>Extensions: e.g., maintenance, cargo</td>
</tr>
</tbody>
</table>

Source: O’Connell and Williams 2005, 260

Even though the low-cost model of Southwest Airlines has inspired other low-cost airlines in the global, the success in airline operation depends on individual strategies. Culture, market environment, people or politics may have to take into the consideration for set up a successful low-cost airline.

4.2 Competitive Issues

4.2.1 Deregulation

Deregulation has made a big change in the airline industry. It has brought competitive, affordable fares and service improvement in the airline business. Deregulation allows newcomers entered the market, which most of them are low-cost airlines. In 2006, there are over 1,400 airlines in the global including traditional airlines, low-cost airlines, charter operators, freight carriers, etc (Hanlon, 2007).
One substantial benefit of deregulation is that travelers have more alternatives with affordable fares. Low-cost airlines offer high discounts, create competitive and erode traditional airlines’ market share. The expansion of low-cost airlines forces traditional airlines to adjust their strategies to prevent losing market shares additionally.

As the effect of deregulation has not yet deployed, opportunities still opens for new entrants. Figure 4 shows there are big opportunities to develop expansion of low-cost airlines, especially in Asia.

**Figure 4: Great Opportunities for Low-cost Airlines in Asia**

![Figure 4: Great Opportunities for Low-cost Airlines in Asia](image)

But, survival in the competitive market is more important. Using the success model in the industry may not guarantee that new entrants will operate the business successfully. Therefore, some of businesses will leave the industry accordingly. The market entries are expected for the near future while the market exits are predicted in middle or long-term period (Bieger and Laesser, 2004).

### 4.2.2 Cost Operation

According to low fare offered to passengers, low-cost airlines need to operate their costs effectively to gain maximized profits, and be able to compete in the fierce market. Major strategies that low-cost airlines using for cost effectiveness are as follows (Bieger and Laesser, 2004):

- Keep away from highly frequented airports and use small airports instead. This can reduce the airport fees, which the small airports charge at the lower fees.
- There is no-frills for in-flight services. Passengers need to buy foods or beverages during the flight. This strategy not only saves in-flight costs, but also makes other revenues for the airlines.
- Keep low distribution costs by taking advantage on internet and using call center channels. Most low-cost airlines have a large proportion of booking online. This
distribution channel can eliminate intermediate agents that caused high commission expenses, which traditional airlines normally pay for them.

- Minimize turnaround time to keep aircraft at the high utilization. As the costs are incurred while the aircraft park at the airports, the revenues are recognized while the aircraft fly in the skies.

For example of better cost operation, figure 5 shows that among the U.S. airlines, low-cost airlines have lower unit cost per available seat mile\(^2\) than traditional (legacy) airlines during 1998-2004. Please note that both of “mile” and “kilometer” are used for distance units in this thesis, depending on information of the U.S. airlines, European airlines, or other airlines, which use different the distance units.

\textbf{Figure 5: Unit Cost per Available Seat Mile of the U.S. Low-cost and Traditional (Legacy) Airlines 1998-2004}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure5.png}
\caption{Unit Cost per Available Seat Mile of the U.S. Low-cost and Traditional (Legacy) Airlines 1998-2004}
\end{figure}

\textit{Source: Hecker 2005, 6}

Currently traditional airlines also concentrate more on cost management to improve their bottom lines. Lufthansa, for instance, focused on cost reduction in 2006, and resulted in profit increase. Refer to the 2006 annual report, Lufthansa grew in revenue of 9.9%, but increased in operating results significantly of 46.4%.

\(^2\)Available seat mile (ASM) is number of seats available for passengers multiplied by number of miles the seats are flown.
4.2.3 Loyalty Schemes

Loyalty schemes are parts of airlines’ marketing strategies and they incur marketing costs. The most advantage in loyal schemes is collection of customers’ database, which is much valuable in term of the marketing strategy (Hanlon, 2007).

Hanlon (2007) includes 3 types of the loyal schemes as frequent-flier programs, corporate discounts, and travel agency commission overrides.

Frequent-Flier Programs

The frequent-flier program (FFP) is an incentive plan rewarding to repeated passengers. The rewards are in forms of free tickets or other benefits based on mileage points of distance traveling. The first FFP was initiated by American Airlines in 1981. The program has been very successful and grown consistently. Some airlines join the FFP with alliances while some manage the program individually. Miles awards of the U.S. airlines increase from 4.1 billion miles in 1981 to 1,646 billion miles in 2002. There are 120 million people enrolled to the FFP but only over 25% of those are active members (Hanlon, 2007). Currently airlines can earn from selling mileages to passengers, banks, hotels, car rentals and other business partners. Airlines sold almost $2 billion worth of miles to credit card partners in 2004 and this means that not only repeated passengers are rewarded, but also credit card members are included in the program (Reuters; cited by International Herald Tribune, 2006).

The FFP is another marketing tool that traditional airlines use against low-cost airlines in the competitive market. Attractive destinations and long-haul routes are strengths of traditional airlines. Nowadays, traditional airlines offer discount fares from time to time, when combines with the massive routes and mileage earnings, a number of people still keep flying with the traditional airlines (Grossman, 2003).

Corporate Discounts

When staff of a company takes a business trips, mileage collection is always the question whether it should go for benefit of travelers or of the company that pays for air tickets. In the past, mileage earns are accumulated in travelers’ accounts instead of the company. But, now several airlines are requested to reward benefits according to accumulated mileages to companies that pay for staffs’ air tickets. About 10% of the U.S. companies request business travelers deliver mileage rewards to the companies and this can save 12-15% on companies’ air travel budgets (Hanlon, 2007).

Contract of corporate discounts usually is made between companies and traditional airlines, and applied with the premium fares level (Hanlon, 2007). Traditional airlines deals with big companies on business travels more than low-cost airlines do. This is one of the strategic advantages of traditional airlines due to their massive destinations and routes. A lot of international companies have business trips around the world extensively and traditional airlines can serve this purpose, while low-cost airlines have limitations on the routes and their short-haul distances.
Travel Agency Commission Overrides

The FFPs deal with travelers and corporate discounts deals with companies, as the commission overrides deal with travel agencies. Travel agencies are paid for commission based on sales volumes. In addition, travel agencies will receive overriding fees if they can reach the extra volumes set by airlines (Hanlon, 2007). Traditional airlines normally use travel agencies as intermediaries to boost up their sales while low-cost airlines bypass this distribution channel to avoid commission costs.

4.3 Financial Performance

The airline business is very typical in the term of investing capital. It has been used heavy capital over the past century and people still invest the money on this extraordinary business (Hanlon, 2007). Even though the airline industry experienced in high losses over $40 billion during 2001 to 2005, there were some airlines, especially low-cost carriers, gained profitability over those years, and this made the industry still being attractive for investors (Smyth and Pearce, 2006).

The airline industry generated positive operating profits during 1996 to 2004, however, the return for investors is not normal rate of return and not sufficient to cover related risk, for example, the cost of capital. For low-cost airlines, although they outperformed traditional airlines, only few of them can provide investor return\(^3\) at the rate covering the cost of capital.

International Air Transport Association (IATA) joined McKinsey & Company working analysis of the financial results for representative traditional airlines and low-cost airlines to examine the return on investing capital for the period 1996 to 2004 (Smyth and Pearce, 2006). The analysis showed that the airlines had the median average return on invested capital at 4.9% from 1996 to 2004, which is lower than the cost of capital of 7.5%. Only representatives of European low-costs airlines can deliver the higher return on invested capital over the cost of capital.

\(^3\)Investor return = (ROIC-WACC) x IC where IC is amount of invested capital in the operations adjusted for leases. IC can calculate with operating capital adding to net plant, property and equipment assets.
Figure 6 presents the return on invested capital (ROIC\(^4\)) against the cost of capital\(^5\) of the representative airlines during 1996-2004.

**Figure 6: ROIC and Cost of Capital of the Representative Airlines 1996-2004**

![Graph showing ROIC and Cost of Capital for Network Airlines Total, LCCs in US, LCCs in Europe, and Network Airlines in Europe.]

*Source: Smyth and Pearce 2006, 16*

The air transport industry has grown with a high rate, but it seems not to grow in high profitability. The commensurate rate of return in the airline business should be around 7-8% in order to cover the related risk, but the industry is hardly to achieve such level despite in the high expansion period. One possible reason explains that other businesses in the aviation industry are attractive in term of higher return on invested capital (Hanlon, 2007). As shown in figure 7, the computer reservations systems (CSRs) give the highest rate of return on invested capital in 2004.

---

\(^4\)ROIC = net operating profit after tax divided by end-of-year invested capital.

\(^5\)Cost of capital is weighted average cost of capital (WACC) and in the IATA & McKinsey analysis, the cost of capital is used at 7.5% for all airlines.
However, profitability of the airline industry ranges in wide variations. As the airline industry is an extraordinary business, success model of operation, low-cost model for example, does not guarantee for success in profitability. Individual airline needs to find the suitable strategy for the success operation. The 2 following tables provide twenty most profitable airlines and twenty most losses airlines in 2005. But, comparison should be taken carefully because airlines in different countries use different accounting practices, which might cause favorable variances to ones and unfavorable variances to others.

Source: Hanlon 2007, 51
Table 3: 20 Most Profitable Airlines in 2005

<table>
<thead>
<tr>
<th>No.</th>
<th>Airline</th>
<th>Net profit (US$ million)</th>
<th>Net margin (% of sales revenue)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Air France-KLM</td>
<td>1108</td>
<td>4.3</td>
</tr>
<tr>
<td>2</td>
<td>British Airways</td>
<td>829</td>
<td>5.5</td>
</tr>
<tr>
<td>3</td>
<td>Singapore Airlines</td>
<td>747</td>
<td>9.3</td>
</tr>
<tr>
<td>4</td>
<td>Emirates</td>
<td>674</td>
<td>10.7</td>
</tr>
<tr>
<td>5</td>
<td>Iberia</td>
<td>635</td>
<td>10.5</td>
</tr>
<tr>
<td>6</td>
<td>Qantas</td>
<td>575</td>
<td>6.0</td>
</tr>
<tr>
<td>7</td>
<td>Lufthansa</td>
<td>561</td>
<td>2.5</td>
</tr>
<tr>
<td>8</td>
<td>Southwest</td>
<td>484</td>
<td>6.4</td>
</tr>
<tr>
<td>9</td>
<td>Cathay Pacific</td>
<td>424</td>
<td>6.5</td>
</tr>
<tr>
<td>10</td>
<td>Ryanair</td>
<td>380</td>
<td>18.1</td>
</tr>
<tr>
<td>11</td>
<td>Air China</td>
<td>294</td>
<td>6.3</td>
</tr>
<tr>
<td>12</td>
<td>FL Group</td>
<td>274</td>
<td>274.2</td>
</tr>
<tr>
<td>13</td>
<td>ANA Group</td>
<td>235</td>
<td>2.0</td>
</tr>
<tr>
<td>14</td>
<td>ACE/Air Canada</td>
<td>221</td>
<td>2.6</td>
</tr>
<tr>
<td>15</td>
<td>GOL Transportes Aeros</td>
<td>213</td>
<td>212.6</td>
</tr>
<tr>
<td>16</td>
<td>Korean Air</td>
<td>196</td>
<td>2.6</td>
</tr>
<tr>
<td>17</td>
<td>Aeroflot Russian</td>
<td>190</td>
<td>7.5</td>
</tr>
<tr>
<td>18</td>
<td>Thai International</td>
<td>169</td>
<td>4.2</td>
</tr>
<tr>
<td>19</td>
<td>LAN</td>
<td>147</td>
<td>5.9</td>
</tr>
<tr>
<td>20</td>
<td>Saudi Arabian Airlines</td>
<td>137</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Source: Hanlon 2007, 52

As can be seen in the above table, most traditional airlines are dominant on the profitability amount because they can generate more substantial revenues than low-cost airlines. However, some low-cost airlines perform the good results: Southwest and Ryanair are ranked in the top ten lists whereas FL Group and GOL Transportes Aeros gain the exception margin rate.
Table 4: 20 Most Heaviest Losses Airlines in 2005

<table>
<thead>
<tr>
<th>No.</th>
<th>Airline</th>
<th>Net loss (US$ million)</th>
<th>Net margin (% of sales revenue)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United</td>
<td>-21176</td>
<td>-121.9</td>
</tr>
<tr>
<td>2</td>
<td>Delta</td>
<td>-3818</td>
<td>-23.6</td>
</tr>
<tr>
<td>3</td>
<td>Northwest</td>
<td>-2533</td>
<td>-20.6</td>
</tr>
<tr>
<td>4</td>
<td>American</td>
<td>-861</td>
<td>-4.2</td>
</tr>
<tr>
<td>5</td>
<td>Varig</td>
<td>-612</td>
<td>-29.8</td>
</tr>
<tr>
<td>6</td>
<td>ATA</td>
<td>-445</td>
<td>-42.3</td>
</tr>
<tr>
<td>7</td>
<td>Malaysian</td>
<td>-421</td>
<td>-13.4</td>
</tr>
<tr>
<td>8</td>
<td>JAL</td>
<td>-416</td>
<td>-2.2</td>
</tr>
<tr>
<td>9</td>
<td>US Airways</td>
<td>-237</td>
<td>-2.2</td>
</tr>
<tr>
<td>10</td>
<td>China Southern</td>
<td>-226</td>
<td>-4.8</td>
</tr>
<tr>
<td>11</td>
<td>Alitalian</td>
<td>-208</td>
<td>-3.5</td>
</tr>
<tr>
<td>12</td>
<td>Austrian</td>
<td>-160</td>
<td>-5.2</td>
</tr>
<tr>
<td>13</td>
<td>Air Berlin</td>
<td>-144</td>
<td>-9.5</td>
</tr>
<tr>
<td>14</td>
<td>Swiss</td>
<td>-142</td>
<td>-5.0</td>
</tr>
<tr>
<td>15</td>
<td>Kuwait Airways</td>
<td>-82</td>
<td>-9.6</td>
</tr>
<tr>
<td>16</td>
<td>PIA</td>
<td>-74</td>
<td>-6.9</td>
</tr>
<tr>
<td>17</td>
<td>Garuda</td>
<td>-71</td>
<td>-6.0</td>
</tr>
<tr>
<td>18</td>
<td>Continental</td>
<td>-68</td>
<td>-0.6</td>
</tr>
<tr>
<td>19</td>
<td>Midwest</td>
<td>-65</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>China Eastern</td>
<td>-57</td>
<td>-1.7</td>
</tr>
</tbody>
</table>

Source: Hanlon 2007, 53

On the other hand, the first four heaviest loss-making airlines are the U.S. airlines. From 9/11 tragedy to the fierce competition in domestic routes, the big U.S. airlines are still in difficult time of their operations. In addition, three of them filed for bankruptcy protection, and their heavy losses also make average margin of the whole industry decreased.

4.4 Future Growth

Growth in the airline industry will be discussed with the following factors:
- Traffic growth
- Revenue and profitability growth
- Increase of new aircraft
- Large emerging and GDP growth

Traffic growth

As mentioned in the industry overview, passenger traffic has been growing from 1990 and forecasted to grow in the future. Based on IATA’s air industry survey, international air passenger traffic is forecasted to grow with the average of 4.8% per year for 2006 to 2010 (Pearce, 2006), which details are shown in figure 8. Drivers of growth in passenger traffic are passenger demand, industry liberalization, expansion of new routes, growth in emerging market etc.
The IATA’s forecast is in line with published report of Airbus, one of the largest aircraft manufacturers. But, Airbus forecasts traffic growth with the longer period, over next twenty years until 2025. Based on Airbus report, liberalization in Asia will be dominant for future traffic growth. Up to 1,600 new routes in Asian regions will be operated by low-cost airlines by 2015. The figure below shows world air traffic by regional in term of revenue passenger kilometers\(^6\) (RPK), comparing the year 2005 to 2025.

\(^6\)Revenue passenger kilometers are the number of kilometres flown by revenue passengers, where revenue passengers are total of paying passengers flown on each flight.
**Revenue and profitability growth**

After the heavy losses since 9/11, the airline industry is forecasted to be profitability first time at $3.8 billion in 2007 and $7.6 billion in 2008 (Pearce, 2007). Even though the revenue growth rebounded after going down in 2001, the industry has hardly performed profitability for many years. The two figures below present the industry’s revenue growth from 1996 to 2008, relating to the world economic growth, and operating margin/net losses relating to sales for 1998 to 2008.

**Figure 10: Airline Revenue Growth & Global Economic Growth During 1996-2008**

![Airline revenue growth & global economic growth](source: Pearce 2007, 2)

As can be seen in the both figures, the industry’s revenue growth has the peak point in 2004. However, forecasting the growth is continued, but in the slow steps while the profitability tends to go upwards from 2007.
**Increase in new aircraft**

Boeing, one of the biggest aircraft manufacturers, reported its 2005 performance with earnings per share grew at 42%, revenue rose 5% and the operating cash flow was 7 billions. Boeing has been placed more than 1,000 new airplanes, which grows about 89% in one year. Revenue of 2006 first quarter increased 12% and earnings per share increased 29%, comparing to the same period of 2005 (McNerney, 2006).

The aircraft manufacturers’ operating results will grow in several future years because they remain big orders of aircraft fleet in the backlog. According to Airbus published report, there are 22,663 new airplanes for passengers and freighters being ordered over the next twenty years with approximately worth at $2.6 trillion. Part of the orders are replaced the old fleet, and the remaining are for new businesses in the industry. The top order, accounted for 31%, is placed by Asia/Pacific region, as 28% and 25% are ordered by North American airlines and European airlines consecutively. By increasing of new aircraft, the world fleet will rise from 17,153 at the end of 2005 to 33,500 by 2025 or 95% over the next twenty years.

**Large emerging market and GDP growth**

Based on the Airbus report, Brazil, Russia, India and China (BRIC) are considered to be the largest emerging market and will drive the global economics by 2050. The 25% of aircraft deliveries in the next twenty years belong to BRIC. Air travel of BRIC have risen by 9.9% per year over the last decade and the aircraft orders have increased significantly to 35% in 2005, comparing to 5% from the past until 2004.

In addition, the liberalization is another driver of the growth in the business. New airlines have entered the air sectors since the deregulation have spread across the world. Air travel demand is generally based on gross domestic product (GDP) even though the demand grows faster than GDP (Hanlon, 2007). When the GDP increases, people travel more and these can be attractive to entrepreneurs coming into the business. The following graph shows forecasting GDP of the world, which BRIC are in the group with the high growth rates.

**Figure 12: Forecasting GDP Growth and Real Consumer Spending Growth 2005-2010**

![Graph showing GDP growth and real consumer spending growth 2005-2010](image)

*Source: Airbus 2006, 8*
In conclusion, according to the above factors, the airline industry has an optimistic view for future years. However, there are possible factors that may slow the growth: rising oil price, rising inflation, rising unemployment and the most important assumption: terrorists, which can cause significant impact in the industry.
Chapter 5 Analysis and Results

This chapter carries out ratio analysis, forecasting and valuation analysis of representative low-cost and traditional airlines, as well as delivers the results of analyses. Firstly, background of individual airline is briefly presented. Then, overview of strategy analysis and accounting analysis are addressed, and followed with the ratio analysis as well as explanation of the results. Next, key assumptions of forecasting, based on historical ratios and other related information, are described. The last section presents equity values of all airlines converted from the forecasting, comparing to their stock prices.

5.1 Airline Overview

To give a clear picture of representative airlines that their operating results are used for undertake ratio analysis and equity valuation, the followings are brief overview of six airlines, which the information are gathered from individual airline’s website.

British Airways

British Airways (BA) is the UK’s largest scheduled airline with principle based in London. The airline is engaged in operations of scheduled and non-schedule air services. BA currently operates domestic and international flights in 75 countries. At March 31, 2006, the airline has 284 aircraft in service, comparing to 290 in the last period. 207 aircraft are recorded on balance sheet as 77 aircraft are off balance sheet under operating lease contracts. The airline has ordered new 10 aircraft in Airbus family to replace the leaving fleet, and the delivery schedule of the new aircraft will be during 2007-2008. Aircraft ages range from 1.4-16.7 years, with the total fleet’s average of 9.5 years. Average hours per aircraft run from 5.99-13.47 hours per day, with the total fleet’s average of 10.14 hours.

BA mentions in the 2006 annual report that it targets to acquire 10% operating margin. To achieve the target, the airline’s short-term strategy focuses on cost reduction concerning distribution channel through online reservation, and the restructure of short haul pricing. Booking online can decrease fees paid to travel agents as well as the airline can offer competitive fare to customers through the website.

At March 31, 2006, the airline is a membership of one world alliance, which consists of eight airlines: British Airways, Aer Ligus, American Airlines, Cathay Pacific, Finnair, Iberia, LanChile and Qantas. Alliance airlines are considered as one of the operating arms, that traditional airlines can increase benefits to customers and enhance the airlines’ effectiveness through this tool.

BA considers its market as highly competitive. The market share of domestic short haul continues declining from 30% in 1998 to 20% in 2005. BA is facing not only short haul competition with growing of low-cost airlines, but also growing of other traditional airlines in long haul, especially expansion of Middle East airlines.
**Continental Airlines**

Continental Airlines, a major United States air carrier and the world’s fifth largest airline, is incorporated in 1980. As of December 31, 2006, Continental Airlines operates 136 domestic and 126 international destinations covered Europe, North and South America and Asia. The primary hubs of the airlines are located in New York, Huston and Cleveland airports.

Continental Airlines is a membership of SkyTeam alliance, which consists of nine airlines: Aeroflot, Aeromexico, Air France, Alitalia, CSA Czech, Delta Air Lines, KLM, Korean Air and Northwest Airlines.

Continental Airlines uses the advantage on the internet for the distribution channel by gradual increasing the revenue through online reservation. In 2006, 24% of ticket purchases are made through the website. The airline can reduce distribution costs paid to travel agents, but with the lower fares offered on the website, the airline also has the lower yield.

Even though the airline turns profitability in 2006, after long suffering years from September 11, 2001, there are several risk factors challenged the airline to sustain its profitability. Uncertain fuel prices, competitive costs, competitive fares, excessive taxes and significant pension liabilities are pressure of Continental Airlines to achieve the target yields.

As of December 31, 2006, Continental Airlines has a fleet totaling 638 aircraft, of which 366 are mainline jets (ranges between 114-283 seats), and 272 are regional jets (ranges between 37-50 seats). The airline owns 140 mainline jets and 18 regional jets, while 226 mainline jets and 254 regional jets are under operating lease contracts (off balance sheet). Continental Airlines has ordered 82 new aircraft in Boeing family and the delivery schedule will be from 2007 to 2012.

**Lufthansa**

Lufthansa, the largest German airline, is incorporated in 1926. The airline operates in five business segments: passenger transportation, logistics, maintenance & repair and overhaul services (MRO), information technology services and catering, which its core business is passenger transportation. The major traffic hubs based in Frankfurt and Munich. Lufthansa is a membership of Star Alliance, the first and biggest airline alliance. The alliance network covers the routes of 841 cities in 157 countries.

At December 31, 2006, Lufthansa reports a fleet totaling of 430 aircraft. There are 351 aircraft owned by Lufthansa, as 11 aircraft are under financial lease and 68 aircraft are under operating lease agreements. During 2007-2015, additional 96 aircraft in Airbus and Boeing families will be delivered. The finance lease agreements are non-terminable with the period of 4-12 years. Aircraft under finance lease agreements are obliged for acquiring after the expiry periods.

The success of cost reduction strategy in 2006 drives the operating results to improve by 46.4%. Lufthansa continues using this strategy and target to have operating profitability of €1 billion by 2008. Lufthansa aims to be the leader among traditional airlines as well as to achieve in profitability growth. To meet these objectives, Lufthansa needs to grow in routes expansion and aircraft enlargement.
Lufthansa set up Germanwings, no-frills airline, in 2002 to protect the market share in low-cost market. Germanwings operates 43 destinations in European countries and grows in revenue continuously.

EasyJet

Formed in 1995, EasyJet is the UK low-cost airline, based at London Luton airport. EasyJet operates the routes throughout the UK and mainland Europe covered 272 routes at 74 airports. It is the fourth largest airline in Europe based on passengers carried. Under low-cost concept, EasyJet eliminates unnecessary expenses to minimize the costs such as use the internet channel for booking and payment to reduce distribution costs, maximize utilization of each aircraft, ticketless system, no free meal, rapid turnaround time at 30 minutes or lower, and paperless operation in the company.

In 2006, EasyJet has a fleet totaling of 122 aircraft (87 Airbus and 35 Boeing) with average age at 2.2 years. There are 38 aircraft owned by the company, as 78 aircraft are under operating lease agreements, and 6 aircraft are under finance lease agreement. To support continuing growth, EasyJet has ordered additional 192 aircraft in Airbus family, which will be delivered from 2006-2010.

EasyJet has only 6% on total European market shares. The market is considered as highly competitive and forecasted to grow with 5-6% per year. EasyJet tends to have its growth rate around 15% per year in a medium period. Competitors in the market are both of traditional and low-cost airlines including other transportations, which some of them have the same city-pairs routes. But, according to the advantage in its low unit cost, EasyJet has low fare consistently while the competitors can offer low fares occasionally.

JetBlue Airways

JetBlue Airways Corporation is incorporated in 1999 as a low-cost airline with the primary based in New York City, United States of America. As of February 14, 2007, JetBlue operates 50 destinations over the U.S., Puerto Rico, Mexico and the Caribbean.

According to the low-cost strategy, JetBlue minimizes the operating costs through high aircraft utilization, low distribution costs with major sales on their website, productive workforce and operating of only two aircraft types (Airbus A320 and EMBRAER 190) to reduce repair and maintenance costs. In 2006, sales from booking on the website account for 79% and sales from agents account for 19%. With the unit cost of 5.19 cents per ASM in 2006, JetBlue has lower unit cost than other major U.S. airlines.

As of December 31, 2006, JetBlue has a fleet totaling of 119 aircraft at the average age of 2.6 years. 70 aircraft own by JetBlue, 2 aircraft are under capital lease agreements, and 47 aircraft are under operating lease agreements. JetBlue has an order of 160 aircraft, which will be delivered from 2007-2014.
JetBlue is the largest airline at New York’s John F. Kennedy international airport based on passengers carried. In the highly competitive market, routes expansion and increase of aircraft are the strategies using for growth in the business, similar to other airlines.

JetBlue has its own frequent-flier program “TrueBlue”, which rewards members with free trips, depending on the points earned by traveling distances.

Ryanair

Ryanair, set up in 1985, is the first and the largest low-cost airline in Europe with the registered head office in Dublin, Ireland. Ryanair currently operates 463 routes covered 25 European countries. Its strategies are focus on low fare to increase passenger traffic, and efficient operation to low operating costs. With taking advantage on the internet, Ryanair has over 99% bookings made through its website. The passenger volume has been growing from about 945,000 passengers in 1992 to 35 million passengers in 2006.

As of March 31, 2006, Ryanair has a single fleet of Boeing family totaling of 103 aircraft of which 86 aircraft owns to the company. The average age of the fleet is 2.4 years. Ryanair entered the contract to purchase new 136 aircraft from Boeing, which will be delivered from 2007-2012.

Even though the European market is highly competitive, there are opportunities to continue growing. Rather than low fare and low operating cost, Ryanair concentrates on the growth strategy. Its criteria of the growth strategy include fleet expansion, route expansion, frequency increase, domestic route initiation, acquisition consideration, etc.

5.2 Strategy Analysis

Potential to earn abnormal profit in the industry is determined by degree of competition (Palepu et al., 2000). Competition in the airline business is aggressively between low-cost and traditional airlines, including among the low-cost airlines or the traditional airlines themselves. This competition pushes the airlines using price strategy or other promotions to maintain existing customers and also attract new customers. As the deregulation of the air industry is in expansion stage worldwide, threat of new entrants is gradually decreased and new airlines, particular low-cost airlines, will enter to the industry more in the future. For threat of substitute products, other transportations, i.e. train, bus, or car rental, are the substitution but the airline business can take advantage of them in term of current competitive prices or time saving.

While the abnormal profits depend on degree of competition, the actual profits of the industry are affected by its bargaining power of customers and suppliers (Palepu et al., 2000). For customers of the airline industry, price sensitivity influences passenger’s decision for the same routes offered by several airlines because the product is considered not different. Even if passengers are price sensitive, they are no relative bargaining power because transaction per passenger is not dominant. For bargaining power of suppliers, aircraft manufactures are the substantial suppliers in the industry. Even though there are few aircraft manufacturers in the airline business, they are not powerful completely because airlines can buy or lease aircraft not only from the manufacturers, but also from other airlines that want to expire part of their aircraft fleet.
According to the competitive strategy, low-cost airlines focus more on cost operation, while traditional airlines use the differentiation strategy. However, under the cost strategy, some low-cost airlines tend to differentiate themselves with the objective to enhance customers’ value. On the other hand, most traditional airlines improve the cost management to reduce unnecessary costs to increase the profitability. Even though both of them use mixed strategies, the main focus of low-cost airlines is still cost leadership, and traditional airlines still use differentiation.

For corporate analysis, low-cost airlines focus only one business of passengers carried while traditional airlines operates other businesses in addition to passenger carried, i.e. cargo services, maintenance services, or aircraft rental. But, multibusiness of traditional airlines is related to each other, not diversified to different industries.

5.3 Accounting Analysis

In the airline business, there are several concerns of accounting analysis, dealing with estimates and accounting policies. Part of them concerning the aircraft, which are significant in the accounts, can be addressed as follows:

- Aircraft lifetime. Generally aircraft fleets account the highest number in airlines’ balance sheets. Two estimates involve the aircraft lifetime. Firstly the airlines estimate residual values of aircraft, and next the airlines estimate useful life over their aircraft, which the depreciation period is average of 15-30 years and straight-line basis is applied. The following details show useful life of aircraft fleet of the representative airlines.

<table>
<thead>
<tr>
<th>Airline</th>
<th>Useful Life of Aircraft Fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>15-25 years</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>25-30 years</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>12 years</td>
</tr>
<tr>
<td>EasyJet</td>
<td>20-30 years</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>25 years</td>
</tr>
<tr>
<td>Ryannair</td>
<td>23 years</td>
</tr>
</tbody>
</table>

- Aircraft lease. In addition to own aircraft, many airlines include operating leases in their aircraft fleet. Under operating leases, the airlines can use economic resources that do not appear in the balance sheet (Elliott and Elliott, 2006). The airlines record only rental expenses in the income statements while aircraft and debt obligations are off-balance sheet both in assets and liabilities sides. These off-balance sheet transactions affect financial ratios of the airlines, i.e. operating asset turnover and leverage ratios. There are two types of leases: financial lease and operating lease. Under the IAS 17 (International Accounting Standards), financial lease (or capital lease under the U.S. GAAP) is a lease that significant risks and benefits of ownership of an asset are transferred to a lessee, and substance of the lease transaction is more important than its form (Epstein 2006). Many leading European companies apply the IAS as the U.S. companies use the U.S. GAAP.
Epstein (2006) mentioned, according to the IAS 17, if any one of the following criteria is met, the leased asset normally is under the financial lease:

- The ownership of the asset will be transferred at the end of lease agreement.
- There is a bargain purchase option tends to be exercised for the leased asset.
- The lease term is major part of the economic life of the leased asset.
- The present value of minimum payment of the leased asset at the inception date is substantial for its fair value.
- The leased asset is of a specialized nature and the lessee can use without major modification.

Otherwise, it will be classified under operating lease. In general, the lease determination is similar under the IAS and the U.S. GAAP. There are some different details between the two standards for instance, minimum lease payment, tax benefits relating to leverage leases, etc. Difference relating to the operating lease is recognition of gain on sale and leaseback transaction. While the IAS requires record of the gain immediately, the U.S. GAAP requires to be amortized the gain over the lease term (IASPlus, 2004).

The table below compares proportion of aircraft fleet in 2006 between own to/under the financial lease of the airlines, and are under operating leases.

### Table 5: Aircraft Fleet of the Airlines in 2006

| British Airways | 207 | 73% | 77 | 27% | 284 | 100% |
| Lufthansa | 362 | 84% | 68 | 16% | 430 | 100% |
| Continental Airlines | 158 | 25% | 480 | 75% | 638 | 100% |
| EasyJet | 44 | 36% | 78 | 64% | 122 | 100% |
| JetBlue Airways | 72 | 61% | 47 | 39% | 119 | 100% |
| Ryanair | 86 | 83% | 17 | 17% | 103 | 100% |

**Source:** Individual airline website

### 5.4 Analysis and Results: Ratio Analysis

Key financial ratios using to analyze airlines’ actual performance are the ratios driven sustainable growth rates. The analysis undertakes in a time-series comparison from 2002 to 2006 for all representative airlines. The results of ratio analysis are generated automatically by the Business Analysis & Valuation (BAV) application. To get the ratio analysis, financial numbers in balance sheets, income statements and cash flows statements are required to put into the application.
• Operating ROA

Figure 13: Comparison of Operating ROA 2002-2006

Table 6: Operating ROA 2006 VS 5 Years Average (2002-2006)

<table>
<thead>
<tr>
<th></th>
<th>Operating ROA</th>
<th>5 Yrs. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>13.3%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>15.4%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>24.3%</td>
<td>13.0%</td>
</tr>
<tr>
<td>EasyJet</td>
<td>22.3%</td>
<td>14.9%</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>-0.5%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Ryanair</td>
<td>22.0%</td>
<td>27.8%</td>
</tr>
</tbody>
</table>

The two low-cost airlines, EasyJet and Ryanair, including one traditional airline, Lufthansa, have operating ROA over 20% in 2006. The other two traditional airlines, British Airways and Continental, have the lower ratios, leaving JetBlue at the lowest point. The factors impact Operating ROA are NOPAT margin and operating asset turnover. NOPAT margins of all traditional airlines in 2006 range between 4.5-6.4% as their operating asset turnovers fall in the high range of 2.07 to 4.82.

For low-cost airlines, NOPAT margins in 2006 vary from 20% by Ryanair to –0.6% by JetBlue while operating asset turnovers range from 0.86 by JetBlue to 4.2 by EasyJet. EasyJet has both of ratios similar to traditional airlines, 5.3% on NOPAT margin and 4.2 for operating asset turnover. Details of analyses on NOPAT margin and operating asset turnover are discussed below.
Operating ROA of all traditional airlines in 2006 including one low-cost airline, EasyJet, are moving upwards while those of the other two low-cost airlines, Ryanair and JetBlue, slightly go down. As can be illustrated in figure 13, Ryanair reaches the peak point in 2003 at the high rate of 36.3% before moving downwards to meet other airlines’ ratios.

According to Palepu et al. (2000), Operating ROA tends to be in line with the weighted average cost of debt and equity capital (WACC) over the long run in the competitive market. To provide the benchmark for analysis, the WACC of the airline industry is estimated at 7.5% (Pearce, 2006). Half of the representative airlines perform 5 years average of operating ROA over the industry’s WACC, whereas the two low-cost airlines, EasyJet and Ryanair, dominate all traditional airlines.

- **NOPAT Margin**

Figure 14: Comparison of NOPAT Margin 2002-2006

![NOPAT Margin Chart](chart.png)

Table 7: NOPAT Margin 2006 VS of 5 Years Average (2002-2006)

<table>
<thead>
<tr>
<th></th>
<th>NOPAT Margin 2006</th>
<th>5 Yrs. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>6.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>4.5%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>5.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>EasyJet</td>
<td>5.3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>-0.6%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Ryanair</td>
<td>20.0%</td>
<td>23.2%</td>
</tr>
</tbody>
</table>
For traditional airlines, they have the similar NOPAT margin in 2006, which British Airways outperforms the other two airlines. For low-cost airlines, EasyJet has an average NOPAT margin in the same range of the traditional airlines while Jetblue is the only one airline has a negative NOPAT margin. The reason is that JetBlue has tax amount larger than pretax income.

All traditional airlines improve their operating performances in 2006 comparing to their 5 years average margin. In 2006, traditional airlines focus more on cost management and the strategy works successfully. EasyJet is the only one low-cost airline that has a better margin in 2006 as margins of the other two airlines decrease. EasyJet can manage its cost of good sold relative to sales at the average of 79.4% while the selling and administrative costs are at the average of 13.7% for 2002 to 2006.

Ryanair has an extraordinary NOPAT margin at 20% in 2006 over the other representative airlines. Ryanair has operated the unit cost very effectively to gain high NOPAT margin for long years. And another advantage to support Ryanair’s superior performance is tax benefit on engaging in international processing and reservation services. According to 2006 annual report, Ryanair receives the effective corporate tax rate at 10% until 2010. In the table below, Ryanair shows its lowest unit cost per available seat kilometers (ASK) in 2005 among other European airlines, including EasyJet.

Table 8: Unit Cost of European Airlines within European Markets in 2005

<table>
<thead>
<tr>
<th></th>
<th>Network Airlines</th>
<th>Easyjet</th>
<th>Ryanair</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACMI + Fuel</strong></td>
<td>4.39</td>
<td>3.31</td>
<td>2.67</td>
</tr>
<tr>
<td>Labour</td>
<td>0.99</td>
<td>0.73</td>
<td>0.52</td>
</tr>
<tr>
<td>Fuel</td>
<td>1.45</td>
<td>1.32</td>
<td>1.37</td>
</tr>
<tr>
<td>Aircraft Ownership</td>
<td>1.11</td>
<td>0.65</td>
<td>0.48</td>
</tr>
<tr>
<td>Maintenance</td>
<td>0.83</td>
<td>0.62</td>
<td>0.29</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>3.31</td>
<td>2.50</td>
<td>1.15</td>
</tr>
<tr>
<td>Airport Charges &amp; Station</td>
<td>2.70</td>
<td>1.95</td>
<td>0.68</td>
</tr>
<tr>
<td>Other</td>
<td>0.61</td>
<td>0.54</td>
<td>0.48</td>
</tr>
<tr>
<td><strong>Product, Distribution</strong></td>
<td>2.73</td>
<td>0.70</td>
<td>0.31</td>
</tr>
<tr>
<td>Distribution</td>
<td>1.51</td>
<td>0.26</td>
<td>0.04</td>
</tr>
<tr>
<td>Other</td>
<td>1.22</td>
<td>0.44</td>
<td>0.27</td>
</tr>
<tr>
<td><strong>All non-Fuel</strong></td>
<td>8.98</td>
<td>5.19</td>
<td>2.77</td>
</tr>
<tr>
<td><strong>Total Operating Expenses</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted</td>
<td>10.43</td>
<td>6.51</td>
<td>4.13</td>
</tr>
</tbody>
</table>

Source: Moosberger and Pearce 2007, 7

ACMI refer to aircraft, crew, maintenance and insurance.
For the U.S. airlines, unit cost per ASK in 2005 is shown in the following table. The U.S. airlines that perform domestic routes manage better costs that the European airlines. Please note that the unit cost of the European airlines presents in € cents as of the U.S. airlines presents in $ cents. The cost comparison should take with caution because the European airlines operate internationally extensively, which some expenses are more substantial different than the U.S. airlines for example, airport charges.

Table 9: Unit Cost of U.S. Airlines in Domestic Markets in 2005

<table>
<thead>
<tr>
<th>2005 $ cents per ASK</th>
<th>Network Airlines</th>
<th>JetBlue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACMI + Fuel</strong></td>
<td>3.69</td>
<td>3.19</td>
</tr>
<tr>
<td>Labour</td>
<td>0.76</td>
<td>0.66</td>
</tr>
<tr>
<td>Fuel</td>
<td>1.80</td>
<td>1.48</td>
</tr>
<tr>
<td>Aircraft Ownership</td>
<td>0.54</td>
<td>0.59</td>
</tr>
<tr>
<td>Maintenance</td>
<td>0.60</td>
<td>0.46</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>1.40</td>
<td>1.09</td>
</tr>
<tr>
<td>Landing Fees</td>
<td>0.17</td>
<td>0.20</td>
</tr>
<tr>
<td>Other</td>
<td>1.23</td>
<td>0.89</td>
</tr>
<tr>
<td><strong>Product, Distribution</strong></td>
<td>1.79</td>
<td>1.27</td>
</tr>
<tr>
<td>Distribution</td>
<td>1.17</td>
<td>0.94</td>
</tr>
<tr>
<td>Other</td>
<td>0.62</td>
<td>0.33</td>
</tr>
<tr>
<td><strong>All non-Fuel</strong></td>
<td>5.09</td>
<td>4.07</td>
</tr>
<tr>
<td><strong>Total Operating Expenses Adjusted</strong></td>
<td>6.89</td>
<td>5.55</td>
</tr>
</tbody>
</table>

*Source: Moosberger and Pearce 2007, 4*

The fuel is one of the most important costs for airline operations. The fuel price raised significantly $50/barrel in 2004 to $82/barrel in 2006 and the price is volatile depending on several factors (Moosberger and Pearce, 2007). However, most airlines protect themselves from the unpredictable prices by hedging fuel costs. The airlines also push partial fuel costs to passengers, known as fuel surcharges including in airfare.
• Operating Asset Turnover

Figure 15: Comparison of Operating Asset Turnover 2002-2006

<table>
<thead>
<tr>
<th></th>
<th>Operating Asset Turnover</th>
<th>5 Yrs. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>2.07</td>
<td>1.24</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>3.4</td>
<td>2.18</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>4.82</td>
<td>4.10</td>
</tr>
<tr>
<td>EasyJet</td>
<td>4.2</td>
<td>3.17</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>0.86</td>
<td>1.09</td>
</tr>
<tr>
<td>Ryanair</td>
<td>1.1</td>
<td>1.19</td>
</tr>
</tbody>
</table>

From the movements shown in the figure 15, the traditional airlines mostly outperform the low-cost airlines for operating asset turnover in 2006. All traditional airlines use their operating assets very efficiently to boost sales in 2006, especially Lufthansa, which has an extreme rate of operating asset turnover at 4.82.

All traditional airlines improve their operating asset turnovers in 2006, comparing to the 5 years average ratio. For low-cost airline, only EasyJet can improve the ratio while Ryanair maintains its operating asset turnover consistently over years. JetBlue worsened the operating asset turnover in 2006, comparing to its 5 years average.

The factors affected this ratio are sales, operating working capital and net long-term assets, or aircraft fleet, which is the biggest amount in the balance sheet. Continental and EasyJet use
operating lease strategy on the aircraft operation whereas the other airlines owned aircraft in the larger amount than leasing.

- **Spread**

Figure 16: Comparison of Spread 2002-2006

![Spread Graph](image)

**Table 11: Spread 2006 VS 5 Years Average (2002-2006)**

<table>
<thead>
<tr>
<th></th>
<th>Spread 2006</th>
<th>5 Yrs. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>10.0%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>8.5%</td>
<td>-2.5%</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>117.0%</td>
<td>21.7%</td>
</tr>
<tr>
<td>EasyJet</td>
<td>20.6%</td>
<td>12.1%</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>0.2%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Ryanair</td>
<td>38.9%</td>
<td>34.2%</td>
</tr>
</tbody>
</table>

Operating ROA, interest expense after tax, cash and short-term investment, and debt influence spread. Operating ROA that greater than cost of borrowing yields positive spread. All representative airlines have positive spreads in 2006 with high range variations. Good operating ROA of most airlines in 2006 drive good spread ratio. Usually spread should be lower than operating ROA, but Lufthansa and Ryanair have spread over their operating ROA ratios. The high spreads of both two airlines cause by retaining cash and short-term investments in the amount larger than debts.
- **Net Financial Leverage**

Figure 17: Comparison of Net Financial Leverage 2002-2006

![Net Financial Leverage](image)

Table 12: Net Financial Leverage 2006 VS 5 Years Average (2002-2006)

<table>
<thead>
<tr>
<th></th>
<th>Net Financial Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td>British Airways</td>
<td>2.47</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>16.10</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>-0.05</td>
</tr>
<tr>
<td>EasyJet</td>
<td>-0.55</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>2.02</td>
</tr>
<tr>
<td>Ryanair</td>
<td>-0.11</td>
</tr>
</tbody>
</table>

Similar to spread, net financial leverage ratio is influenced by debt factors. In 2006, Lufthansa, EasyJet and Ryanair have negative net financial leverage due to their higher level of cash and short-term investment over interest-bearing debts. As financial leverage is one of the factors affected increase in shareholder value, those three airlines with negative financial leverage cannot create their shareholders’ value with this ratio.

Continental has a remarkable net financial leverage both in 2006 and the 5 years average. Continental has a high level of long-term debt since 2002. Its debt-to-equity ratio in 2006 is 15.66, comparing to other traditional airlines’: British Airways at 2.19 and Lufthansa at 0.64.
- **Return on Equity (ROE)**

Figure 18: Comparison of ROE 2002-2006

Table 13: Return on Equity 2006 VS 5 Years Average (2002-2006)

<table>
<thead>
<tr>
<th>ROE</th>
<th>2006</th>
<th>5 Yrs. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>38.1%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>151.8%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>18.5%</td>
<td>8.3%</td>
</tr>
<tr>
<td>EasyJet</td>
<td>10.9%</td>
<td>8.8%</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>-0.1%</td>
<td>12.0%</td>
</tr>
<tr>
<td>Ryanair</td>
<td>17.7%</td>
<td>20.0%</td>
</tr>
</tbody>
</table>

ROE is the comprehensive ratio affected by operating ROA and financial leverage. Continental’s ROE jumps in 2006 by the high level of financial leverage while British Airways also increases the shareholder return by using the financial leverage. On the other hand, ROE of Lufthansa, EasyJet and Ryanair are lower than their operating ROA in 2006 because they do not use the financial leverage to increase the shareholders’ returns.

All traditional airlines improve their ROE in 2006 noticeably, comparing to the 5 years average. These are resulted by improving on operating ROA and financial leverage of the traditional airlines in 2006 over 5 years average.
EasyJet is the only one low-cost airline that its ROE increases in 2006 as Ryanair’s ROE decreases slightly and JetBlue’s ROE goes down significantly. Negative operating ROA and low financial leverage affect the small ROE of JetBlue.

- **Sustainable Growth Rate**

**Figure 19: Comparison of Sustainable Growth Rate 2002-2006**

<table>
<thead>
<tr>
<th>Sustainable Growth Rate</th>
<th>2006</th>
<th>5 Yrs. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>38.1%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>151.8%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>13.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>EasyJet</td>
<td>10.9%</td>
<td>8.8%</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>-0.1%</td>
<td>12.0%</td>
</tr>
<tr>
<td>Ryanair</td>
<td>17.7%</td>
<td>20.0%</td>
</tr>
</tbody>
</table>

Sustainable growth rate links all ratios discussed above. If there is no dividend payout, the sustainable growth rate is the same value as ROE. In 2006, only Lufthansa pays dividends to shareholders, which is resulted in its sustainable growth rate being lower than the ROE whereas the other airlines keep no dividend payment.

For low-cost airlines, all of them have not paid dividends for years because they would like to retain the cash flow from profitability for future operating expansion.
• **Summary of All Ratios**

The tables below conclude all ratios of traditional airlines and low-cost airlines for 2006 and 5 years average. Each ratio is calculated by arithmetic average of all traditional airlines and low-cost airlines for 2006 and 5 years average.

**Table 15: Comparison of Key Financial Ratios of 5 Years Average**

<table>
<thead>
<tr>
<th></th>
<th>5 Years Average</th>
<th>Operating ROA</th>
<th>NOPAT Margin</th>
<th>Operating Asset Turnover</th>
<th>Spread</th>
<th>Net Financial Leverage</th>
<th>ROE</th>
<th>Sustainable Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Airlines</td>
<td>7.3%</td>
<td>2.6%</td>
<td>2.51</td>
<td>7.3%</td>
<td>4.94</td>
<td>8.3%</td>
<td>6.4%</td>
<td></td>
</tr>
<tr>
<td>Low-cost Airlines</td>
<td>16.5%</td>
<td>11.1%</td>
<td>1.82</td>
<td>16.8%</td>
<td>0.21</td>
<td>13.6%</td>
<td>13.6%</td>
<td></td>
</tr>
</tbody>
</table>

**Table 16: Comparison of Key Financial Ratios of 2006**

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>Operating ROA</th>
<th>NOPAT Margin</th>
<th>Operating Asset Turnover</th>
<th>Spread</th>
<th>Net Financial Leverage</th>
<th>ROE</th>
<th>Sustainable Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Airlines</td>
<td>17.7%</td>
<td>5.3%</td>
<td>3.43</td>
<td>45.2%</td>
<td>6.17</td>
<td>69.5%</td>
<td>67.7%</td>
<td></td>
</tr>
<tr>
<td>Low-cost Airlines</td>
<td>14.6%</td>
<td>8.2%</td>
<td>2.05</td>
<td>19.9%</td>
<td>0.45</td>
<td>9.5%</td>
<td>9.5%</td>
<td></td>
</tr>
</tbody>
</table>

Table 15 shows that for 5 years average of 2002-2006, based on key ratio analysis low-cost airlines outperform traditional airlines. On the other hand, in 2006 traditional airlines improve their operations and dominate low-cost airlines in most ratios, except NOPAT margin. Low-cost airlines can earn better NOPAT margin than traditional airlines consistently according to the effectiveness of cost management.

When consider operating ROA and NOPAT margin, traditional airlines improve their ratios in 2006 whereas low-cost airlines cannot maintain the high ratio. The ratios of both traditional and low-cost airlines tend to move to the same range in the future. For operating asset turnover, even if low-cost airlines improve the ratio in 2006, traditional airlines still use their economic resources more efficient than low-cost airlines. The important factor influenced better operating asset turnover of traditional airlines is operating lease strategy of Continental Airlines.

Even if the airline industry continues growing but potential abnormal earnings are hardly obtained in the future, according to the strategy analysis. This is accompanied by the financial analysis, which most ratios of low-cost and traditional airlines move closely to each other to the normal level. However, it is too optimistic to forecast future performance based on the latest year because the year 2006 is the extraordinary year for traditional airlines. Average performance based on historical up to date is worthy of consideration and can be the guidance in forecasting key accounting numbers.
5.5 Equity Valuation

The section performs equity valuation of all representative airlines based on the Residual Earnings Model. Key assumptions and analysis results are presented as follows.

5.5.1 Key Assumptions of Forecasting

Calculation of Residual Earnings valuation for all six airlines is undertaken by the Business Analysis & Valuation (BAV) application. The application requires estimation of key financial ratios to perform the equity valuation. Key assumptions are forecasted based on historical financial data range from 1996-2006, depending upon available information published on the individual airline website and other sources. Forecast horizon estimates for 6 years from 2007-2012 and the terminal years are 2013-2014. Forecasting key assumptions are as follows:

- **Sales Growth Rate**

  Sales growth rate is estimated based on average historical growth rate of individual airlines and assumed to be constant in 2007-2012. For British Airways and Continental Airlines, the years 2002 and 2003 are excluded in the calculation according to the effect of 9/11 incident that resulted substantial negative effects on the financial results and could be misleading the future forecast. Sales growth rate of all airlines forecasted for terminal years is 5.4%, based on the world GDP forecast for 2006-2010 adding 2% over the GDP. This is according to revenue growth of the airline business normally is greater than GDP. Lufthansa’s 2006 annual report forecasts the world GDP for 2006-2010 at 3.4%.

- **NOPAT Margin**

  NOPAT margin is estimated based on average historical NOPAT margin of individual airline and assumed to be constant from 2007 to 2014. NOPAT margin of 2002 and 2003 for British Airways and Continental Airlines are excluded from the calculation according to their unusual ratios affected by 9/11 incident.

- **Beginning Net Operating Working Capital/Sales and Beginning Net Operating Long-term assets/Sales**

  Both ratios are calculated based on average of historical ratios of 2001-2006. The rate of individual airline is estimated at the constant rate for 2007-2014.

- **Net Debt/Market Value of Net Capital and Preferred Equity/Market Value of Net Capital (Market Value Leverage)**

  Both ratios are estimated only for the beginning of 2007. Net debt and preferred equity are the value at year-ended 2006. Market value of net capital is calculated by using the market price at year-ended 2006 multiplied by number of shares outstanding at the end of the same year.
• **Cost of Capital Parameters**

All representative airlines are traded in different currencies and stock markets, so estimate of risk-free rate, market return and common equity beta are undertaken based on the airlines’ trading markets. The following table presents airlines’ trading information.

**Table 17: Trading Stock Exchange and Currency of Representative Airlines**

<table>
<thead>
<tr>
<th>Airline</th>
<th>Symbol</th>
<th>Stock Exchange</th>
<th>Currency</th>
<th>Market Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>BAY</td>
<td>LSE</td>
<td>Pence</td>
<td>FTSE 100</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>CAL</td>
<td>NYSE</td>
<td>US$</td>
<td>S&amp;P 500</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>LHA</td>
<td>FWB</td>
<td>Euro</td>
<td>DAX 30</td>
</tr>
<tr>
<td>EasyJet</td>
<td>EZJ</td>
<td>LSE</td>
<td>Pence</td>
<td>FTSE</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>JBLU</td>
<td>NYSE</td>
<td>US$</td>
<td>S&amp;P 500</td>
</tr>
<tr>
<td>Ryanair</td>
<td>RYAAY</td>
<td>NYSE</td>
<td>US$</td>
<td>S&amp;P 500</td>
</tr>
</tbody>
</table>

**Risk-Free Rate**

For British Airways and EasyJet, the estimated risk-free rate of 4.6% is the average rate of 10 years UK government bond for the 2002 to 2006, which the data are gathered from *Datastream*. As these 2 airlines are traded in the London Stock Market, the same risk-free rate is applied.

For Lufthansa, the risk-free rate is estimated at 4.0%, according to 10 years government bond average from 2002-2006, which the data are gathered from *Datastream*.

For Continental Airlines, JetBlue Airways, and Ryanair, the estimated risk-free rate of 4.4% is the average rate of 10 years U.S. Treasury bond for 2002 to 2006, which the data are gathered from *Datastream*. As these 3 airlines are traded in the New York Stock Exchange, the same risk-free rate is applied.

**Market Return**

For British Airways and EasyJet, the estimated market return of 7.1% is the average rate of return on FTSE 100 during 2002 to 2006.

For Lufthansa, the estimated market return of 11.4% is the average rate of return on DAX 30 performance during 2002 to 2006.

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8LSE London Stock Exchange

9NYSE New York Stock Exchange

10FWB Frankfurt Stock Exchange
For Continental Airlines, JetBlue Airways, and Ryanair, the estimated market return of 7.7% is the average rate of return on S&P 500 during 2002 to 2006.

All data calculated for market returns of representative airlines are gathered from *Datastream*.

**Common Equity Beta**

The common equity beta using for calculation is gathered from yahoo finance and www.advfn.com.

**Tax Rate**

Tax rate is estimated based on the rate announced in the airlines’ annual reports as well as the actual average rate calculated from their financial statements during 2002-2006.

**Cost of Debt**

Cost of debt is estimated based upon interest rate payable on short-term and long-term debt announced in the airlines’ annual reports.

The following table summarizes key assumptions of all representative airlines for calculation of equity valuation for the fiscal year 2006.

**Table 18: Key Assumptions of Representative Airlines**

<table>
<thead>
<tr>
<th>Description</th>
<th>British Airways</th>
<th>Continental Airlines</th>
<th>Lufthansa</th>
<th>EasyJet</th>
<th>JetBlue Airways</th>
<th>Ryanair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Growth Rate (2007-2012)</td>
<td>3.6%</td>
<td>11.6%</td>
<td>6.6%</td>
<td>20.0%</td>
<td>33.0%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Sales Growth Rate (2013-2014)</td>
<td>5.4%</td>
<td>5.4%</td>
<td>5.4%</td>
<td>5.4%</td>
<td>5.4%</td>
<td>5.4%</td>
</tr>
<tr>
<td>NOPAT margin (2007-2014)</td>
<td>5.9%</td>
<td>3.9%</td>
<td>3.9%</td>
<td>3.6%</td>
<td>5.6%</td>
<td>23.2%</td>
</tr>
<tr>
<td>Beginning net operating working capital/sales (2008-2014)</td>
<td>-17.5%</td>
<td>-14.9%</td>
<td>-13.0%</td>
<td>-13.4%</td>
<td>-18.0%</td>
<td>-20.0%</td>
</tr>
<tr>
<td>Beginning net operating long-term assets/sales (2008-2014)</td>
<td>97.9%</td>
<td>59.4%</td>
<td>40.6%</td>
<td>49.0%</td>
<td>112.0%</td>
<td>109.0%</td>
</tr>
<tr>
<td>Net debt/market value of net capital (beginning of 2007)</td>
<td>29.4%</td>
<td>42.2%</td>
<td>4.2%</td>
<td>27.0%</td>
<td>46.0%</td>
<td>16.0%</td>
</tr>
<tr>
<td>Preferred equity/market value of net capital (beginning of 2007)</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Market risk premium</td>
<td>2.5%</td>
<td>3.3%</td>
<td>7.4%</td>
<td>2.5%</td>
<td>3.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Risk free rate</td>
<td>4.6%</td>
<td>4.4%</td>
<td>4.0%</td>
<td>4.6%</td>
<td>4.4%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Tax rate</td>
<td>33.0%</td>
<td>35.0%</td>
<td>35.0%</td>
<td>30.0%</td>
<td>30.0%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Cost of debt</td>
<td>5.5%</td>
<td>7.0%</td>
<td>5.5%</td>
<td>5.5%</td>
<td>5.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Common equity beta</td>
<td>1.53</td>
<td>3.66</td>
<td>0.88</td>
<td>0.76</td>
<td>1.01</td>
<td>1.16</td>
</tr>
<tr>
<td>Cost of common equity</td>
<td>8.4%</td>
<td>16.5%</td>
<td>10.5%</td>
<td>6.5%</td>
<td>7.7%</td>
<td>8.2%</td>
</tr>
</tbody>
</table>

**5.5.2 Analysis and Results: Equity Valuation**

From the above key assumptions, equity valuation according to residual earnings model of all airlines is presented in the table below.
Table 19: Comparison of Equity Value Per Share and Trading Price

<table>
<thead>
<tr>
<th>Airline</th>
<th>Latest Fiscal Year-ended</th>
<th>Currency</th>
<th>Equity Value Per Share</th>
<th>Closing Price At Fiscal Year-ended Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Airways</td>
<td>31 Mar 2006</td>
<td>pence</td>
<td>405</td>
<td>353.25</td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>31 Dec 2006</td>
<td>US$</td>
<td>29.34</td>
<td>41.25</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>31 Dec 2006</td>
<td>Euro</td>
<td>23.49</td>
<td>20.83</td>
</tr>
<tr>
<td>EasyJet</td>
<td>31 Sep 2006</td>
<td>pence</td>
<td>717</td>
<td>486</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>31 Dec 2006</td>
<td>US$</td>
<td>25.45</td>
<td>14.2</td>
</tr>
<tr>
<td>Ryanair</td>
<td>31 Mar 2006</td>
<td>US$</td>
<td>42.25</td>
<td>54.7</td>
</tr>
</tbody>
</table>

For traditional airlines, British Airways and Lufthansa have equity value greater than their trading prices while Continental’s equity value is much lower than the trading price.

For low-cost airlines, EasyJet and JetBlue have equity value much greater than the trading price whereas Ryanair’s stock is traded at the higher price than its real value.

Modification of assumptions will change the results of equity values and two airlines, JetBlue and Ryanair, will be used as examples.

JetBlue’s sales growth rate is forecasted at the superior rate of 33% over six years (2007-2012), and this assumption yields the superior value. If the sales growth rate is changed to 20% for 2007-2012 and other key assumptions remain the same, the equity value per share will decrease to 16.34 US$.

In case of Ryanair, the sales growth rate is forecasted at 28% for 2007 to 2012. If this rate is changed to 20% while other assumptions remain the same, value per share of Ryanair will decrease to 29.90 US$. If sales growth rate and NOPAT margin of Ryanair are forecasted at 20% and 15% consecutively, the value per share will decrease to 15.58 US$.
Chapter 6  Discussion and Conclusions

This chapter presents the conclusion drawn from analyses and linked to the research questions. It also provides suggestions for further research studies as well as the quality of research design.

6.1  Conclusion on Ratio Analysis

The finding on ratio analysis of low-cost and traditional airlines shows that low-cost airlines perform operating results average from 2002 to 2006 better than traditional airlines significantly. However, in the year 2006 traditional airlines outperform low-cost airlines.

The ratios of both types of airlines tend to move toward a common level. As the airline business is considered competitively without barriers, low-cost airlines and traditional airlines will perform their operations at the same pattern and obtain no abnormal profitability over the long run.

6.2  Conclusion on Equity Valuation

Equity values of the representative airlines yield the results inconsistently. The equity values of four airlines, British Airways, Lufthansa, EasyJet and JetBlue, are greater than their stock prices. On the other hand, equity values of Continental Airlines and Ryanair are lower than their current stock prices. Possible reason that the equity value per share could differ from the marketing price is there might be improvement in key financial ratios. Continental Airlines, as an example, has been forecasted NOPAT margin along the years at 3.9%. If NOPAT margin of Continental Airlines improves to 5% through 2007 to 2014, the estimated value per share will increase to 49.68 US$ which gets closer to the market prices.

Estimates of the equity values of all airlines are conducted based on historical performances by using the ratio analysis as the foundation for future forecast. Results of the estimated equity values depend on key assumptions. Change in key assumptions, for instance change in sales growth rate, NOPAT margin, or forecast horizon, will produce different results. The assumptions should be set up in various scenarios from pessimistic to optimistic views to investigate the equity values in various dimensions and when compare to the current stock prices, it can imply how the stock market perceive the firms.

Even if modification of the assumptions can be done easily, but due to the time constrain, this study performs only one scenario.

6.3  Recommendations for further Research

It would be interesting to perform further researches as follows:
- Extend size of airline cases covered various regions to investigate whether the analysis results in the same manner.
- Perform fundamental analysis in different industries and evaluate the current stock prices based on potential future forecast.
- Perform sensitivity analysis of estimate on key assumptions based on possible scenarios to examine how equity values of the firm change upon the scenarios.
- Perform other equity valuation methods to compare whether the results of all methods yield identical.

6.4 Reliability, Validity and Degree of Generalization

This study is undertaken in quantitative method, which the statistical analyses are performed on reliable software application. Financial data are extracted only from reliable and trustworthy sources such as the airlines’ annual reports and Datastream.

Therefore this study claims to be reliable and the analysis results would be consistent if the study is replicated by other researchers with the same variables using in this paper.

For all researches, measurement must be accurate and the interpretation must be logical (Stake, 1995). According to Yin (1989), the construct validity establishes correct operational measurement and the tactic is to use multiple sources of evidences. This study is implied to be accurate and validity since the data obtained from multiple sources, as well as the calculation is performed by the reliable software application, and the author replicates the calculation to recheck the results.

Few case studies seem not to be large enough for generalization (Stake, 1995). The scientific facts generally base on multiple experiments replicated in different conditions. To obtain generalization, multiple case studies, represented as the experiments, can use under different concept of the research designs (Yin, 1989).

In this study, the selected airlines represented sample of total population, which includes all airlines worldwide, are too small to apply for the findings of total population.
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